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(54) Titre : MOLECULES D'ACIDES NUCLEIQUES ET PROTEINES ISSUES DE LA TETE, DE LA MOELLE EPINIERE,
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(54) Title: FLEA HEAD, NERVE CORD, HINDGUT AND MALPIGHIAN TUBULE NUCLEIC ACID MOLECULES,
PROTEINS AND USES THEREOF

(57) **Abrégé/Abstract:**

The present invention relates to flea head, nerve cord, hindgut and Malpighian tubule proteins; to flea head, nerve cord, hindgut and Malpighian tubule nucleic acid molecules, including those that encode such flea head, nerve cord, hindgut and Malpighian tubule proteins; to antibodies raised against such flea head, nerve cord, hindgut and Malpighian tubule proteins; and to compounds that inhibit flea head, nerve cord, hindgut and Malpighian tubule protein activity. The present invention also includes methods to obtain such proteins, nucleic acid molecules, antibodies, and inhibitory compounds. Also included in the present invention are therapeutic compositions comprising proteins, nucleic acid molecules, antibodies, or protective compounds derived from proteins of the present invention as well as the use of such therapeutic compositions to protect animals from flea infestation. Also included in the present invention is the use of flea head, nerve cord, hindgut and Malpighian tubule proteins to derive inhibitory compounds.



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(54) Title: FLEA HEAD, NERVE CORD, HINDGUT AND MALPIGHIAN TUBULE NUCLEIC ACID MOLECULES, PROTEINS AND USES THEREOF

(57) Abstract: The present invention relates to flea head, nerve cord, hindgut and Malpighian tubule proteins; to flea head, nerve cord, hindgut and Malpighian tubule nucleic acid molecules, including those that encode such flea head, nerve cord, hindgut and Malpighian tubule proteins; to antibodies raised against such flea head, nerve cord, hindgut and Malpighian tubule proteins; and to compounds that inhibit flea head, nerve cord, hindgut and Malpighian tubule protein activity. The present invention also includes methods to obtain such proteins, nucleic acid molecules, antibodies, and inhibitory compounds. Also included in the present invention are therapeutic compositions comprising proteins, nucleic acid molecules, antibodies, or protective compounds derived from proteins of the present invention as well as the use of such therapeutic compositions to protect animals from flea infestation. Also included in the present invention is the use of flea head, nerve cord, hindgut and Malpighian tubule proteins to derive inhibitory compounds.



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FLEA HEAD, NERVE CORD, HINDGUT AND MALPIGHIAN TUBULE NUCLEIC ACID MOLECULES, PROTEINS AND USES THEREOF

FIELD OF THE INVENTION

The present invention relates to nucleic acid molecules isolated from the head
5 and nerve cord of a flea, nucleic acid molecules isolated from the hindgut and
Malpighian tubule of a flea, proteins encoded by such nucleic acid molecules,
antibodies raised against such proteins, and inhibitors of such proteins. The present
invention also includes therapeutic compositions comprising such nucleic acid
molecules, proteins, antibodies, and/or other inhibitors, as well as uses thereof.

10 BACKGROUND OF THE INVENTION

Flea infestation of animals is a health and economic concern to pet owners. In
particular, the bites of fleas are a problem for animals maintained as pets because the
infestation becomes a source of annoyance not only for the pet but also for the pet
owner who may find his or her home generally contaminated with insects. Fleas are
15 known to directly cause a variety of diseases, including allergies, and also carry a
variety of infectious agents including, but not limited to, endoparasites (e.g.,
nematodes, cestodes, trematodes and protozoa), bacteria and viruses. As such, fleas
are a problem not only when they are on an animal but also when they are in the
general environment of the animal.

20 Bites from fleas are a particular problem on many animals because they can
cause a hypersensitive response in animals which is manifested as disease. For
example, bites from fleas can cause an allergic disease called flea allergic (or allergy)
dermatitis (FAD). A hypersensitive response in animals typically results in localized
tissue inflammation and damage, causing substantial discomfort to the animal.

25 The medical importance of flea infestation has prompted the development of
reagents capable of controlling flea infestation. Commonly encountered methods to
control flea infestation are generally focused on use of insecticides, which are often
unsuccessful for one or more of the following reasons: (1) failure of owner compliance
(frequent administration is required); (2) behavioral or physiological intolerance of the
30 pet to the pesticide product or means of administration; and (3) the emergence of flea
populations resistant to the prescribed dose of pesticide.

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Thus, there remains a need to develop a reagent and a method to protect animals from flea infestation.

SUMMARY OF THE INVENTION

5 The present invention relates to a novel product and process for protection of animals from flea infestation.

The present invention provides flea head and nerve cord (HNC) proteins and flea hindgut and Malpighian tubule (HMT) proteins; nucleic acid molecules encoding flea HNC proteins and flea HMT proteins; antibodies raised against such proteins (i.e., anti-flea HNC antibodies and anti-flea HMT antibodies respectively); mimetopes of
10 such proteins or antibodies; and compounds that inhibit flea HNC or HMT activity (i.e., inhibitory compounds or inhibitors).

The present invention also includes methods to obtain such proteins, mimetopes, nucleic acid molecules, antibodies and inhibitory compounds. The present invention also includes the use of proteins and antibodies to identify such inhibitory
15 compounds as well as assay kits to identify such inhibitory compounds. Also included in the present invention are therapeutic compositions comprising proteins, mimetopes, nucleic acid molecules, antibodies and inhibitory compounds of the present invention including protective compounds derived from a protein of the present invention that inhibit the activity of HNC and/or HMT proteins; also included are uses of such
20 therapeutic compounds to reduce flea infestation.

One embodiment of the present invention is an isolated nucleic acid molecule that hybridizes with a nucleic acid molecule selected from the group consisting of a nucleic acid sequence of Table I and/or Table II, or a nucleic acid sequence complementary to a nucleic acid sequence of Table I and/or Table II under conditions
25 that allow less than or equal to 30% base pair mismatch.

Another embodiment of the present invention is an isolated nucleic acid molecule having a nucleic acid sequence that is at least 70% identical to a nucleic acid sequence of Table I and/or Table II or complements thereof as well as fragments of such sequences.

30 The present invention also relates to recombinant molecules, recombinant viruses and recombinant cells that include a nucleic acid molecule of the present

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invention. Also included are methods to produce such nucleic acid molecules, recombinant molecules, recombinant viruses and recombinant cells.

Another embodiment of the present invention includes an isolated flea HMT and/or HNC protein that is at least 70% identical to an amino acid sequence encoded by a nucleic acid sequence of Table I and/or Table II, and fragments thereof, wherein such fragments can elicit an immune response against respective flea proteins or have activity comparable to respective flea proteins.

Another embodiment of the present invention includes an isolated protein encoded by a nucleic acid molecule that hybridizes with the complement of a nucleic acid sequence of Table I and/or Table II, under conditions that allow less than or equal to 30% base pair mismatch.

DETAILED DESCRIPTION OF THE INVENTION

The present invention provides for nucleic acid molecules isolated from the head and/or nerve cord of a flea, nucleic acid molecules isolated from the hindgut and/or Malpighian tubule of a flea, proteins encoded by such nucleic acid molecules, antibodies raised against such proteins, and inhibitors of such proteins. As used herein, nucleic acid molecules isolated from the head and/or nerve cord of a flea and proteins encoded by such nucleic acid molecules are also referred to as flea HNC, or HNC, nucleic acid molecules and proteins respectively; and nucleic acid molecules isolated from the hindgut and/or Malpighian tubules of a flea and proteins encoded by such nucleic acid molecules are referred to as flea HMT or HMT, nucleic acid molecules and proteins respectively. HNC nucleic acid molecules and HMT nucleic acid molecules of the present invention are nucleic acid molecules that are primarily expressed in flea HNC tissues and HMT tissues respectively, but which may be expressed in cells derived from flea tissues other than HNC and HMT. HNC and HMT nucleic acid molecules and proteins of the present invention can be isolated from a flea or prepared recombinantly or synthetically. HMT and HNC nucleic acid molecules of the present invention can be RNA or DNA; examples of nucleic acid molecules include, but are not limited to, complementary DNA (cDNA) molecules, genomic DNA molecules, synthetic DNA molecules, DNA molecules which are specific tags for messenger RNA derived from HMT and HNC tissues, and

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corresponding mRNA molecules. As such, a flea nucleic acid molecule of the present invention is not intended refer to an entire chromosome within which such a nucleic acid molecule is contained, however, a flea HMT or HNC cDNA of the present invention may include all regions such as regulatory regions that control production of
5 flea peritrophin proteins encoded by such a cDNA (such as, but not limited to, transcription, translation or post-translation control regions) as well as the coding region itself, and any introns or non-translated coding regions. As used herein, the phrases “HMT and/or HNC protein” and “HMT and HNC protein” refer to a protein expressed by a flea HMT tissue, by a flea HNC tissue, or by both flea HMT and HNC
10 tissues. As used herein, the phrases “HMT and/or HNC nucleic acid molecule” and “HMT and HNC nucleic acid molecule” refer to a nucleic acid molecule that can be isolated from a HMT cDNA library, from a HNC cDNA library, or from both libraries, or a gene corresponding thereto.

The present invention also provides for HMT and HNC DNA molecules that
15 are specific tags for messenger RNA molecules derived from HMT and HNC tissues. Such DNA molecules can correspond to an entire or partial sequence of a messenger RNA, and therefore, a DNA molecule corresponding to such a messenger RNA molecule (i.e. a cDNA molecule), can encode a full-length or partial-length protein. A nucleic acid molecule encoding a partial-length protein can be used directly as a probe
20 or indirectly to generate primers to identify and/or isolate a cDNA nucleic acid molecule encoding a corresponding, or structurally related, full-length protein. Such a partial cDNA nucleic acid molecule can also be used in a similar manner to identify a genomic nucleic acid molecule, such as a nucleic acid molecule that contains the complete gene including regulatory regions, exons and introns. Methods for using
25 partial HMT and HNC cDNA molecules and sequences to isolate full-length transcripts and corresponding cDNA molecules are described in the examples herein below.

The proteins and nucleic acid molecules of the present invention can be obtained from their natural source, or can be produced using, for example,
30 recombinant nucleic acid technology or chemical synthesis. Also included in the present invention is the use of these proteins and nucleic acid molecules as well as

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antibodies and inhibitory compounds thereto as therapeutic compositions to protect animals from flea infestation as well as in other applications, such as those disclosed below.

Flea HMT and HNC proteins and nucleic acid molecules of the present invention have utility because they represent novel targets for anti-arthropod vaccines and chemotherapeutic drugs. The products and processes of the present invention are advantageous because they enable the inhibition of arthropod development, metamorphosis, feeding, digestion and/or reproduction processes that involve HMT and/or HNC proteins.

The head and nerve cord of the flea, including antennae, brain, corpora cardiacum, corpora allata, and subesophageal and abdominal ganglion tissues are of interest as such tissues are highly enriched for transcripts that encode neuronal and endocrine targets, as well as targets involved in chemosensory and mechanosensory reception. By sequencing cDNA fragments from a library enriched in flea head and nerve cord nucleic acid sequences (referred to herein as HNC nucleic acid sequences), genes, and their respective full-length coding regions, integrally involved with flea neuronal and endocrine function are identified. Once identified, these genes can be further characterized and specific interference strategies are designed. As such, flea HNC proteins and nucleic acid molecules of the present invention have utility because they represent novel targets for anti-arthropod vaccines and chemotherapeutic drugs.

Blood-feeding insects such as fleas ingest large quantities of blood relative to their body weight and, as such, are adapted to reduce the volume of the ingested blood meal through the rapid elimination of water. In addition, the concentrations of sodium, potassium, and chloride ions in the blood meal are greater than in the hemolymph of fleas, necessitating the excretion of excessive amounts of these ions. The active transport of these ions from the hemolymph into the lumens of the Malpighian tubules and the hindgut drives the passive transport of water and other hemolymph contents into these organs as well. While passing through these organs, waste products from the hemolymph are excreted and needed nutrients, water, and salts are reabsorbed. As such, interfering with these essential processes is an important strategy for developing a product for controlling flea populations. By sequencing cDNA fragments from a

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library enriched in hindgut and Malpighian tubule nucleic acid sequences (referred to herein as HMT nucleic acid sequences), genes integrally involved with these processes, and their respective full-length coding regions, are identified. Once identified, these genes are further characterized and specific interference strategies can be designed. As such, flea HMT proteins and nucleic acid molecules of the present invention have utility because they represent novel targets for anti-arthropod vaccines and chemotherapeutic drugs.

One embodiment of the present invention is an isolated protein that includes a flea HMT and/or HNC protein. It is to be noted that the term "a" or "an" entity refers to one or more of that entity; for example, a protein, a nucleic acid molecule, an antibody and a therapeutic composition refers to "one or more" or "at least one" protein, nucleic acid molecule, antibody and therapeutic composition respectively. As such, the terms "a" (or "an"), "one or more" and "at least one" can be used interchangeably herein. It is also to be noted that the terms "comprising", "including", and "having" can be used interchangeably. According to the present invention, an isolated, or biologically pure, protein, is a protein that has been removed from its natural milieu. As such, "isolated" and "biologically pure" do not necessarily reflect the extent to which the protein has been purified. An isolated protein of the present invention can be obtained from its natural source, can be produced using recombinant DNA technology, or can be produced by chemical synthesis.

As used herein, isolated flea HMT and/or HNC proteins of the present invention can be full-length proteins or any homologue of such proteins. An isolated protein of the present invention, including a homologue, can be identified in a straightforward manner by the protein's ability to elicit an immune response against a flea HMT and/or HNC protein or by the protein's HMT and/or HNC activity. Examples of flea HMT and HNC homologue proteins include flea HMT and HNC proteins in which amino acids have been deleted (e.g., a truncated version of the protein, such as a peptide), inserted, inverted, substituted and/or derivatized (e.g., by glycosylation, phosphorylation, acetylation, myristoylation, prenylation, palmitoylation, amidation and/or addition of glycerophosphatidyl inositol) such that the homologue includes at least one epitope capable of eliciting an immune response against a flea HMT or HNC

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protein, and/or of binding to an antibody directed against a flea HMT or HNC protein. That is, when the homologue is administered to an animal as an immunogen, using techniques known to those skilled in the art, the animal will produce an immune response against at least one epitope of a natural flea HMT or HNC protein. The ability of a protein to effect an immune response can be measured using techniques known to those skilled in the art. As used herein, the term "epitope" refers to the smallest portion of a protein or other antigen capable of selectively binding to the antigen binding site of an antibody or a T cell receptor. It is well accepted by those skilled in the art that the minimal size of a protein epitope is about four to six amino acids. As is appreciated by those skilled in the art, an epitope can include amino acids that naturally are contiguous to each other as well as amino acids that, due to the tertiary structure of the natural protein, are in sufficiently close proximity to form an epitope. According to the present invention, an epitope includes a portion of a protein comprising at least 4 amino acids, at least 5 amino acids, at least 6 amino acids, at least 10 amino acids, at least 15 amino acids, at least 20 amino acids, at least 25 amino acids, at least 30 amino acids, at least 35 amino acids, at least 40 amino acids or at least 50 amino acids in length.

In one embodiment of the present invention a flea homologue protein has HMT or HNC activity, i.e. the homologue exhibits an activity similar to its natural counterpart. Methods to detect and measure such activities are known to those skilled in the art.

Flea HMT and/or HNC homologue proteins can be the result of natural allelic variation or natural mutation. Flea HMT and/or HNC protein homologues of the present invention can also be produced using techniques known in the art including, but not limited to, direct modifications to the protein or modifications to the gene encoding the protein using, for example, classic or recombinant DNA techniques to effect random or targeted mutagenesis.

Flea HMT and HNC proteins of the present invention are encoded by flea HMT and HNC nucleic acid molecules, respectively. As used herein, flea HMT and HNC nucleic acid molecules include nucleic acid sequences related to natural flea HMT and HNC genes, and, preferably, to *Ctenocephalides felis* HMT and HNC genes.

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As used herein, flea HMT and HNC genes include all regions such as regulatory regions that control production of flea HMT and HNC proteins encoded by such genes (such as, but not limited to, transcription, translation or post-translation control regions) as well as the coding region itself, and any introns or non-translated coding regions. As used herein, a nucleic acid molecule that “includes” or “comprises” a sequence may include that sequence in one contiguous array, or may include the sequence as fragmented exons such as is often found for a flea gene. As used herein, the term “coding region” refers to a continuous linear array of nucleotides that translates into a protein. A full-length coding region is that coding region that is translated into a full-length, i.e., a complete protein as would be initially translated in its natural millieu, prior to any post-translational modifications.

Table I represents a variety of flea HNC nucleic acid molecules of the present invention.

SEQ ID NO	Name
1	2227-82HNC
2	2228-51HNC
3	2229-06HNC
4	2229-42HNC
5	2245-07HNC
6	2245-93HNC
7	2247-04HNC
8	2229-44HNC
9	2249-09HNC
10	2249-10HNC
11	2251-09HNC
12	2215-13HNC
13	2218-39HNC
14	2218-82HNC

Table II represents a variety of flea HMT nucleic acid molecules of the present invention.

SEQ ID NO:	Name
15	2084-03HMT
16	2084-27HMT
17	2084-41HMT
18	2084-45HMT
19	2084-47HMT

20	2084-49HMT
21	2084-51HMT
22	2085-10HMT
23	2085-23HMT
24	2085-25HMT
25	2085-41HMT

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	SEQ ID NO:	Name		
	26	2085-57HMT	69	2156-05HMT
	27	2086-22HMT	70	2156-57HMT
	28	2087-18HMT	71	2157-40HMT
5	29	2088-24HMT	72	2158-08HMT
	30	2088-27HMT	73	2158-20HMT
	31	2088-30HMT	74	2158-78HMT
	32	2088-51HMT	75	2159-78HMT
	33	2088-53HMT	76	2160-38HMT
10	34	2089-52HMT	77	2160-87HMT
	35	2091-32HMT	78	2162-16HMT
	36	2091-62HMT	79	2162-20HMT
	37	2092-34HMT	80	2162-74HMT
	38	2093-57HMT	81	2166-25HMT
15	39	2094-14HMT	82	2167-46HMT
	40	2094-18HMT	83	2169-34HMT
	41	2094-46HMT	84	2171-31HMT
	42	2094-61HMT	85	2171-81HMT
	43	2095-14HMT	86	2173-28HMT
	44	2095-25HMT	87	2173-61HMT
20	45	2095-50HMT	88	2175-12HMT
	46	2102-06HMT	89	2175-26HMT
	47	2102-25HMT	90	2175-77HMT
	48	2102-26HMT	91	2177-26HMT
	49	2103-15HMT	92	2177-42HMT
25	50	2104-14HMT	93	2177-50HMT
	51	2104-16HMT	94	2177-82HMT
	52	2105-04HMT	95	2181-65HMT
	53	2105-07HMT	96	2181-85HMT
	54	2105-25HMT	97	2183-34HMT
30	55	2105-41HMT	98	2183-77HMT
	56	2106-10HMT	99	2183-90HMT
	57	2107-21HMT	100	2187-45HMT
	58	2107-36HMT	101	2188-28HMT
	59	2108-08HMT	102	2188-75HMT
35	60	2108-12HMT	103	2191-26HMT
	61	2108-22HMT	104	2191-66HMT
	62	2124-03HMT	105	2192-23HMT
	63	2154-17HMT	106	2192-42HMT
	64	2154-18HMT	107	2193-50HMT
40	65	2154-49HMT	108	2194-30HMT
	66	2154-52HMT	109	2194-37HMT
	67	2154-55HMT	110	2195-34HMT
	68	2154-57HMT	111	2195-80HMT

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	SEQ ID NO:	Name		
	112	2196-04HMT	155	2094-47HMT
	113	2196-29HMT	156	2103-28HMT
	114	2197-24HMT	157	2103-58HMT
5	115	2202-47HMT	158	2104-23HMT
	116	2205-78HMT	159	2104-59HMT
	117	2253-02HMT	160	2105-09HMT
	118	2253-05HMT	161	2106-14HMT
	119	2253-07HMT	162	2156-03HMT
10	120	2253-21HMT	163	2156-14HMT
	121	2253-73HMT	164	2161-46HMT
	122	2253-82HMT	165	2162-93HMT
	123	2253-83HMT	166	2175-18HMT
	124	2253-84HMT	167	2185-19HMT
	125	2253-96HMT	168	2191-92HMT
15	126	2254-23HMT	169	2195-06HMT
	127	2254-24HMT	170	2196-61HMT
	128	2254-29HMT	171	2253-13HMT
	129	2254-40HMT	172	2253-16HMT
	130	2254-53HMT	173	2253-19HMT
20	131	2254-57HMT	174	2253-27HMT
	132	2254-71HMT	175	2253-40HMT
	133	2254-85HMT	176	2253-56HMT
	134	2254-87HMT	177	2253-68HMT
	135	2254-92HMT	178	2253-78HMT
25	136	2255-14HMT	179	2253-87HMT
	137	2255-15HMT	180	2253-92HMT
	138	2255-20HMT	181	2254-43HMT
	139	2255-21HMT	182	2254-45HMT
	140	2255-34HMT	183	2254-51HMT
30	141	2255-52HMT	184	2254-54HMT
	142	2255-61HMT	185	2254-66HMT
	143	2255-72HMT	186	2254-88HMT
	144	2255-80HMT	187	2254-96HMT
	145	2256-05HMT	188	2255-17HMT
35	146	2085-58HMT	189	2255-19HMT
	147	2086-20HMT	190	2255-23HMT
	148	2086-53HMT	191	2255-25HMT
	149	2087-06HMT	192	2255-32HMT
	150	2088-05HMT	193	2255-39HMT
40	151	2088-17HMT	194	2255-41HMT
	152	2089-10HMT	195	2255-45HMT
	153	2092-40HMT	196	2255-60HMT
	154	2094-33HMT	197	2255-62HMT

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SEQ ID NO:	Name
198	2255-67HMT
199	2255-77HMT
200	2255-79HMT
201	2255-82HMT
202	2256-12HMT
203	2256-22HMT
204	2256-46HMT
205	2256-54HMT
206	2256-58HMT
207	2256-64HMT
208	2229-13HMT
209	2229-17HMT
210	2229-20HMT
211	2229-31HMT
212	2229-33HMT
213	2229-34HMT
214	2232-63HMT
215	2232-70HMT
216	2232-81HMT
217	2232-96HMT
218	2233-03HMT
219	2233-04HMT
220	2233-09HMT
221	2233-14HMT
222	2233-20HMT
223	2233-33HMT
224	2233-38HMT
225	2233-39HMT
226	2233-48HMT
227	2233-54HMT
228	2233-56HMT
229	2233-60HMT
230	2233-64HMT
231	2233-70HMT
232	2233-71HMT
233	2233-75HMT
234	2233-76HMT
235	2233-77HMT
236	2233-92HMT
237	2233-95HMT
238	2234-08HMT
239	2234-15HMT
240	2234-17HMT

241	2234-18HMT
242	2234-30HMT
243	2234-33HMT
244	2234-35HMT
245	2234-37HMT
246	2234-57HMT
247	2234-65HMT
248	2240-04HMT
249	2241-07HMT
250	2241-08HMT
251	2241-09HMT
252	2229-71HMT
253	2229-86HMT
254	2230-04HMT
255	2230-09HMT
256	2230-12HMT
257	2230-13HMT
258	2230-30HMT
259	2230-31HMT
260	2230-36HMT
261	2230-40HMT
262	2230-42HMT
263	2230-44HMT
264	2230-45HMT
265	2230-61HMT
266	2230-63HMT
267	2230-68HMT
268	2230-70HMT
269	2230-72HMT
270	2230-76HMT
271	2230-78HMT
272	2230-86HMT
273	2230-92HMT
274	2231-05HMT
275	2231-06HMT
276	2231-09HMT
277	2231-12HMT
278	2231-17HMT
279	2231-30HMT
280	2231-34HMT
281	2231-45HMT
282	2231-96HMT
283	2232-07HMT

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SEQ ID NO:	Name		
284	2232-09HMT	318	2241-54HMT
285	2232-13HMT	319	2241-56HMT
286	2232-23HMT	320	2241-60HMT
287	2232-31HMT	321	2241-66HMT
288	2232-35HMT	322	2241-74HMT
289	2232-40HMT	323	2241-82HMT
290	2232-46HMT	324	2241-83HMT
291	2232-54HMT	325	2241-86HMT
292	2229-51HMT	326	2241-87HMT
293	2230-60HMT	327	2243-10HMT
294	2230-81HMT	328	2243-18HMT
295	2231-03HMT	329	2243-20HMT
296	2231-24HMT	330	2243-22HMT
297	2231-56HMT	331	2243-27HMT
298	2233-59HMT	332	2243-28HMT
299	2234-12HMT	333	2243-31HMT
300	2234-76HMT	334	2243-32HMT
301	2234-86HMT	335	2243-38HMT
302	2240-11HMT	336	2243-41HMT
303	2240-14HMT	337	2243-45HMT
304	2240-17HMT	338	2243-48HMT
305	2240-23HMT	339	2243-52HMT
306	2240-26HMT	340	2243-73HMT
307	2240-28HMT	341	2243-86HMT
308	2240-31HMT	342	2243-87HMT
309	2240-44HMT	343	2243-94HMT
310	2240-63HMT	344	2244-12HMT
311	2240-66HMT	345	2244-25HMT
312	2240-70HMT	346	2244-29HMT
313	2240-72HMT	347	2244-44HMT
314	2240-94HMT	348	2244-54HMT
315	2241-10HMT	349	2244-71HMT
316	2241-12HMT	350	2244-75HMT
317	2241-40HMT		

35 Table III represents highest Blast hits for nucleic acid molecules of the present invention.

ID No.	Description	Species
3084 3	Actin, cytoplasmic	<i>Bombyx mori</i>
3084 27	ribosomal protein l12	<i>Rattus norvegicus</i>
3084 41	Elongation factor 2 (EF-2)	<i>Drosophila melanogaster</i>
3084 45	60S ribosomal protein L5	<i>Bombyx mori</i>

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ID No.		Description	Species	
5	3084	47	Acidic ribosomal protein rpA	<i>Drosophila melanogaster</i>
	3084	49	CG5827 gene produ	<i>Drosophila melanogaster</i>
	3084	51	Ribosomal protein s7	<i>Manduca sexta</i>
	3085	10	Amphiphysin	<i>Drosophila melanogaster</i>
	3085	23	CG10315 gene product	<i>Drosophila melanogaster</i>
	3085	41	RpS4 gene product	<i>Drosophila melanogaster</i>
	3085	57	CG3380 gene product	<i>Drosophila melanogaster</i>
10	3086	22	Cofactor C	<i>Homo sapiens</i>
	3087	18	unknown	<i>Drosophila melanogaster</i>
	3088	24	cell adhesion molecule apCAM (clone d12)	<i>California sea hare</i>
	3088	27	elongation factor 1 alpha	<i>Mayetiola destructor</i>
15	3088	30	CG12775 gene product	<i>Drosophila melanogaster</i>
	3088	51	paramyosin - nematode	<i>Onchocerca volvulus</i>
	3088	53	succinate dehydrogenase flavoprotein subunit	<i>Drosophila melanogaster</i>
	3089	52	CG13806 gene product	<i>Drosophila melanogaster</i>
	3091	32	Acyl carrier protein, mitochondrial precursor	<i>Drosophila melanogaster</i>
20	3091	62	Protein disulfide isomerase precursor	<i>Drosophila melanogaster</i>
	3092	34	siah binding protein	<i>Homo sapiens</i>
	3094	14	aconitase	<i>Daphnia pulex</i>
	3094	18	excision repair protein ERCC2/XPD	<i>Drosophila melanogaster</i>
	3094	46	CG7176 gene product	<i>Drosophila melanogaster</i>
	3094	61	elongation factor-1 alpha	<i>Cyphonia clavata</i>
	3095	14	kettin	<i>Drosophila melanogaster</i>
25	3095	25	CG7791 gene product	<i>Drosophila melanogaster</i>
	3095	50	CG3861 gene product	<i>Drosophila melanogaster</i>
	3102	6	CG4288 gene product [alt 1]	<i>Drosophila melanogaster</i>
30	3102	25	Poly-A binding protein, Chain E	<i>Xenopus laevis</i>
	3102	26	Elongation factor 2	<i>Drosophila melanogaster</i>
	3103	15	human polyadenylate binding protein II	<i>Homo sapiens</i>
	3104	14	CG9244 gene product [alt 1]	<i>Drosophila melanogaster</i>
	3104	16	translation elongation factor 2	<i>Drosophila melanogaster</i>
	3105	4	ribospmal protein s5	<i>Mus musculus</i>
	3105	7	vanin-like protein	<i>Drosophila melanogaster</i>
35	3105	25	NADH dehydrogenase	<i>Homo sapiens</i>
	3105	41	CG5214 gene product	<i>Drosophila melanogaster</i>
	3107	21	ribosomal protein L8	<i>Anopheles gambiae</i>
40	3107	36	ribosomal protein L18a	<i>Homo sapiens</i>
	3108	8	vacuolar ATPase SFD subunit	<i>Drosophila melanogaster</i>
	3108	12	CG6439 gene product	<i>Drosophila melanogaster</i>
	3108	22	CG8415 gene product	<i>Drosophila melanogaster</i>
	3124	3	TSC2	<i>Takifugu rubripes</i>
45	3154	17	CG11771 gene product	<i>Drosophila melanogaster</i>
	3154	18	elongation factor 1 alpha	<i>Acampsis alternipes</i>
	3154	49	CG11266 gene product	<i>Drosophila melanogaster</i>
	3154	52	elongation factor 2	<i>Drosophila melanogaster</i>
	3154	55	NADPH ferrihemoprotein reductase	<i>Drosophila melanogaster</i>
	3154	57	CG7144 gene product	<i>Drosophila melanogaster</i>
50	3156	5	CG8201 gene product [alt 1]	<i>Drosophila melanogaster</i>
	3156	57	miniparamyosin	<i>Drosophila melanogaster</i>
	3157	40	fimbrin	<i>Drosophila melanogaster</i>

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ID No.		Description	Species	
5	3158	8	mitochondrial phosphate carrier protein	<i>Drosophila melanogaster</i>
	3159	78	nuclear protein SA	<i>Drosophila melanogaster</i>
	3160	38	ribosomal protein S17	<i>Drosophila melanogaster</i>
	3160	87	CG3872 gene produc	<i>Drosophila melanogaster</i>
	3162	16	fimbrin	<i>Drosophila melanogaster</i>
10	3162	20	HL23 ribosomal protein	<i>Homo sapiens</i>
	3162	74	NADH-ubiquinone oxidoreductase	<i>Bos taurus</i>
	3166	25	dp115 protein	<i>Drosophila melanogaster</i>
	3167	46	ribosomal protein S24	<i>Fugu rubripes</i>
	3169	34	Proline synthetase associated	<i>Homo sapiens</i>
15	3171	31	translocation protein 1	<i>Drosophila melanogaster</i>
	3171	81	CG4600 gene product	<i>Drosophila melanogaster</i>
	3173	28	CG15077 gene product	<i>Drosophila melanogaster</i>
	3173	61	ADP/ATP translocase	<i>Oryctolagus cuniculus</i>
	3175	12	CG5037 gene product	<i>Drosophila yakuba</i>
20	3175	26	ribosomal protein S8	<i>Apis mellifera</i>
	3175	77	cytochrome b	<i>Drosophila melanogaster</i>
	3177	26	cytochrome oxidase II	<i>Ctenocephalides felis</i>
	3177	42	CG8728 gene product	<i>Drosophila melanogaster</i>
	3177	50	pyruvate dehydrogenase type 1 alpha subunit	<i>Caenorhabditis elegans</i>
25	3177	82	translation repressor NAT1	<i>Gallus gallus</i>
	3181	65	ubiquinol-cytochrome c reductase	<i>Homo sapiens</i>
	3181	85	hypothetical protein FLJ20417	<i>Homo sapiens</i>
	3183	34	Heat shock protein 70	<i>Ceratitis capitata</i>
	3183	77	ADP ribosylation factor 2	<i>Drosophila melanogaster</i>
30	3183	90	glutamate dehydrogenase	<i>Drosophila melanogaster</i>
	3187	45	ribosomal protein S4	<i>Drosophila melanogaster</i>
	3188	28	RAS-related protein RAB-5C	<i>Mus musculus</i>
	3188	75	CG7144 gene product	<i>Drosophila melanogaster</i>
	3191	66	ATP-specific succinyl-CoA synthetase beta subunit	<i>Mus musculus</i>
35	3192	23	D-Titin	<i>Drosophila melangaster</i>
	3192	42	projectin	<i>Drosophila melangaster</i>
	3193	50	CG15221 gene product	<i>Drosophila melanogaster</i>
	3194	30	K7 kinesin-like protein	<i>Dictyostelium discoideum</i>
	3194	37	CG9498 gene product	<i>Drosophila melanogaster</i>
40	3195	34	CG10320 gene product	<i>Drosophila melanogaster</i>
	3195	80	hypothetical protein C56E6.6	<i>C. elegans</i>
	3196	4	put. ribosomal protein L1	<i>Drosophila melanogaster</i>
	3196	29	eukaryotic translation initiation factor 4A (eIF-4A)	<i>Drosopihila melanogaster</i>
	3197	24	polyadenylate binding protein	<i>Petromyzon marinus</i>
45	3202	47	eukaryotic translation initiation factor 4A	<i>Mus musculus</i>
	3205	78	cytoskeletal actin	<i>Styela clava</i>
	3253	2	cytochrome C oxidase	<i>H. sapiens</i>
	3253	73	CG6090 gene product	<i>Drosophila melanogaster</i>
	3253	83	translation elongation factor 2	<i>Drosophila melanogaster</i>
45	3253	84	NADH dehydrogenase subunit 5	<i>Anopheles gambiae</i>
	3254	23	elongation factor 1-gamma	<i>Artemia</i>
	3254	40	cDNA EST yk96f8.5	<i>C. elegans</i>

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ID No.		Description	Species
5	3254	57 hypothetical protein SC3C3.03c	<i>Streptomyces oelicolor</i> A3(2)
	3254	87 CG5891 gene product	<i>Drosophila melanogaster</i>
	3255	61 polyhydroxyalkanoic synthase, PHA synthase	<i>Alcaligenes eutrophus</i>
	3255	80 CG3648 gene product	<i>Drosophila melanogaster</i>
	3256	5 CG5827 gene product	<i>Drosophila melanogaster</i>
10	3086	20 mini-collagen	<i>Hydra</i>
	3086	53 60S ribosomal protein L4	<i>Drosophila melanogaster</i>
	3087	6 beta-tubulin	<i>Drosophila melanogaster</i>
	3088	5 Rab 5c protein	<i>Canis familiaris</i>
	3088	17 beta subunit RNA polymerase	<i>Plasmodium falciparum</i>
15	3089	10 beta adaptin	<i>Drosophila melanogaster</i>
	3094	33 hypothetical protein C01B12.1	<i>C. elegans</i>
	3094	47 putative glutathione synthetase	<i>Medicago truncatula</i>
	3103	28 CG10602 gene product	<i>Drosophila melanogaster</i>
	3104	23 CG4164 gene product	<i>Drosophila melanogaster</i>
20	3104	59 CG6529 gene product	<i>Drosophila melanogaster</i>
	3105	9 CG4090	<i>Drosophila melanogaster</i>
	3106	14 kinesin-like protein	<i>Drosophila melanogaster</i>
	3156	3 clathrin-associated adaptor complex AP-1 medium chain	<i>Drosophila melanogaster</i>
	3156	14 CG11963 gene product	<i>Drosophila melanogaster</i>
25	3162	93 CG11267 gene product	<i>Drosophila melanogaster</i>
	3175	18 Probable E4 protein	<i>Human papillomavirus type 6a</i>
	3185	19 cytochrome oxidase II	<i>Ctenocephalides felis</i>
	3191	92 CG13655 gene product	<i>Drosophila melanogaster</i>
	3196	61 cytoplasmic gelsolin	<i>Drosophila melanogaster</i>
30	3253	13 translation initiation factor 5A	<i>CG18445 gene product</i>
	3253	16 myosin light chain 2	<i>Drosophila melanogaster</i>
	3253	19 CG14206 gene product	<i>Drosophila melanogaster</i>
	3253	27 larval and adult myosin heavy chain	<i>Drosophila melanogaster</i>
	3253	40 Heterogeneous nuclear ribonucleoprotein 27C	<i>Drosophila melanogaster</i>
35	3253	56 profilin	<i>Drosophila melanogaster</i>
	3253	68 NADH-ubiquinone oxidoreductase 42 kDa subunit	<i>Drosophila melanogaster</i>
	3253	78 CG7903 gene product	<i>Drosophila melanogaster</i>
	3253	87 ferritin subunit 1	<i>Drosophila melanogaster</i>
	3253	92 myosin light chain 2	<i>Drosophila melanogaster</i>
40	3254	43 muscle myosin heavy chain	<i>Drosophila melanogaster</i>
	3254	45 CG3714 gene product	<i>Drosophila melanogaster</i>
	3254	51 60S ribosomal protein	<i>Mus musculus</i>
	3254	54 CG10753 gene product	<i>Drosophila melanogaster</i>
	3254	66 poly-U-binding-splicing-factor gene product [alt 1]	<i>Drosophila melanogaster</i>
45	3254	88 alpha-spectrin	<i>Drosophila melanogaster</i>
	3254	96 CG2852 gene product	<i>Drosophila melanogaster</i>
	3255	17 ribonucleoside reductase M1 subunit	<i>Drosophila melanogaster</i>
	3255	19 docking protein	<i>Homo sapiens</i>
	3255	23 ribosomal protein S31	<i>Drosophila melanogaster</i>
	3255	25 isovaleryl dehydrogenase precursor	<i>Mus musculus</i>
	3255	32 ribosomal protein L7a	<i>Drosophila melanogaster</i>

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ID No.		Description	Species
5	3255 39	CG10627 gene product	<i>Drosophila melanogaster</i>
	3255 41	NADH dehydrogenase subunit 6	<i>Drosophila mauritiana</i>
	3255 45	BcDNA:GH11673 gene product	<i>Drosophila melanogaster</i>
	3255 60	Sec23 protein	<i>Homo sapiens</i>
	3255 62	HMG CoA synthase	<i>M. musculus</i>
10	3255 67	CG7920 gene product	<i>Drosophila melanogaster</i>
	3255 77	CG14206 gene produ	<i>Drosophila melanogaster</i>
	3255 79	40S ribosomal protein SA	<i>Drosophila melanogaster</i>
	3255 82	RNA-binding protein lark	<i>Drosophila melanogaster</i>
	3256 12	CG7821 gene product	<i>Drosophila melanogaster</i>
15	3256 22	Eukaryotic translation initiation factor 6	<i>Drosophila melanogaster</i>
	3256 46	hydroxyproline-rich protein	<i>Volvox carteri f. nagariensis</i>
	3256 54	PDGF associated protein	<i>Homo sapiens</i>
	3256 58	S20 ribosomal protein	<i>Drosophila melanogaster</i>
	3256 64	ribosomal protein S9	<i>Drosophila melanogaster</i>
20	3229 13	myosin-IB	<i>Drosophila melanogaster</i>
	3229 17	NADH dehydrogenase subunit 2	<i>Bombyx mori</i>
	3229 20	cytochrome b	<i>Beomys hindei</i>
	3229 31	CG1967 gene product	<i>Drosophila melanogaster</i>
	3229 33	r protein	<i>Drosophila melanogaster</i>
25	3229 34	ferritin 2 light chain homolog	<i>Drosophila melanogaster</i>
	3232 63	NADH dehydrogenase subunit 4	<i>Anopheles gambiae</i>
	3232 70	ubiquitin-hybrid protein precursor	<i>Drosophila melanogaster</i>
	3232 81	ribosomal protein L23a	<i>Drosophila melanogaster</i>
	3232 96	ribosomal protein RSP14A	<i>Drosophila melanogaster</i>
30	3233 3	malate dehydrogenase	<i>Mus musculus</i>
	3233 4	calponin-like protein Chd64	<i>Drosophila melanogaster</i>
	3233 9	paramyosin	<i>Drosophila melanogaster</i>
	3233 14	CG2099 gene product	<i>Drosophila melanogaster</i>
	3233 20	CG11963 gene produ	<i>Drosophila melanogaster</i>
35	3233 33	succinyl-CoA:alpha-ketoacid coenzyme A transferase	<i>Sus scrofa</i>
	3233 38	unknown	<i>Homo sapiens</i>
	3233 39	CG12736 gene product	<i>Drosophila melanogaster</i>
	3233 48	RpL11 gene product	<i>Drosophila melanogaster</i>
	3233 54	minute(1)1B protein	<i>Drosophila melanogaster</i>
40	3233 56	ribosomal protein L9	<i>Drosophila melanogaster</i>
	3233 60	CG10124 gene product	<i>Drosophila melanogaster</i>
	3233 64	protein 4.1 homologue (coracle)	<i>Drosophila melanogaster</i>
	3233 70	mitochondrial ND5 gene for NADH dehydrogenase subunit 5	<i>Pieris rapae</i>
	3233 71	CG9515 gene product	<i>Drosophila melanogaster</i>
45	3233 75	putative prunasin hydrolase precursor	<i>Prunus serotina</i>
	3233 77	ribosomal protein 15a	<i>Drosophila melanogaster</i>
	3233 92	ribosomal protein S18	<i>Drosophila melanogaster</i>
	3233 95	CG3006 gene product	<i>Drosophila melanogaster</i>
	3234 8	beta-5 tubulin	<i>Gallus gallus</i>
	3234 15	hydroxyproline-rich protein	<i>Volvox carteri f. nagariensis</i>
	3234 17	myosin-IB	<i>Drosophila melanogaster</i>
	3234 18	muscle myosin heavy chain	<i>Drosophila melanogaster</i>

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	ID No.	Description	Species
	3234 30	ribosomal protein L31	<i>Aedes aegypti</i>
	3234 33	cytochrome P450	<i>Musca domestica</i>
	3234 35	carnitine palmitoyltransferase I	<i>Drosophila melanogaster</i>
	3234 37	non-muscle myosin	<i>Drosophila melanogaster</i>
5	3234 57	Aldehyde-dehydrogenase like protein	<i>C. elegans</i>
	3234 65	ribosomal protein S6	<i>Manduca sexta</i>
	3240 4	fucosidase, alpha-L-1, tissue	<i>Rattus norvegicus</i>
	3241 7	Integrin beta-subunit myospheroid precursor	<i>Drosophila melanogaster</i>
	3229 71	aldehyde dehydrogenase	<i>Placopecten magellanicus</i>
10	3229 86	glutamine synthetase	<i>Anopheles gambiae</i>
	3230 4	cytochrome C oxidase III	<i>Ceratitis capitata</i>
	3230 9	TRIP-1 homolog	<i>Drosophila melanogaster</i>
	3230 12	sta gene product	<i>Drosophila melanogaster</i>
	3230 13	BcDNA.GM04779	<i>Drosophila melanogaster</i>
15	3230 30	BcDNA.GM12291	<i>Drosophila melanogaster</i>
	3230 31	hnRNP protein	<i>Chironomus tentans</i>
	3230 36	SURF-4 protein	<i>Drosophila melanogaster</i>
	3230 40	similar to ubiquitin family	<i>C. elegans</i>
	3230 42	ribosomal protein L19	<i>Drosophila melanogaster</i>
20	3230 44	CG5651 gene product	<i>Drosophila melanogaster</i>
	3230 45	CG4046 gene product	<i>Drosophila melanogaster</i>
	3230 61	CG1475 gene produ	<i>Drosophila melanogaster</i>
	3230 63	CG17489 gene product	<i>Drosophila melanogaster</i>
	3230 68	40S ribosomal protein S12	<i>Drosophila melanogaster</i>
25	3230 70	CG2062 gene product	<i>Drosophila melanogaster</i>
	3230 72	ribosomal protein L41	<i>Mus musculus</i>
	3230 76	CG1837 gene product	<i>Drosophila melanogaster</i>
	3230 78	kst gene product	<i>Drosophila melanogaster</i>
	3230 86	ribosomal protein L8	<i>Aedes albopictus</i>
30	3230 92	CG12082 gene product	<i>Drosophila melanogaster</i>
	3231 5	CG10423 gene product	<i>Drosophila melanogaster</i>
	3231 6	CG7424 gene product	<i>Drosophila melanogaster</i>
	3231 9	glyceraldehyde-3-phosphate dehydrogenase-1	<i>Drosophila melanogaster</i>
	3231 12	cytoplasmic actin	<i>Pisaster ochraceus</i>
35	3231 17	CG1628 gene product	<i>Drosophila melanogaster</i>
	3231 30	BcDNA.GH06451	<i>Drosophila melanogaster</i>
	3231 34	ribosomal protein 49	<i>Drosophila melanogaster</i>
	3231 45	myosin heavy-chain a	<i>Drosophila melanogaster</i>
	3231 96	moesin/ezrin/radixin homolog	<i>Drosophila melanogaster</i>
40	3232 7	calreticulin	<i>Drosophila melanogaster</i>
	3232 9	ribosomal protein S19	<i>Drosophila melanogaster</i>
	3232 13	tropomyosin	<i>Periplaneta americana</i>
	3232 23	CG13806 gene product	<i>Drosophila melanogaster</i>
	3232 31	hypothetical protein FLJ20604	<i>Homo sapiens</i>
45	3232 35	hemomucin	<i>Drosophila melanogaster</i>
	3232 40	CG6287 gene product	<i>Drosophila melanogaster</i>
	3232 46	mitochondrial cytochrome oxidase I	<i>Agrius convolvuli</i>
	3232 54	tropomyosin I isoform e	<i>Drosophila melanogaster</i>
	3229 51	isocitrate dehydrogenase	<i>Homo sapiens</i>
50	3230 60	CG7662 gene product	<i>Drosophila melanogaster</i>

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ID No.		Description	Species
5	3230 81	DISCS LOST; dlt	<i>Drosophila melanogaster</i>
	3231 3	CG8857 gene product	<i>Drosophila melanogaster</i>
	3231 24	p97 subunit of 15S Mg(2+)- ATPase	<i>Xenopus laevis</i>
	3231 56	cytochrome b	<i>Phlebotomus bergeroti</i>
	3231 59	CG6180 gene product	<i>Drosophila melanogaster</i>
10	3234 12	secretory mucin	<i>Homo sapiens</i>
	3234 76	CG2674 gene product [alt 1]	<i>Drosophila melanogaster</i>
	3234 86	ribosomal protein L3	<i>Bombyx mori</i>
	3240 11	CG7404 gene product	<i>Drosophila melanogaster</i>
	3240 14	CG9140 gene product	<i>Drosophila melanogaster</i>
15	3240 17	CG7973 gene product	<i>Drosophila melanogaster</i>
	3240 23	symplesin	<i>Homo sapiens</i>
	3240 26	CG9282 gene product	<i>Drosophila melanogaster</i>
	3240 28	CG7283 gene product	<i>Drosophila melanogaster</i>
	3240 31	eukaryotic initiation factor 4 gamma	<i>Homo sapiens</i>
20	3240 44	unknown	<i>Drosophila melanogaster</i>
	3240 63	ferritin subunit 1	<i>Drosophila melanogaster</i>
	3240 66	putative t-complex polypeptide 1 delta	<i>Aedes triseriatus</i>
	3240 70	CG4729 gene product [alt 2]	<i>Drosophila melanogaster</i>
	3240 72	CG9332 gene product	<i>Drosophila melanogaster</i>
25	3240 94	glycerol-3-phosphate dehydrogenase	<i>Ceratitis capitata</i>
	3241 10	Sam50	<i>Drosophila melanogaster</i>
	3241 12	NADH dehydrogenase subunit 2	<i>Bombyx mori</i>
	3241 40	EF-1-alpha	<i>Drosophila melanogaster</i>
	3241 54	CG2998 gene product	<i>Drosophila melanogaster</i>
30	3241 56	short-chain alcohol dehydrogenase	<i>Homo sapiens</i>
	3241 60	muscle type phosphofructokinase	<i>Drosophila melanogaster</i>
	3241 66	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase 48 kd subunit	<i>Drosophila melanogaster</i>
	3241 74	enolase	<i>Hymenolepis diminuta</i>
	3241 82	paramyosin	<i>Drosophila melanogaster</i>
35	3241 83	beta-tubulin	<i>Bombyx mori</i>
	3241 86	BcDNA:GH04637 gene product [alt 1]	<i>Drosophila melanogaster</i>
	3241 87	renin	<i>Rattus norvegicus</i>
	3243 10	alpha-actinin	<i>Drosophila melanogaster</i>
	3243 18	acetyl-CoA synthetase	<i>Drosophila melanogaster</i>
40	3243 20	cytochrome P450 CYP12A3	<i>Musca domestica</i>
	3243 22	NADH dehydrogenase subunit 4	<i>Anopheles arabiensis</i>
	3243 27	polyubiquitin 5	<i>Arabidopsis thaliana</i>
	3243 28	moesin	<i>Drosophila melanogaster</i>
	3243 31	QM protein	<i>Bombyx mandarina</i>
45	3243 32	CG1250 gene product [alt 1]	<i>Drosophila melanogaster</i>
	3243 38	projectin	<i>Drosophila melanogaster</i>
	3243 41	CG6543 gene product	<i>Drosophila melanogaster</i>
	3243 45	CG13171 gene product	<i>Drosophila melanogaster</i>
	3243 48	neurofibromatosis type 2 protein isoform Mer162	<i>Homo sapiens</i>
	3243 52	putative succinyl-coa ligase (GDP-forming)	<i>Drosophila melanogaster</i>
	3243 73	CG7176 gene product [alt 3]	<i>Drosophila melanogaster</i>
	3243 86	Phosphoserine aminotransferase (PSAT)	<i>Homo sapiens</i>

ID No.		Description	Species
5	3243	87 Bmsqd-2	<i>Bombyx mori</i>
	3243	94 CG3132 gene product	<i>Drosophila melanogaster</i>
	3244	12 tropomyosin isoform 127	<i>Drosophila melanogaster</i>
	3244	25 CG3132 gene product	<i>Drosophila melanogaster</i>
	3244	29 NADH dehydrogenase	<i>Bos taurus</i>
10	3244	44 glutamate dehydrogenase	<i>Drosophila melanogaster</i>
	3244	54 spliceosomal protein	<i>Drosophila melanogaster</i>
	3244	71 peritrophin 1	<i>Anopheles gambiae</i>
	3244	75 NADH dehydrogenase subunit 5	<i>Anopheles gambiae</i>
	3227	82 CG7607 gene product	<i>Drosophila melanogaster</i>
15	3228	51 NADH dehydrogenase subunit 4L	<i>Cochliomyia hominivorax</i>
	3229	6 40S ribosomal protein S13	<i>Drosophila melanogaster</i>
	3229	42 Tubulin ALPHA-3/ALPHA-7 chain	<i>Mus musculus</i>
	3229	44 CG11916 gene product	<i>Drosophila melanogaster</i>
	3249	9 heat shock protein 60	<i>Culicoides variipennis</i>
	3249	10 troponin T	<i>Periplaneta americana</i>
	3251	9 Citrate lyase alpha chain	<i>Escherichia coli</i>

In one embodiment, a gene or other nucleic acid molecule of the present invention can be an allelic variant that includes a similar but not identical sequence to a *C. felis* nucleic acid sequence of Table I and/or Table II or a complement thereof. For example, an allelic variant of a *C. felis* gene including SEQ ID NO:1 is a gene that occurs at essentially the same locus (or loci) in the genome as the gene including SEQ ID NO:1, but which, due to natural variations caused by, for example, mutation or recombination, has a similar but not identical sequence. Because natural selection typically selects against alterations that affect function, allelic variants (i.e. alleles corresponding to, or of, cited nucleic acid sequences) usually encode proteins having similar activity to that of the protein encoded by the gene to which they are being compared. Allelic variants of genes or nucleic acid molecules can also comprise alterations in the 5' or 3' untranslated regions of the gene (e.g., in regulatory control regions), or can involve alternative splicing of a nascent transcript, thereby bringing alternative exons into juxtaposition. Allelic variants are well known to those skilled in the art and would be expected to occur naturally within a given flea such as *C. felis*, since the genome is diploid, and sexual reproduction will result in the reassortment of alleles.

In one embodiment of the present invention, isolated HMT and HNC proteins are encoded by nucleic acid molecules that hybridize under stringent hybridization

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conditions to genes or other nucleic acid molecules encoding flea HMT and HNC proteins, respectively. The minimal size of HMT and HNC proteins of the present invention is a size sufficient to be encoded by a nucleic acid molecule capable of forming a stable hybrid (i.e., hybridizing under stringent hybridization conditions) with the complementary sequence of a nucleic acid molecule encoding the corresponding natural protein. The size of a nucleic acid molecule encoding such a protein is dependent on the nucleic acid composition and the percent homology between the flea HMT or HNC nucleic acid molecule and the complementary nucleic acid sequence. It can easily be understood that the extent of homology required to form a stable hybrid under stringent conditions can vary depending on whether the homologous sequences are interspersed throughout a given nucleic acid molecule or are clustered (i.e., localized) in distinct regions on a given nucleic acid molecule.

The minimal size of a nucleic acid molecule capable of forming a stable hybrid with a gene encoding a flea HMT or HNC protein is typically at least about 12 to about 15 nucleotides in length if the nucleic acid molecule is GC-rich and at least about 15 to about 17 bases in length if it is AT-rich. The minimal size of a nucleic acid molecule used to encode an HMT or HNC protein homologue of the present invention is from about 12 to about 18 nucleotides in length. Thus, the minimal size of HMT or HNC protein homologues of the present invention is from about 4 to about 6 amino acids in length. There is no limit, other than a practical limit, on the maximal size of a nucleic acid molecule encoding a flea HMT or HNC protein of the present invention because a nucleic acid molecule of the present invention can include a portion of a gene, an entire gene, or multiple genes. The preferred size of a protein encoded by a nucleic acid molecule of the present invention depends on whether a full-length, fusion, multivalent, or functional portion of such a protein is desired.

Stringent hybridization conditions are determined based on defined physical properties of the gene to which the nucleic acid molecule is being hybridized, and can be defined mathematically. Stringent hybridization conditions are those experimental parameters that allow an individual skilled in the art to identify significant similarities between heterologous nucleic acid molecules. These conditions are well known to those skilled in the art. See, for example, Sambrook, *et al.*, 1989, *Molecular Cloning:*

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A Laboratory Manual, Cold Spring Harbor Labs Press, and Meinkoth, *et al.*, 1984, *Anal. Biochem.* 138, 267-284, each of which is incorporated by reference herein in its entirety. As explained in detail in the cited references, the determination of hybridization conditions involves the manipulation of a set of variables including the ionic strength (M, in moles/liter), the hybridization temperature (°C), the concentration of nucleic acid helix destabilizing agents (such as formamide), the average length of the shortest hybrid duplex (n), and the percent G + C composition of the fragment to which an unknown nucleic acid molecule is being hybridized. For nucleic acid molecules of at least about 150 nucleotides, these variables are inserted into a standard mathematical formula to calculate the melting temperature, or T_m , of a given nucleic acid molecule. As defined in the formula below, T_m is the temperature at which two complementary nucleic acid molecule strands will disassociate, assuming 100% complementarity between the two strands:

$$T_m = 81.5^\circ\text{C} + 16.6 \log M + 0.41(\%G + C) - 500/n - 0.61(\%\text{formamide}).$$

For nucleic acid molecules smaller than about 50 nucleotides, hybrid stability is defined by the dissociation temperature (T_d), which is defined as the temperature at which 50% of the duplexes dissociate. For these smaller molecules, the stability at a standard ionic strength is defined by the following equation:

$$T_d = 4(G + C) + 2(A + T).$$

A temperature of 5°C below T_d is used to detect hybridization between perfectly matched molecules.

Also well known to those skilled in the art is how base pair mismatch, i.e. differences between two nucleic acid molecules being compared, including non-complementarity of bases at a given location, and gaps due to insertion or deletion of one or more bases at a given location on either of the nucleic acid molecules being compared, will affect T_m or T_d for nucleic acid molecules of different sizes. For example, T_m decreases about 1°C for each 1% of mismatched base pairs for hybrids greater than about 150 bp, and T_d decreases about 5°C for each mismatched base pair for hybrids below about 50 bp. Conditions for hybrids between about 50 and about 150 base pairs can be determined empirically and without undue experimentation using standard laboratory procedures well known to those skilled in the art. These

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simple procedures allow one skilled in the art to set the hybridization conditions (by altering, for example, the salt concentration, the helix destabilizing compound concentration or the temperature) so that only nucleic acid hybrids with greater than a specified % base pair mismatch will hybridize. Stringent hybridization conditions are
5 commonly understood by those skilled in the art to be those experimental conditions that will allow less than or equal to about 30% base pair mismatch (i.e., at least about 70% identity). Because one skilled in the art can easily determine whether a given nucleic acid molecule to be tested is less than or greater than about 50 nucleotides, and can therefore choose the appropriate formula for determining hybridization conditions,
10 he or she can determine whether the nucleic acid molecule will hybridize with a given gene under stringent hybridization conditions and similarly whether the nucleic acid molecule will hybridize under conditions designed to allow a desired amount of base pair mismatch.

Hybridization reactions are often carried out by attaching the nucleic acid
15 molecule to be hybridized to a solid support such as a membrane, and then hybridizing with a labeled nucleic acid molecule, typically referred to as a probe, suspended in a hybridization solution. Examples of common hybridization reaction techniques include, but are not limited to, the well-known Southern and northern blotting procedures. Typically, the actual hybridization reaction is done under non-stringent
20 conditions, i.e., at a lower temperature and/or a higher salt concentration, and then high stringency is achieved by washing the membrane in a solution with a higher temperature and/or lower salt concentration in order to achieve the desired stringency.

For example, if the skilled artisan wished to identify a nucleic acid molecule that hybridizes under conditions that would allow less than or equal to 30% pair
25 mismatch with a flea nucleic acid molecule of about 150 bp in length or greater, the following conditions could preferably be used. The average G + C content of flea DNA is about 37%, as calculated from known flea nucleic acid sequences. The unknown nucleic acid molecules would be attached to a support membrane, and the 150 bp probe would be labeled, e.g. with a radioactive tag. The hybridization reaction
30 could be carried out in a solution comprising 2X SSC in the absence of helix destabilizing compounds, at a temperature of about 37°C (low stringency conditions).

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Solutions of differing concentrations of SSC can be made by one of skill in the art by diluting a stock solution of 20X SSC (175.3 gram NaCl and about 88.2 gram sodium citrate in 1 liter of water, pH 7) to obtain the desired concentration of SSC. The skilled artisan would calculate the washing conditions required to allow up to 30%
5 base pair mismatch. For example, in a wash solution comprising 1X SSC in the absence of helix destabilizing compounds, the T_m of perfect hybrids would be about 77°C:

$$81.5^{\circ}\text{C} + 16.6 \log (.15\text{M}) + (0.41 \times 0.37) - (500/150) - (0.61 \times 0) = 77.5^{\circ}\text{C}.$$

Thus, to achieve hybridization with nucleic acid molecules having about 30% base pair
10 mismatch, hybridization washes would be carried out at a temperature of less than or equal to 47.5°C. It is thus within the skill of one in the art to calculate additional hybridization temperatures based on the desired percentage base pair mismatch, formulae and G/C content disclosed herein. For example, it is appreciated by one skilled in the art that as the nucleic acid molecule to be tested for hybridization against
15 nucleic acid molecules of the present invention having sequences specified herein becomes longer than 150 nucleotides, the T_m for a hybridization reaction allowing up to 30% base pair mismatch will not vary significantly from 47.5°C.

Furthermore, it is known in the art that there are commercially available computer programs for determining the degree of similarity between two nucleic acid
20 or protein sequences. These computer programs include various known methods to determine the percentage identity and the number and length of gaps between hybrid nucleic acid molecules or proteins. Preferred methods to determine the percent identity among amino acid sequences and also among nucleic acid sequences include analysis using one or more of the commercially available computer programs designed
25 to compare and analyze nucleic acid or amino acid sequences. These computer programs include, but are not limited to, the SeqLab® Wisconsin Package™ Version 10.0-UNIX sequence analysis software (hereinafter referred to as "SeqLab"), available from Genetics Computer Group, Madison, WI; and DNAsis® sequence analysis software, version 2.0, available from Hitachi Software, San Bruno, CA. Such software
30 programs represent a collection of algorithms paired with a graphical user interface for using the algorithms. The DNAsis version 2.0 software and SeqLab Wisconsin

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Package Version 10.0-UNIX software, for example, employ a particular algorithm, the Needleman-Wunsch algorithm to perform pair-wise comparisons between two sequences to yield a percentage identity score, see Needleman, S.B. and Wunch, C.D., 1970, *J. Mol. Biol.*, 48, 443, which is incorporated herein by reference in its entirety.

5 Such algorithms, including the Needleman-Wunsch algorithm, are commonly used by those skilled in the nucleic acid and amino acid sequencing art to compare sequences. A preferred method to determine percent identity among amino acid sequences and also among nucleic acid sequences includes using the Needleman-Wunsch algorithm, available in the SeqLab Wisconsin Package Version 10.0-UNIX software (hereinafter

10 "SeqLab"), using the Pairwise Comparison/Gap function with the nwsgapdna.cmp scoring matrix, the gap creation penalty and the gap extension penalties set at default values, and the gap shift limits set at maximum (hereinafter referred to as "SeqLab default parameters"). An additional preferred method to determine percent identity among amino acid sequences and also among nucleic acid sequences includes using

15 the Higgins-Sharp algorithm, available in the DNAsis version 2.0 software (hereinafter "DNAsis"), with the gap penalty set at 5, the number of top diagonals set at 5, the fixed gap penalty set at 10, the k-tuple set at 2, the window size set at 5, and the floating gap penalty set at 10. A particularly preferred method to determine percent identity among amino acid sequences and also among nucleic acid sequences includes

20 using the Needleman-Wunsch algorithm available in the SeqLab software, using the SeqLab default parameters.

A preferred flea HMT and/or HNC protein includes a protein encoded by a nucleic acid molecule that hybridizes under conditions that preferably allow less than or equal to 30% base pair mismatch, preferably under conditions that allow less than

25 or equal to 25% base pair mismatch, preferably under conditions that allow less than or equal to 20% base pair mismatch, preferably under conditions that allow less than or equal to 15% base pair mismatch, preferably under conditions that allow less than or equal to 10% base pair mismatch and preferably under conditions that allow less than or equal to 5% base pair mismatch with a nucleic acid molecule selected from the

30 group consisting of a nucleic acid sequence complementary to a nucleic acid sequence of Table I and/or Table II.

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Another embodiment of the present invention includes a flea HMT and/or HNC protein encoded by a nucleic acid molecule that hybridizes under conditions comprising, (a) hybridizing in a solution comprising 1X SSC in the absence of helix destabilizing compounds, at a temperature of 37°C and (b) washing in a solution
5 comprising 1X SSC in the absence of helix destabilizing compounds, at a temperature of 47.5°C, to an isolated nucleic acid molecule selected from the group consisting of a nucleic acid sequence complementary to a nucleic acid sequence of Table I and/or Table II.

Another preferred flea HMT and/or HNC protein of the present invention
10 includes a protein that is encoded by a nucleic acid molecule that is preferably at least 70% identical, preferably at least 75% identical, preferably at least 80% identical, preferably at least 85% identical, preferably at least 90% identical, and preferably at least 95% identical to a nucleic acid molecule having a nucleic acid sequence of Table I and/or Table II; also preferred are fragments (i.e. portions) of such proteins encoded
15 by nucleic acid molecules that are at least 18 nucleotides. Percent identity as used herein is determined using the Compare function by maximum matching within the program DNAsis Version 2.1 using default parameters.

Additional preferred flea HMT and/or HNC proteins of the present invention include proteins having an amino acid sequence encoded by a nucleic acid sequence of
20 Table I and/or Table II, and proteins comprising homologues of a protein encoded by a nucleic acid sequence of Table I and/or Table II, wherein such a homologue comprises at least one epitope that elicits an immune response against a protein encoded by a nucleic acid sequence of Table I and/or Table II.

In one embodiment, a preferred flea HMT or HNC protein comprises an amino
25 acid sequence of at least 6 amino acids, preferably at least 10 amino acids, preferably at least 15 amino acids, preferably at least 20 amino acids, preferably at least 25 amino acids, preferably at least 30 amino acids, preferably at least 35 amino acids, preferably at least 40 amino acids, preferably at least 50 amino acids, preferably at least 100 amino acids, preferably at least 200 amino acids, preferably at least 250 amino acids,
30 preferably at least 300 amino acids, preferably at least 350 amino acids, and preferably at least 375 amino acids. In another embodiment, preferred flea HMT and

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HNC proteins comprise full-length proteins, i.e., proteins encoded by full-length coding regions, or post-translationally modified proteins thereof, such as mature proteins from which initiating methionine and/or signal sequences or “pro” sequences have been removed.

5 A fragment of an HMT and/or HNC protein of the present invention preferably comprises at least 5 amino acids, preferably at least 10 amino acids, preferably at least 15 amino acids, preferably at least 20 amino acids, preferably at least 25 amino acids, preferably at least 30 amino acids, preferably at least 35 amino acids, preferably at least 40 amino acids, preferably at least 45 amino acids, preferably at
10 least 50 amino acids, preferably at least 55 amino acids, preferably at least 60 amino acids, preferably at least 65 amino acids, preferably at least 70 amino acids, preferably at least 75 amino acids, preferably at least 80 amino acids, preferably at least 85 amino acids, preferably at least 90 amino acids, preferably at least 95 amino acids, and preferably at least 100 amino acids in length.

15 In another embodiment, a preferred flea HMT and/or HNC protein of the present invention is encoded by a nucleic acid molecule comprising at least 15 nucleotides, preferably at least 18 nucleotides, preferably at least 20 nucleotides, preferably at least 25 nucleotides, preferably at least 30 nucleotides, preferably at least 40 nucleotides, preferably at least 50 nucleotides, preferably at least 100
20 nucleotides, preferably at least 150 nucleotides, preferably at least 350 nucleotides, preferably at least 450 nucleotides, preferably at least 550 nucleotides, preferably at least 650 nucleotides, preferably at least 750 nucleotides, preferably at least 1000 nucleotides, and preferably at least 1100 nucleotides in length. In another embodiment, preferred flea HMT and HNC proteins of the present invention are
25 encoded by nucleic acid molecules comprising apparently full-length HMT or HNC coding regions respectively, i.e., nucleic acid molecules encoding an apparently full-length HMT or HNC proteins.

 Preferred flea HMT and HNC proteins of the present invention can be used to develop inhibitors that, when administered to an animal in an effective manner, are
30 capable of protecting that animal from flea infestation. In accordance with the present invention, the ability of an inhibitor of the present invention to protect an animal from

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flea infestation refers to the ability of that protein to, for example, treat, ameliorate and/or prevent infestation caused by fleas. In particular, the phrase "to protect an animal from flea infestation" refers to reducing the potential for flea population expansion on and around the animal (i.e., reducing the flea burden). Preferably, the flea population size is decreased, optimally to an extent that the animal is no longer bothered by fleas. A host animal, as used herein, is an animal from which fleas can feed by attaching to and feeding through the skin of the animal. Fleas, and other ectoparasites, can live on a host animal for an extended period of time or can attach temporarily to an animal in order to feed. At any given time, a certain percentage of a flea population can be on a host animal whereas the remainder can be in the environment of the animal. Such an environment can include not only adult fleas, but also flea eggs and/or flea larvae. The environment can be of any size such that fleas in the environment are able to jump onto and off of a host animal. For example, the environment of an animal can include plants, such as crops, from which fleas infest an animal. As such, it is desirable not only to reduce the flea burden on an animal per se, but also to reduce the flea burden in the environment of the animal.

Suitable fleas to target include any flea that is essentially incapable of causing disease in an animal administered an inhibitor of the present invention. As such, fleas to target include any flea that produces a protein that can be targeted by an inhibitory compound that inhibits a flea HMT or HNC protein function, thereby resulting in the decreased ability of the parasite to cause disease in an animal. Preferred fleas to target include fleas of the following genera: *Ctenocephalides*, *Cyopsyllus*, *Diamanus* (*Oropsylla*), *Echidnophaga*, *Nosopsyllus*, *Pulex*, *Tunga*, and *Xenopsylla*, with those of the species *Ctenocephalides canis*, *Ctenocephalides felis*, *Diamanus montanus*, *Echidnophaga gallinacea*, *Nosopsyllus faciatus*, *Pulex irritans*, *Pulex simulans*, *Tunga penetrans* and *Xenopsylla cheopis* being more preferred, with *C. felis* being preferred. Such fleas are also preferred for the isolation of proteins or nucleic acid molecules of the present invention.

One embodiment of a flea HMT and/or HNC protein of the present invention is a fusion protein that includes a flea HMT and/or HNC protein-containing domain attached to one or more fusion segments. Suitable fusion segments for use with the

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present invention include, but are not limited to, segments that can: enhance a protein's stability; act as an immunopotentiator to enhance an immune response against a flea HMT and/or HNC protein; and/or assist in purification of a flea HMT and/or HNC protein (e.g., by affinity chromatography). A suitable fusion segment can be a domain
5 of any size that has the desired function (e.g., imparts increased stability, imparts increased immunogenicity to a protein, and/or simplifies purification of a protein). Fusion segments can be joined to amino and/or carboxyl termini of the flea HMT-containing and/or HNC-containing domain of the protein and can be susceptible to cleavage in order to enable straight-forward recovery of a flea HMT and/or HNC
10 protein. Fusion proteins are preferably produced by culturing a recombinant cell transformed with a fusion nucleic acid molecule that encodes a protein including the fusion segment attached to either the carboxyl and/or amino terminal end of an HMT-containing and/or HNC-containing domain. Preferred fusion segments include a metal binding domain (e.g., a poly-histidine segment); an immunoglobulin binding domain
15 (e.g., Protein A; Protein G; T cell; B cell; Fc receptor or complement protein antibody-binding domains); a sugar binding domain (e.g., a maltose binding domain); and/or a "tag" domain (e.g., at least a portion of β -galactosidase, a strep tag peptide, a T7 tag peptide, a FlagTM peptide, or other domains that can be purified using compounds that bind to the domain, such as monoclonal antibodies). More preferred fusion segments
20 include metal binding domains, such as a poly-histidine segment; a maltose binding domain; a strep tag peptide, such as that available from Biometra in Tampa, FL; and an S10 peptide.

The present invention also includes mimetopes of flea HMT and/or HNC proteins of the present invention. As used herein, a mimetope of a flea HMT and/or
25 HNC protein of the present invention refers to any compound that is able to mimic the activity of such an HMT and/or HNC protein, often because the mimetope has a structure that mimics the particular HMT and/or HNC protein. Mimetopes can be, but are not limited to: peptides that have been modified to decrease their susceptibility to degradation such as all-D retro peptides; anti-idiotypic and/or catalytic antibodies, or
30 fragments thereof; non-proteinaceous immunogenic portions of an isolated protein (e.g., carbohydrate structures); and synthetic or natural organic molecules, including

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nucleic acids. Such mimetopes can be designed using computer-generated structures of proteins of the present invention. Mimetopes can also be obtained by generating random samples of molecules, such as oligonucleotides, peptides or other organic molecules, and screening such samples by affinity chromatography techniques using
5 the corresponding binding partner.

Another embodiment of the present invention is an isolated nucleic acid molecule comprising a flea HMT and/or HNC nucleic acid molecule, i.e. a nucleic acid molecule that can be isolated from a HMT cDNA library, from a HNC cDNA library, or from both libraries. As used herein, HMT and HNC nucleic acid molecules
10 has the same meaning as HMT and/or HNC nucleic acid molecule. The identifying characteristics of such nucleic acid molecules are heretofore described. A nucleic acid molecule of the present invention can include an isolated natural flea HMT and/or HNC gene or a homologue thereof, the latter of which is described in more detail below. A nucleic acid molecule of the present invention can include one or more
15 regulatory regions, full-length or partial coding regions, or combinations thereof. The minimal size of a nucleic acid molecule of the present invention is a size sufficient to allow the formation of a stable hybrid (i.e., hybridization under stringent hybridization conditions) with the complementary sequence of another nucleic acid molecule. As such, the minimal size of a HMT and/or HNC nucleic acid molecule of the present
20 invention is from 12 to 18 nucleotides in length. Suitable and preferred fleas from which to isolate nucleic acid molecules of the present invention are disclosed herein. Particularly preferred HMT and/or HNC nucleic acid molecules include *C. felis* HMT and/or HNC nucleic acid molecules.

In accordance with the present invention, an isolated nucleic acid molecule is a
25 nucleic acid molecule that has been removed from its natural milieu (i.e., that has been subjected to human manipulation) and can include DNA, RNA, or derivatives of either DNA or RNA. As such, "isolated" does not reflect the extent to which the nucleic acid molecule has been purified. Isolated flea HMT and/or HNC nucleic acid molecules of the present invention, or homologues thereof, can be isolated from a natural source or
30 produced using recombinant DNA technology (e.g., polymerase chain reaction (PCR) amplification or cloning) or chemical synthesis. Isolated flea HMT and/or HNC

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nucleic acid molecules, and homologues thereof, can include, for example, natural allelic variants and nucleic acid molecules modified by nucleotide insertions, deletions, substitutions, and/or inversions in a manner such that the modifications do not substantially interfere with the nucleic acid molecule's ability to encode a HMT
5 and/or HNC protein of the present invention.

A flea HMT and/or HNC nucleic acid molecule homologue can be produced using a number of methods known to those skilled in the art, see, for example, Sambrook et al., *ibid.*, is incorporated by reference herein in its entirety. For example, nucleic acid molecules can be modified using a variety of techniques including, but not
10 limited to, classic mutagenesis and recombinant DNA techniques such as site-directed mutagenesis, chemical treatment, restriction enzyme cleavage, ligation of nucleic acid fragments, PCR amplification, synthesis of oligonucleotide mixtures and ligation of mixture groups to "build" a mixture of nucleic acid molecules, and combinations thereof. Nucleic acid molecule homologues can be selected by hybridization with flea
15 HMT and/or HNC nucleic acid molecules or by screening the function of a protein encoded by the nucleic acid molecule (e.g., ability to elicit an immune response against at least one epitope of a flea HMT or HNC protein or to effect HMT or HNC activity).

An isolated nucleic acid molecule of the present invention can include a nucleic acid sequence that encodes at least one flea HMT or HNC protein of the
20 present invention, examples of such proteins being disclosed herein. Although the phrase "nucleic acid molecule" primarily refers to the physical nucleic acid molecule and the phrase "nucleic acid sequence" primarily refers to the sequence of nucleotides on the nucleic acid molecule, the two phrases can be used interchangeably, especially with respect to a nucleic acid molecule, or a nucleic acid sequence, being capable of
25 encoding a flea HMT or HNC protein.

A preferred nucleic acid molecule of the present invention, when administered to an animal, is capable of protecting that animal from flea infestation. As will be disclosed in more detail below, such a nucleic acid molecule can be, or encode, an antisense RNA, a molecule capable of triple helix formation, a ribozyme, or other
30 nucleic acid-based drug compound. In additional embodiments, a nucleic acid molecule of the present invention can encode a protective protein (e.g., an HMT or

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HNC protein of the present invention), the nucleic acid molecule being delivered to the animal, for example, by direct injection (i.e, as a genetic vaccine) or in a vehicle such as a recombinant virus vaccine or a recombinant cell vaccine.

In one embodiment of the present invention, a preferred flea HMT and/or HNC
5 nucleic acid molecule includes an isolated nucleic acid molecule that hybridizes under conditions that preferably allow less than or equal to 30% base pair mismatch, preferably under conditions that allow less than or equal to 25% base pair mismatch, preferably under conditions that allow less than or equal to 20% base pair mismatch, preferably under conditions that allow less than or equal to 15% base pair mismatch,
10 preferably under conditions that allow less than or equal to 10% base pair mismatch and preferably under conditions that allow less than or equal to 5% base pair mismatch with a nucleic acid molecule of Table I and/or Table II and/or a nucleic acid molecule that is complementary to a nucleic acid molecule of Table I and/or Table II.

Another embodiment of the present invention includes a HMT and/or HNC
15 nucleic acid molecule, wherein said nucleic acid molecule hybridizes, in a solution comprising 1X SSC in the absence of helix destabilizing compounds, at a temperature of 47.5°C, to an isolated nucleic acid molecule a nucleic acid molecule of Table I or Table II and/or a nucleic acid molecule that is complementary to a nucleic acid molecule of Table I or Table II. Additional preferred nucleic acid molecules of the
20 present invention include oligonucleotides of an isolated nucleic acid molecule, wherein said nucleic acid molecule hybridizes, in a solution comprising 1X SSC in the absence of helix destabilizing compounds, at a temperature of 47.5°C, to an isolated nucleic acid molecule of Table I or Table II and/or a nucleic acid molecule that is complementary to a nucleic acid molecule of Table I or Table II, wherein said
25 oligonucleotide comprises at least 18 nucleotides.

Additional preferred flea HMT and/or HNC nucleic acid molecules of the present invention include nucleic acid molecules comprising a nucleic acid sequence that is preferably at least 70%, preferably at least 75%, preferably at least 80% preferably at least 85%, preferably at least 90%, and preferably at least 95%
30 identical to a nucleic acid sequence of Table I or Table II and/or a nucleic acid molecule that is complementary to a nucleic acid molecule of Table I or Table II. Also

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preferred are oligonucleotides of any of such nucleic acid molecules. Percent identity may be determined using the SeqLab sequence analysis software, using default parameters.

Another preferred nucleic acid molecule of the present invention includes at least a portion of nucleic acid sequence of Table I or Table II, as well as allelic variants of nucleic acid molecules having these nucleic acid sequences and homologues of nucleic acid molecules having these nucleic acid sequences; preferably such a homologue encodes or is complementary to a nucleic acid molecule that encodes at least one epitope that elicits an immune response against a protein encoded by a nucleic acid molecule of Table I and/or Table II. Such nucleic acid molecules can include nucleotides in addition to those included in the SEQ ID NOs, such as, but not limited to, a full-length gene, a full-length coding region, a nucleic acid molecule encoding a fusion protein, or a nucleic acid molecule encoding a multivalent protective compound.

In one embodiment, HMT and/or HNC nucleic acid molecule of the present invention encodes a protein that is at least 70%, preferably at least 75%, preferably at least 80%, preferably at least 85%, preferably at least 90%, preferably at least 95%, preferably at least 98%, and preferably at least 100% identical to a protein encoded by a nucleic acid molecule having a sequence of Table I and/or Table II.

In one embodiment, a HMT and/or HNC nucleic acid molecule of the present invention encodes a protein having an amino acid sequence that is at least 70%, preferably at least 75%, preferably at least 80%, preferably at least 85%, preferably at least 90%, preferably at least 95%, preferably at least 98%, and preferably at least 100% identical to a protein encoded by a nucleic acid molecule having a sequence of Table I and/or Table II. The present invention also includes a HMT and/or HNC nucleic acid molecule encoding a protein having at least a portion of a protein encoded by a nucleic acid molecule having a sequence of Table I and/or Table II, as well as allelic variants of a nucleic acid molecule encoding a protein having these sequences, including nucleic acid molecules that have been modified to accommodate codon usage properties of the cells in which such nucleic acid molecules are to be expressed.

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In another embodiment, a preferred flea HMT and/or HNC nucleic acid molecule of the present invention comprises a nucleic acid molecule comprising at least 15 nucleotides, preferably at least 18 nucleotides, preferably at least 20 nucleotides, preferably at least 25 nucleotides, preferably at least 30 nucleotides, preferably at least 40 nucleotides, preferably at least 50 nucleotides, preferably at least 100 nucleotides, preferably at least 150 nucleotides, preferably at least 350 nucleotides, preferably at least 450 nucleotides, preferably at least 550 nucleotides, preferably at least 650 nucleotides, preferably at least 750 nucleotides, preferably at least 1000 nucleotides, and preferably at least 1100 nucleotides in length.

10 In another embodiment, a preferred flea HMT and/or HNC nucleic acid molecule encodes a protein comprising at least 5 amino acids, preferably at least 6 amino acids, preferably at least 10 amino acids, preferably at least 15 amino acids, preferably at least 20 amino acids, preferably at least 25 amino acids, preferably at least 30 amino acids, preferably at least 40 amino acids, preferably at least 50 amino acids, preferably at least 100 amino acids, preferably at least 150 amino acids, preferably at least 200 amino acids, preferably at least 300 amino acids, preferably at least 350 amino acids, and preferably at least 350 amino acids in length.

In another embodiment, a preferred flea HMT and/or HNC nucleic acid molecule of the present invention comprises an apparently full-length HMT and/or HNC coding region, i.e., the preferred nucleic acid molecule encodes an apparently full-length HMT and/or HNC protein, or a post-translationally modified protein thereof. In one embodiment, a preferred HMT and/or HNC nucleic acid molecule of the present invention encodes a mature protein.

25 Knowing the nucleic acid sequences of certain flea HMT and/or HNC nucleic acid molecules of the present invention allows one skilled in the art to, for example, (a) make copies of those nucleic acid molecules, (b) obtain nucleic acid molecules including at least a portion of such nucleic acid molecules (e.g., nucleic acid molecules including full-length genes, full-length coding regions, regulatory control sequences, truncated coding regions), and (c) obtain other flea HMT and/or HNC nucleic acid molecules. Such nucleic acid molecules can be obtained in a variety of ways including screening appropriate expression libraries with antibodies of the present invention;

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traditional cloning techniques using oligonucleotide probes of the present invention to screen appropriate libraries; and PCR amplification of appropriate libraries or DNA using oligonucleotide primers of the present invention. Preferred libraries to screen or from which to amplify nucleic acid molecules include flea 1st instar larvae; 3rd instar larvae, wandering larvae, prepupal larvae, pupae and whole adult flea cDNA libraries as well as genomic DNA libraries. Similarly, preferred DNA sources to screen or from which to amplify nucleic acid molecules include flea prepupal cDNA, adult cDNA and genomic DNA. Techniques to clone and amplify genes are disclosed, for example, in Sambrook et al., *ibid*.

10 The present invention also includes nucleic acid molecules that are oligonucleotides capable of hybridizing, under stringent hybridization conditions, with complementary regions of other, preferably longer, nucleic acid molecules of the present invention such as those comprising *C. felis* HMT and/or HNC nucleic acid molecules or other flea HMT and/or HNC nucleic acid molecules. Oligonucleotides of the present invention can be RNA, DNA, or derivatives of either. The minimum size of such oligonucleotides is the size required for formation of a stable hybrid between an oligonucleotide and a complementary sequence on a nucleic acid molecule of the present invention. A preferred oligonucleotide of the present invention has a maximum size of preferably 100 to 200 nucleotides. The present invention includes

15 oligonucleotides that can be used as, for example, probes to identify nucleic acid molecules, primers to produce nucleic acid molecules, or therapeutic reagents to inhibit flea HMT and/or HNC protein production or activity (e.g., as antisense-, triplex formation-, ribozyme- and/or RNA drug-based reagents). The present invention also includes the use of such oligonucleotides to protect animals from disease using one or

20 more of such technologies. Appropriate oligonucleotide-containing therapeutic compositions can be administered to an animal using techniques known to those skilled in the art.

One embodiment of the present invention includes a recombinant vector, which includes at least one isolated nucleic acid molecule of the present invention, inserted

30 into any vector capable of delivering the nucleic acid molecule into a host cell. Such a vector contains heterologous nucleic acid sequences, that is nucleic acid sequences that

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are not naturally found adjacent to nucleic acid molecules of the present invention and that preferably are derived from a species other than the species from which the nucleic acid molecule(s) are derived. The vector can be either RNA or DNA, either prokaryotic or eukaryotic, and typically is a virus or a plasmid. Recombinant vectors
5 can be used in the cloning, sequencing, and/or otherwise manipulating of flea HMT and/or HNC nucleic acid molecules of the present invention.

One type of recombinant vector, referred to herein as a recombinant molecule, comprises a nucleic acid molecule of the present invention operatively linked to an expression vector. The phrase operatively linked refers to insertion of a nucleic acid
10 molecule into an expression vector in a manner such that the molecule is able to be expressed when transformed into a host cell. As used herein, an expression vector is a DNA or RNA vector that is capable of transforming a host cell and of effecting expression of a specified nucleic acid molecule. Preferably, the expression vector is also capable of replicating within the host cell. Expression vectors can be either
15 prokaryotic or eukaryotic, and are typically viruses or plasmids. Expression vectors of the present invention include any vectors that function (i.e., direct gene expression) in recombinant cells of the present invention, including in bacterial, fungal, parasite, insect, other animal, and plant cells. Preferred expression vectors of the present invention can direct gene expression in bacterial, yeast, insect and mammalian cells,
20 and preferably in the cell types disclosed herein.

In particular, expression vectors of the present invention contain regulatory sequences such as transcription control sequences, translation control sequences, origins of replication, and other regulatory sequences that are compatible with the recombinant cell and that control the expression of nucleic acid molecules of the
25 present invention. In particular, recombinant molecules of the present invention include transcription control sequences. Transcription control sequences are sequences that control the initiation, elongation, and termination of transcription. Particularly important transcription control sequences are those which control transcription initiation, such as promoter, enhancer, operator and repressor sequences.
30 Suitable transcription control sequences include any transcription control sequence that can function in at least one of the recombinant cells of the present invention. A variety

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of such transcription control sequences are known to those skilled in the art. Preferred transcription control sequences include those that function in bacterial, yeast, or insect and mammalian cells, such as, but not limited to, *tac*, *lac*, *trp*, *trc*, oxy-pro, omp/lpp, rrnB, bacteriophage lambda (such as lambda p_L and lambda p_R and fusions that include
5 such promoters), bacteriophage T7, T7*lac*, bacteriophage T3, bacteriophage SP6, bacteriophage SP01, metallothionein, alpha-mating factor, *Pichia* alcohol oxidase, alphavirus subgenomic promoter, antibiotic resistance gene, baculovirus, *Heliothis zea* insect virus, vaccinia virus, herpesvirus, raccoon poxvirus, other poxvirus, adenovirus, cytomegalovirus (such as immediate early promoter), simian virus 40, retrovirus, actin,
10 retroviral long terminal repeat, Rous sarcoma virus, heat shock, phosphate and nitrate transcription control sequences as well as other sequences capable of controlling gene expression in prokaryotic or eukaryotic cells. Additional suitable transcription control sequences include tissue-specific promoters and enhancers as well as lymphokine-inducible promoters (e.g., promoters inducible by interferons or interleukins).
15 Transcription control sequences of the present invention can also include naturally occurring transcription control sequences naturally associated with fleas, such as *C. felis* transcription control sequences.

Suitable and preferred nucleic acid molecules to include in recombinant vectors of the present invention are as disclosed herein. Preferred nucleic acid molecules to
20 include in recombinant vectors, and particularly in recombinant molecules, include nucleic acid molecules having a sequence of Table I and/or Table II.

Recombinant molecules of the present invention may also (a) contain secretory signals (i.e., signal segment nucleic acid sequences) to enable an expressed flea protein of the present invention to be secreted from the cell that produces the protein and/or
25 (b) contain fusion sequences which lead to the expression of nucleic acid molecules of the present invention as fusion proteins. Examples of suitable signal segments include any signal segment capable of directing the secretion of a protein of the present invention. Preferred signal segments include, but are not limited to, tissue plasminogen activator (t-PA), interferon, interleukin, growth hormone,
30 histocompatibility and viral envelope glycoprotein signal segments. Suitable fusion segments encoded by fusion segment nucleic acids are disclosed herein. In addition, a

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nucleic acid molecule of the present invention can be joined to a fusion segment that directs the encoded protein to the proteosome, such as a ubiquitin fusion segment. Eukaryotic recombinant molecules may also include intervening and/or untranslated sequences surrounding and/or within the nucleic acid sequences of nucleic acid
5 molecules of the present invention.

Another embodiment of the present invention includes a recombinant cell comprising a host cell transformed with one or more recombinant molecules of the present invention. Transformation of a nucleic acid molecule into a cell can be accomplished by any method by which a nucleic acid molecule can be inserted into the
10 cell. Transformation techniques include, but are not limited to, transfection, electroporation, microinjection, lipofection, adsorption, and protoplast fusion. A recombinant cell may remain unicellular or may grow into a tissue, organ or a multicellular organism. It is to be noted that a cell line refers to any recombinant cell of the present invention that is not a transgenic animal. Transformed nucleic acid
15 molecules of the present invention can remain extrachromosomal or can integrate into one or more sites within a chromosome of the transformed (i.e., recombinant) cell in such a manner that their ability to be expressed is retained. Preferred nucleic acid molecules with which to transform a cell include *C. felis* HMT and HNC nucleic acid molecules disclosed herein. Preferred nucleic acid molecules with which to transform
20 a cell include nucleic acid molecules having a sequence of Table I and/or Table II.

Suitable host cells to transform include any cell that can be transformed with a nucleic acid molecule of the present invention. Host cells can be either untransformed cells or cells that are already transformed with at least one nucleic acid molecule (e.g., nucleic acid molecules encoding one or more proteins of the present invention and/or
25 other proteins useful in the production of multivalent vaccines). Host cells of the present invention either can be endogenously (i.e., naturally) capable of producing flea HMT and/or HNC proteins of the present invention or can be capable of producing such proteins after being transformed with at least one nucleic acid molecule of the present invention. Host cells of the present invention can be any cell capable of
30 producing at least one protein of the present invention, and include bacterial, fungal (including yeast), parasite (including helminth, protozoa and ectoparasite), other

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insect, other animal and plant cells. Preferred host cells include bacterial, mycobacterial, yeast, insect and mammalian cells. More preferred host cells include *Salmonella*, *Escherichia*, *Bacillus*, *Caulobacter*, *Listeria*, *Saccharomyces*, *Pichia*, *Spodoptera*, *Mycobacteria*, *Trichoplusia*, BHK (baby hamster kidney) cells, MDCK cells (Madin-Darby canine kidney cell line), CRFK cells (Crandell feline kidney cell line), CV-1 cells (African monkey kidney cell line used, for example, to culture raccoon poxvirus), COS (e.g., COS-7) cells, and Vero cells. Particularly preferred host cells are *Escherichia coli*, including *E. coli* K-12 derivatives; *Salmonella typhi*; *Salmonella typhimurium*, including attenuated strains such as UK-1_x3987 and SR-11_x4072; *Caulobacter*; *Pichia*; *Spodoptera frugiperda*; *Trichoplusia ni*; BHK cells; MDCK cells; CRFK cells; CV-1 cells; COS cells; Vero cells; and non-tumorigenic mouse myoblast G8 cells (e.g., ATCC CRL 1246). Additional appropriate mammalian cell hosts include other kidney cell lines, other fibroblast cell lines (e.g., human, murine or chicken embryo fibroblast cell lines), myeloma cell lines, Chinese hamster ovary cells, mouse NIH/3T3 cells, LMTK³¹ cells and/or HeLa cells. In one embodiment, the proteins may be expressed as heterologous proteins in myeloma cell lines employing immunoglobulin promoters.

A recombinant cell is preferably produced by transforming a host cell with one or more recombinant molecules, each comprising one or more nucleic acid molecules of the present invention operatively linked to an expression vector containing one or more transcription control sequences, examples of which are disclosed herein. The phrase operatively linked refers to insertion of a nucleic acid molecule into an expression vector in a manner such that the molecule is able to be expressed when transformed into a host cell.

A recombinant cell of the present invention includes any cell transformed with at least one of any nucleic acid molecule of the present invention. Suitable and preferred nucleic acid molecules as well as suitable and preferred recombinant molecules with which to transform cells are disclosed herein.

Recombinant cells of the present invention can also be co-transformed with one or more recombinant molecules including flea HMT and/or HNC nucleic acid molecules encoding one or more proteins of the present invention and one or more

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other nucleic acid molecules encoding other protective compounds, as disclosed herein (e.g., to produce multivalent vaccines).

Recombinant DNA technologies can be used to improve expression of transformed nucleic acid molecules by manipulating, for example, the number of
5 copies of the nucleic acid molecules within a host cell, the efficiency with which those nucleic acid molecules are transcribed, the efficiency with which the resultant transcripts are translated, and the efficiency of post-translational modifications. Recombinant techniques useful for increasing the expression of nucleic acid molecules of the present invention include, but are not limited to, operatively linking nucleic acid
10 molecules to high-copy number plasmids, integration of the nucleic acid molecules into one or more host cell chromosomes, addition of vector stability sequences to plasmids, substitutions or modifications of transcription control signals (e.g., promoters, operators, enhancers), substitutions or modifications of translational control signals (e.g., ribosome binding sites, Shine-Dalgarno sequences), modification of
15 nucleic acid molecules of the present invention to correspond to the codon usage of the host cell, deletion of sequences that destabilize transcripts, and use of control signals that temporally separate recombinant cell growth from recombinant enzyme production during fermentation. The activity of an expressed recombinant protein of the present invention may be improved by fragmenting, modifying, or derivatizing
20 nucleic acid molecules encoding such a protein.

Isolated flea HMT and/or HNC proteins of the present invention can be produced in a variety of ways, including production and recovery of natural proteins, production and recovery of recombinant proteins, and chemical synthesis of the proteins. In one embodiment, an isolated protein of the present invention is produced
25 by culturing a cell capable of expressing the protein under conditions effective to produce the protein, and recovering the protein. A preferred cell to culture is a recombinant cell of the present invention. Effective culture conditions include, but are not limited to, effective media, bioreactor, temperature, pH and oxygen conditions that permit protein production. An effective, medium refers to any medium in which a cell
30 is cultured to produce a flea HMT and/or HNC protein of the present invention. Such medium typically comprises an aqueous medium having assimilable carbon, nitrogen

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and phosphate sources, and appropriate salts, minerals, metals and other nutrients, such as vitamins. Cells of the present invention can be cultured in conventional fermentation bioreactors, shake flasks, test tubes, microtiter dishes, and petri plates. Culturing can be carried out at a temperature, pH and oxygen content appropriate for a recombina⁵nt cell. Such culturing conditions are within the expertise of one of ordinary skill in the art. Examples of suitable conditions are included in the Examples section.

Depending on the vector and host system used for production, resultant proteins of the present invention may either remain within the recombinant cell; be secreted into the fermentation medium; be secreted into a space between two cellular¹⁰ membranes, such as the periplasmic space in *E. coli*; or be retained on the outer surface of a cell or viral membrane.

The phrase "recovering the protein", as well as similar phrases, refers to collecting the whole fermentation medium containing the protein and need not imply additional steps of separation or purification. Proteins of the present invention can be¹⁵ purified using a variety of standard protein purification techniques, such as, but not limited to, affinity chromatography, ion exchange chromatography, filtration, electrophoresis, hydrophobic interaction chromatography, gel filtration chromatography, reverse phase chromatography, concanavalin A chromatography, chromatofocusing and differential solubilization. Proteins of the present invention are²⁰ preferably retrieved in "substantially pure" form. As used herein, "substantially pure" refers to a purity that allows for the effective use of the protein as a therapeutic composition or diagnostic. A therapeutic composition for animals, for example, should exhibit no substantial toxicity and preferably should be capable of stimulating the production of antibodies in a treated animal.

²⁵ The present invention also includes isolated (i.e., removed from their natural milieu) antibodies that selectively bind to a flea HMT and/or HNC protein of the present invention or a mimetope thereof (e.g., anti-*C. felis* HMT or HNC antibodies). As used herein, the term "selectively binds to" an HMT and/or HNC protein refers to the ability of antibodies of the present invention to preferentially bind to specified³⁰ proteins and mimetopes thereof of the present invention. Binding can be measured using a variety of methods standard in the art including enzyme immunoassays (e.g.,

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ELISA), immunoblot assays, etc.; see, for example, Sambrook et al., *ibid.*, and Harlow, et al., 1988, *Antibodies, a Laboratory Manual*, Cold Spring Harbor Labs Press; Harlow et al., *ibid.*, is incorporated by reference herein in its entirety. An anti-HMT or anti-HNC antibody of the present invention preferably selectively binds to a flea HMT or HNC protein respectively in such a way as to inhibit the function of that protein.

Isolated antibodies of the present invention can include antibodies in serum, or antibodies that have been purified to varying degrees. Antibodies of the present invention can be polyclonal or monoclonal, or can be functional equivalents such as antibody fragments and genetically-engineered antibodies, including single chain antibodies or chimeric antibodies that can bind to one or more epitopes.

A preferred method to produce antibodies of the present invention includes (a) administering to an animal an effective amount of a protein, peptide or mimetope thereof of the present invention to produce the antibodies and (b) recovering the antibodies. In another method, antibodies of the present invention are produced recombinantly using techniques as heretofore disclosed to produce HMT and/or HNC proteins of the present invention. Antibodies raised against defined proteins or mimetopes can be advantageous because such antibodies are not substantially contaminated with antibodies against other substances that might otherwise cause interference in a diagnostic assay or side effects if used in a therapeutic composition.

Antibodies of the present invention have a variety of potential uses that are within the scope of the present invention. For example, such antibodies can be used (a) as therapeutic compounds to passively immunize an animal in order to protect the animal from fleas susceptible to treatment by such antibodies and/or (b) as tools to screen expression libraries and/or to recover desired proteins of the present invention from a mixture of proteins and other contaminants. Furthermore, antibodies of the present invention can be used to target cytotoxic agents to fleas in order to directly kill such fleas. Targeting can be accomplished by conjugating (i.e., stably joining) such antibodies to the cytotoxic agents using techniques known to those skilled in the art. Suitable cytotoxic agents are known to those skilled in the art.

One embodiment of the present invention is a therapeutic composition that, when administered to an animal susceptible to flea infestation, is capable of protecting

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that animal from flea infestation. Therapeutic compositions of the present invention include at least one of the following protective molecules: an isolated flea HMT and/or HNC protein; a mimetope of an isolated flea HMT and/or HNC protein; an isolated flea HMT and/or HNC nucleic acid molecule; and/or a compound derived from said
5 isolated flea HMT and/or HNC protein that inhibits HMT and/or HNC protein activity. A therapeutic composition of the present invention can further comprise a component selected from the group of an excipient, a carrier, and/or an adjuvant; these components are described further herein. As used herein, a protective molecule or protective compound refers to a compound that, when administered to an animal in an
10 effective manner, is able to treat, ameliorate, and/or prevent flea infestation. Preferred fleas to target are heretofore disclosed. One example of a protective molecule is a vaccine, such as, but not limited to, a naked nucleic acid vaccine, a recombinant virus vaccine, a recombinant cell vaccine, and a recombinant protein vaccine. Another example of a protective molecule is a compound that inhibits HMT and/or HNC
15 protein activity, such as an isolated antibody that selectively binds to a flea HMT and/or HNC protein, a substrate analog of a flea HMT and/or HNC protein, anti-sense-, triplex formation-, ribozyme-, and/or RNA drug-based compounds, or other inorganic or organic molecules that inhibit HMT and/or HNC protein activity. Inhibiting flea HMT and/or HNC protein activity can refer to the ability of a compound to reduce the
20 activity of flea HMT and/or HNC proteins. Inhibiting flea HMT and/or HNC protein activity can also refer to the ability of a compound to reduce the amount of flea HMT and/or HNC protein in a flea.

Another embodiment of the present invention includes a method to reduce a flea infestation in an animal susceptible to flea infestation. Such a method includes the
25 step of administering to the animal a therapeutic molecule comprising a protective compound selected from the group consisting of (a) an isolated flea HMT and/or HNC protein; (b) a mimetope of an isolated flea HMT and/or HNC protein; (c) an isolated flea HMT and/or HNC nucleic acid molecule; and (d) a compound derived from an isolated flea HMT and/or HNC protein that inhibits HMT and/or HNC protein activity.

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Therapeutic compositions of the present invention can be administered to any animal susceptible to flea infestation, preferably to mammals, and preferably to dogs, cats, humans, ferrets, horses, cattle, sheep, and other pets, economic food animals, work animals and/or zoo animals. Preferred animals to protect against flea infestation
5 include dogs, cats, humans, and ferrets, with dogs and cats being particularly preferred.

As used herein, the term derived, or the term derived from, refers to a peptide, antibody, mimetope, nucleic acid molecule, or other compound that was obtained from or obtained using a flea HMT and/or HNC protein or nucleic acid molecule of the present invention. Methods to obtain derivatives from a HMT and/or HNC molecule
10 of the present invention are known in the art, and as such include, but are not limited to molecular modeling of HMT and/or HNC proteins to determine active sites, i.e. sites that interact with other molecules, and predicting from these active sites smaller fragments and/or mimetopes that retain and/or mimic these active sites, thereby inhibiting HMT and/or HNC protein activity; screening of peptide or small chemical
15 compound libraries against HMT and/or HNC proteins of the present invention; and screening of polyclonal or monoclonal antibodies to find antibodies that specifically bind HMT and/or HNC proteins of the present invention.

An HMT and/or HNC protein inhibitor of the present invention is identified by its ability to bind to, modify, or otherwise interact with, a flea HMT and/or HNC
20 protein, thereby inhibiting the activity of HMT and/or HNC proteins. Suitable inhibitors of HMT and/or HNC protein activity are compounds that inhibit HMT and/or HNC protein activity in at least one of a variety of ways: (a) by binding to or otherwise interacting with or otherwise modifying HMT and/or HNC protein sites; (b) by binding to the HMT and/or HNC protein and thus reducing the availability of the
25 HMT and/or HNC protein in solution; and (c) by interacting with other regions of the HMT and/or HNC protein to inhibit HMT and/or HNC protein activity, for example, by allosteric interaction.

Flea HMT and/or HNC protein inhibitors can be used directly as compounds in compositions of the present invention to treat animals as long as such compounds are
30 not harmful to host animals being treated. Preferred HMT and/or HNC protein inhibitors of the present invention include, but are not limited to, flea HMT and/or

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HNC protein substrate analogs, and other molecules that bind to a flea HMT and/or HNC proteins (e.g., to an allosteric site) in such a manner that the activity of the flea HMT and/or HNC protein is inhibited. An HMT and/or HNC protein substrate analog refers to a compound that interacts with (e.g., binds to, associates with, modifies) the active site of a HMT and/or HNC protein. A preferred HMT and/or HNC protein substrate analog inhibits HMT and/or HNC protein activity. HMT and/or HNC protein substrate analogs can be of any inorganic or organic composition. HMT and/or HNC protein substrate analogs can be, but need not be, structurally similar to a HMT and/or HNC protein natural substrate as long as they can interact with the active site of that HMT and/or HNC protein. HMT and/or HNC protein substrate analogs can be designed using computer-generated structures of HMT and/or HNC proteins of the present invention or computer structures of HMT and/or HNC protein's natural substrates. Preferred sites to model include one or more of the active sites of HMT and/or HNC protein. Substrate analogs can also be obtained by generating random samples of molecules, such as oligonucleotides, peptides, peptidomimetic compounds, or other inorganic or organic molecules, and screening such samples for their ability to interfere with interaction between HMT and/or HNC proteins and their substrates, e.g. by affinity chromatography techniques. A preferred HMT and/or HNC protein substrate analog is a HMT and/or HNC protein mimetic compound, i.e., a compound that is structurally and/or functionally similar to a natural substrate of a HMT and/or HNC protein of the present invention, particularly to the region of the substrate that interacts with the HMT and/or HNC protein active site, but that inhibits HMT and/or HNC protein activity upon interacting with the HMT and/or HNC protein active site.

The present invention also includes a therapeutic composition comprising at least one protective molecule of the present invention in combination with at least one additional compound protective against one or more infectious agents.

In one embodiment, a therapeutic composition of the present invention can be used to protect an animal from flea infestation by administering such composition to a flea in order to prevent infestation. Such administration to the flea and/or animal could be oral, or by application to the animal's body surface (e.g. topical spot-on, or spraying onto the animal), or by application to the environment (e.g., spraying).

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Examples of such compositions include, but are not limited to, transgenic vectors capable of producing at least one therapeutic composition of the present invention. In another embodiment a flea can ingest therapeutic compositions, or products thereof, present on the surface of or in the blood of a host animal that has been administered a
5 therapeutic composition of the present invention.

In accordance with the present invention, a host animal (i.e., an animal that is or is capable of being infested with fleas) is treated by administering to the animal a therapeutic composition of the present invention in such a manner that the composition itself (e.g., a HMT and/or HNC protein, a HMT and/or HNC nucleic acid molecule, a
10 HMT and/or HNC protein inhibitor, a HMT and/or HNC protein synthesis suppressor (i.e., a compound that decreases the production or half-life of a HMT and/or HNC protein in fleas), a HMT and/or HNC protein mimetope, or a anti-HMT and/or HNC antibody) or a product generated by the animal in response to administration of the composition (e.g., antibodies produced in response to administration of a flea HMT
15 and/or HNC protein or nucleic acid molecule, or conversion of an inactive inhibitor "prodrug" to an active HMT and/or HNC protein inhibitor) ultimately enters the flea. A host animal is preferably treated in such a way that the compound or product thereof is present on the body surface of the animal or enters the blood stream of the animal. Fleas are then exposed to the composition or product when they feed from the animal.
20 For example, flea HMT and/or HNC protein inhibitors administered to an animal are administered in such a way that the inhibitors enter the blood stream of the animal, where they can be taken up by feeding fleas.

The present invention also includes the ability to reduce larval flea infestation in that when fleas feed from a host animal that has been administered a therapeutic
25 composition of the present invention, at least a portion of compounds of the present invention, or products thereof, in the blood taken up by the fleas are excreted by the fleas in feces, which is subsequently ingested by flea larvae. In particular, it is of note that flea larvae obtain most, if not all, of their nutrition from flea feces.

In accordance with the present invention, reducing HMT and/or HNC protein
30 activity in a flea can lead to a number of outcomes that reduce flea burden on treated animals and their surrounding environments. Such outcomes include, but are not

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limited to, (a) reducing the viability of fleas that feed from the treated animal, (b) reducing the fecundity of female fleas that feed from the treated animal, (c) reducing the reproductive capacity of male fleas that feed from the treated animal, (d) reducing the viability of eggs laid by female fleas that feed from the treated animal, (e) altering
5 the blood feeding behavior of fleas that feed from the treated animal (e.g., fleas take up less volume per feeding or feed less frequently), (f) reducing the viability of flea larvae, for example due to the feeding of larvae from feces of fleas that feed from the treated animal, (g) altering the development of flea larvae (e.g., by decreasing feeding behavior, inhibiting growth, inhibiting (e.g., slowing or blocking) molting, and/or
10 otherwise inhibiting maturation to adults), and/or (h) altering or decreasing the ability of fleas or flea larvae to digest a blood meal.

In order to protect an animal from flea infestation, a therapeutic composition of the present invention is administered to the animal in an effective manner such that the composition is capable of protecting that animal from flea infestation. Therapeutic
15 compositions of the present invention can be administered to animals prior to infestation in order to prevent infestation (i.e., as a preventative vaccine) and/or can be administered to animals after infestation. For example, proteins, mimetopes thereof, and antibodies thereof can be used as immunotherapeutic agents.

Therapeutic compositions of the present invention can be formulated in an
20 excipient that the animal to be treated can tolerate. Examples of such excipients include water, saline, Ringer's solution, dextrose solution, Hank's solution, and other aqueous physiologically balanced salt solutions. Nonaqueous vehicles, such as fixed oils, sesame oil, ethyl oleate, or triglycerides may also be used. Other useful formulations include suspensions containing viscosity enhancing agents, such as
25 sodium carboxymethylcellulose, sorbitol, or dextran. Excipients can also contain minor amounts of additives, such as substances that enhance isotonicity and chemical stability. Examples of buffers include phosphate buffer, bicarbonate buffer and Tris buffer, while examples of preservatives include thimerosal, or o-cresol, formalin and benzyl alcohol. Standard formulations can either be liquid injectables or solids which
30 can be taken up in a suitable liquid as a suspension or solution for injection. Thus, in a non-liquid formulation, the excipient can comprise dextrose, human serum albumin,

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preservatives, etc., to which sterile water or saline can be added prior to administration.

In one embodiment of the present invention, a therapeutic composition can include an adjuvant. Adjuvants are agents that are capable of enhancing the immune response of an animal to a specific antigen. Suitable adjuvants include, but are not limited to, cytokines, chemokines, and compounds that induce the production of cytokines and chemokines (e.g., granulocyte macrophage colony stimulating factor (GM-CSF), Flt-3 ligand, granulocyte colony stimulating factor (G-CSF), macrophage colony stimulating factor (M-CSF), colony stimulating factor (CSF), erythropoietin (EPO), interleukin 2 (IL-2), interleukin-3 (IL-3), interleukin 4 (IL-4), interleukin 5 (IL-5), interleukin 6 (IL-6), interleukin 7 (IL-7), interleukin 8 (IL-8), interleukin 10 (IL-10), interleukin 12 (IL-12), interferon gamma, interferon gamma inducing factor I (IGIF), transforming growth factor beta, RANTES (regulated upon activation, normal T cell expressed and presumably secreted), macrophage inflammatory proteins (e.g., MIP-1 alpha and MIP-1 beta), and Leishmania elongation initiating factor (LEIF)); bacterial components (e.g., endotoxins, in particular superantigens, exotoxins and cell wall components); aluminum-based salts; calcium-based salts; silica; polynucleotides; toxoids; serum proteins, viral coat proteins; block copolymer adjuvants (e.g., Hunter's Titermax™ adjuvant (Vaxcel™, Inc. Norcross, GA), Ribi adjuvants (Ribi ImmunoChem Research, Inc., Hamilton, MT); and saponins and their derivatives (e.g., Quil A (Superfos Biosector A/S, Denmark). Protein adjuvants of the present invention can be delivered in the form of the protein themselves or of nucleic acid molecules encoding such proteins using the methods described herein.

In one embodiment of the present invention, a therapeutic composition can include a carrier. Carriers include compounds that increase the half-life of a therapeutic composition in the treated animal. Suitable carriers include, but are not limited to, polymeric controlled release vehicles, biodegradable implants, liposomes, bacteria, viruses, other cells, oils, esters, and glycols.

One embodiment of the present invention is a controlled release formulation that is capable of slowly releasing a composition of the present invention into an animal. As used herein, a controlled release formulation comprises a composition of

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the present invention in a controlled release vehicle. Suitable controlled release vehicles include, but are not limited to, biocompatible polymers, other polymeric matrices, capsules, microcapsules, microparticles, bolus preparations, osmotic pumps, diffusion devices, liposomes, lipospheres, and transdermal delivery systems. Other
5 controlled release formulations of the present invention include liquids that, upon administration to an animal, form a solid or a gel *in situ*. Preferred controlled release formulations are biodegradable (i.e., bioerodible).

A preferred controlled release formulation of the present invention is capable of releasing a composition of the present invention into the blood of the treated animal
10 at a constant rate sufficient to attain therapeutic dose levels of the composition to protect an animal from flea infestation. The therapeutic composition is preferably released over a period of time ranging from about 1 to about 12 months. A controlled release formulation of the present invention is capable of effecting a treatment preferably for at least 1 month, preferably for at least 3 months, preferably for at least
15 6 months, preferably for at least 9 months, and preferably for at least 12 months.

Acceptable protocols to administer therapeutic compositions in an effective manner include individual dose size, number of doses, frequency of dose administration, and mode of administration. Determination of such protocols can be accomplished by those skilled in the art. A suitable single dose is a dose that is
20 capable of protecting an animal from disease when administered one or more times over a suitable time period. For example, a preferred single dose of a protein, mimetope or antibody therapeutic composition, including a recombinant protein vaccine, is from about 1 microgram (μg) to about 10 milligrams (mg) of the therapeutic composition per kilogram body weight of the animal. Booster vaccinations
25 can be administered from about 2 weeks to several years after the original administration. Booster administrations preferably are administered when the immune response of the animal becomes insufficient to protect the animal from disease. A preferred administration schedule is one in which from about 10 μg to about 1 mg of the therapeutic composition per kg body weight of the animal is administered from
30 about one to about two times over a time period of from about 2 weeks to about 12 months. Modes of administration can include, but are not limited to, subcutaneous,

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intradermal, intravenous, intranasal, oral, transdermal, intraocular, intranasal, conjunctival, and intramuscular routes. Methods of administration for other therapeutic compounds can be determined by one skilled in the art, and may include administration of a therapeutic composition one or more times, on a daily, weekly, 5 monthly or yearly regimen; routes of administration can be determined by one skilled in the art, and may include any route. A preferred route of administration of an inhibitory compound when administering to fleas is a topical, or "spot-on" formulation administered to the body surface of the animal, so that a flea would encounter the inhibitory compound when attached to the animal; another preferred route of 10 administration of an inhibitory compound is an oral formulation that, when fed to an animal, would enter the bloodstream of the animal, which would then be transferred to a flea while feeding from the animal.

A recombinant protein vaccine of the present invention comprises a recombinantly-produced flea HMT and/or HNC protein of the present invention that is 15 administered to an animal according to a protocol that results in the animal producing a sufficient immune response to protect itself from a flea infestation. Such protocols can be determined by those skilled in the art.

According to one embodiment, a nucleic acid molecule of the present invention can be administered to an animal in a fashion to enable expression of that nucleic acid 20 molecule into a protective protein or protective RNA (e.g., antisense RNA, ribozyme, triple helix forms or RNA drug) in the animal. Nucleic acid molecules can be delivered to an animal in a variety of methods including, but not limited to, (a) administering a naked (i.e., not packaged in a viral coat or cellular membrane) nucleic acid as a genetic vaccine (e.g., as naked DNA or RNA molecules, such as is taught, for 25 example in Wolff et al., 1990, *Science* 247, 1465-1468) or (b) administering a nucleic acid molecule packaged as a recombinant virus vaccine or as a recombinant cell vaccine (i.e., the nucleic acid molecule is delivered by a viral or cellular vehicle).

A genetic (i.e., naked nucleic acid) vaccine of the present invention includes a 30 nucleic acid molecule of the present invention and preferably includes a recombinant molecule of the present invention that preferably is replication, or otherwise amplification, competent. A genetic vaccine of the present invention can comprise one

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or more nucleic acid molecules of the present invention in the form of, for example, a dicistronic recombinant molecule. Preferred genetic vaccines include at least a portion of a viral genome, i.e., a viral vector. Preferred viral vectors include those based on alphaviruses, poxviruses, adenoviruses, herpesviruses, picornaviruses, and
5 retroviruses, with those based on alphaviruses, such as sindbis or Semliki forest virus, species-specific herpesviruses and poxviruses being particularly preferred. Any suitable transcription control sequence can be used, including those disclosed as suitable for protein production. Particularly preferred transcription control sequences include cytomegalovirus immediate early (preferably in conjunction with Intron-A),
10 Rous sarcoma virus long terminal repeat, and tissue-specific transcription control sequences, as well as transcription control sequences endogenous to viral vectors if viral vectors are used. The incorporation of a "strong" polyadenylation signal is also preferred.

Genetic vaccines of the present invention can be administered in a variety of
15 ways, with intramuscular, subcutaneous, intradermal, transdermal, conjunctival, intraocular, intranasal and oral routes of administration being preferred. A preferred single dose of a genetic vaccine ranges from about 1 nanogram (ng) to about 600 µg, depending on the route of administration and/or method of delivery, as can be determined by those skilled in the art. Suitable delivery methods include, for example,
20 by injection, as drops, aerosolized and/or topically. Genetic vaccines of the present invention can be contained in an aqueous excipient (e.g., phosphate buffered saline) alone or in a carrier (e.g., lipid-based vehicles).

A recombinant virus vaccine of the present invention includes a recombinant molecule of the present invention that is packaged in a viral coat and that can be
25 expressed in an animal after administration. Preferably, the recombinant molecule is packaging- or replication-deficient and/or encodes an attenuated virus. A number of recombinant viruses can be used, including, but not limited to, those based on alphaviruses, poxviruses, adenoviruses, herpesviruses, picornaviruses, and retroviruses. Preferred recombinant virus vaccines are those based on alphaviruses
30 (such as Sindbis virus), raccoon poxviruses, species-specific herpesviruses and species-specific poxviruses. An example of methods to produce and use alphavirus

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recombinant virus vaccines are disclosed in U.S. Patent No. 5,766,602 to Xiong and Grieve, which is incorporated by reference herein in its entirety.

When administered to an animal, a recombinant virus vaccine of the present invention infects cells within the immunized animal and directs the production of a protective protein or RNA nucleic acid molecule that is capable of protecting the animal from flea infestation as disclosed herein. For example, a recombinant virus vaccine comprising a flea HMT and/or HNC nucleic acid molecule of the present invention is administered according to a protocol that results in the animal producing a sufficient immune response to protect itself from flea infestation. A preferred single dose of a recombinant virus vaccine of the present invention is from about 1×10^4 to about 1×10^8 virus plaque forming units (pfu) per kilogram body weight of the animal. Administration protocols are similar to those described herein for protein-based vaccines, with subcutaneous, intramuscular, intranasal, intraocular, conjunctival, and oral administration routes being preferred.

A recombinant cell vaccine of the present invention includes recombinant cells of the present invention that express at least one protein of the present invention. Preferred recombinant cells for this embodiment include *Salmonella*, *E. coli*, *Listeria*, *Mycobacterium*, *S. frugiperda*, yeast, (including *Saccharomyces cerevisiae* and *Pichia pastoris*), BHK, CV-1, myoblast G8, COS (e.g., COS-7), Vero, MDCK and CRFK recombinant cells. Recombinant cell vaccines of the present invention can be administered in a variety of ways but have the advantage that they can be administered orally, preferably at doses ranging from about 10^8 to about 10^{12} cells per kilogram body weight. Administration protocols are similar to those described herein for protein-based vaccines. Recombinant cell vaccines can comprise whole cells, cells stripped of cell walls or cell lysates.

The efficacy of a therapeutic composition of the present invention to protect an animal from flea infestation can be tested in a variety of ways including, but not limited to, detection of protective antibodies (using, for example, proteins or mimetopes of the present invention), detection of cellular immunity within the treated animal, or challenge of the treated animal with the fleas to determine whether the treated animal is resistant to infestation. Challenge studies can include direct

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administration of fleas to the treated animal. In one embodiment, therapeutic compositions can be tested in animal models such as mice. Such techniques are known to those skilled in the art.

One therapeutic composition of the present invention includes an inhibitor of flea HMT and/or HNC protein activity, i.e., a compound capable of substantially interfering with the function of a flea HMT and/or HNC protein susceptible to inhibition by an inhibitor of flea HMT and/or HNC protein activity. An inhibitor of HMT and/or HNC protein activity can be identified using flea HMT and/or HNC proteins of the present invention. An inhibitor of HMT and/or HNC protein function can be identified using flea HMT and/or HNC proteins of the present invention. A preferred inhibitor of HMT and/or HNC protein function is a compound capable of substantially interfering with the function of a flea HMT and/or HNC protein and which does not substantially interfere with host animal proteins. As used herein, a compound that does not substantially inhibit or interfere with host animal proteins is one that, when administered to a host animal, the host animal shows no significant adverse effects attributable to the compound and which, when administered to an animal in an effective manner, is capable of protecting that animal from flea infestation.

One embodiment of the present invention is a method to identify a compound capable of inhibiting HMT and/or HNC protein activity of a flea. Such a method includes the steps of (a) contacting (e.g., combining, mixing) an isolated flea HMT and/or HNC protein, preferably a *C. felis* HMT and/or HNC protein of the present invention, with a putative inhibitory compound under conditions in which, in the absence of the compound, the protein has HMT and/or HNC protein activity, and (b) determining if the putative inhibitory compound inhibits the activity. HMT and/or HNC protein activity can be determined in a variety of ways known in the art, including but not limited to determining the ability of HMT and/or HNC protein to bind to or otherwise interact with a substrate. Such conditions under which a HMT and/or HNC protein has HMT and/or HNC protein activity include conditions in which a HMT and/or HNC protein has a correct three-dimensionally folded structure

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under physiologic conditions, i.e. physiologic pH, physiologic ionic concentrations, and physiologic temperatures.

Putative inhibitory compounds to screen include antibodies (including fragments and mimetopes thereof), putative substrate analogs, and other, preferably
5 small, organic or inorganic molecules. Methods to determine HMT and/or HNC protein activity are known to those skilled in the art; see, for example, the Examples section of the present application. Methods to determine binding of a putative inhibitory compound to a HMT and/or HNC protein of the present invention are known to those of skill in the art and include, for example, determining changes in
10 molecular mass using surface plasmon resonance (e.g., determining light scatter by an inhibitor of a HMT and/or HNC protein, before and after contacting the inhibitor or protein with a HMT and/or HNC protein or inhibitor, respectively) or screening for compounds that inhibit interaction between a HMT and/or HNC protein and a substrate.

15 A preferred method to identify a compound capable of inhibiting HMT and/or HNC protein activity includes contacting an isolated flea HMT and/or HNC protein encoded by a nucleic acid molecule of Table I and/or Table II; (b) a protein comprising an at least 25 consecutive amino acid portion identical in sequence to a consecutive amino acid portion of a sequence as set forth in (a), wherein the protein has HMT
20 and/or HNC protein activity; (c) a protein comprising a fragment of a protein as set forth in (a), wherein the fragment has an activity selected from the group consisting of binding to a HMT and/or HNC molecule and hydrolyzing a HMT and/or HNC protein substrate; and (d) a protein encoded by an allelic variant of a nucleic acid molecule that encodes any protein of (a), (b), or (c), with a putative inhibitory compound under
25 conditions in which, in the absence of the compound, the protein has HMT and/or HNC protein activity; and determining if the putative inhibitory compound inhibits the activity.

Another embodiment of the present invention is an assay kit to identify an inhibitor of a flea HMT and/or HNC protein of the present invention. This kit
30 comprises an isolated flea HMT and/or HNC protein of the present invention, and a means for determining inhibition of an activity of flea HMT and/or HNC protein,

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where the means enables detection of inhibition. Detection of inhibition of flea HMT and/or HNC protein identifies a putative inhibitor to be an inhibitor of flea HMT and/or HNC protein. Means for determining inhibition of flea HMT and/or HNC protein include an assay system that detects binding of a putative inhibitor to a flea
5 HMT and/or HNC molecule, and an assay system that detects interference by a putative inhibitor of the ability of flea HMT and/or HNC protein to hydrolyze a substrate. Means and methods are described herein and are known to those skilled in the art.

The following examples are provided for the purposes of illustration and are
10 not intended to limit the scope of the present invention. The following examples include a number of recombinant DNA and protein chemistry techniques known to those skilled in the art; see, for example, Sambrook et al., *ibid*.

Example 1

This Example describes the isolation of RNA from the hindgut and Malpighian
15 tubules (HMT) of *Ctenocephalides felis* and the use of isolated RNA to construct subtracted and unsubtracted cDNA libraries.

Approximately 10,000 hindguts and Malpighian tubules were dissected from equal numbers of cat blood fed and unfed adult *C. felis* with a male to female ratio of 1 to 4, and total RNA was extracted using a guanidine isothiocyanate lysis buffer and the
20 standard procedure described by Sambrook et al. Poly-A enriched mRNA was purified from total RNA above using a mRNA Purification Kit, available from Pharmacia Biotech, Piscataway, NJ, following the manufacturer's protocol. The same procedures were used to extract total RNA and isolate poly-A enriched mRNA from the dissected *C. felis* bodies following removal of HMT, referred to hereinafter as "non-HMT
25 mRNA".

Poly-A enriched mRNA was used to construct a cDNA library using subtractive hybridization and suppression PCR as follows. Subtractive hybridization and suppression PCR was conducted using a PCR-Select™ cDNA Subtraction Kit, available from Clontech Laboratories, Inc., Palo Alto, CA according to the
30 manufacturer's instructions. Briefly, this kit uses subtractive hybridization and suppression PCR to specifically amplify cDNA sequences that are present in the tester

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cDNA and absent in the driver cDNA, thus enriching for tester-specific sequences. The efficiency of the subtraction process can be assessed by semi-quantitative PCR and by comparing the ethidium bromide staining patterns of the subtracted and unsubtracted samples on agarose gels as described in section V.D. of the
5 manufacturer's protocol. For the semi-quantitative PCR, three genes with mRNAs known to be expressed outside of the HMT tissue were used to test for specific subtraction. These genes encoded putative actin, N-aminopeptidase, and serine protease proteins.

Subtractive hybridization and suppression PCR was conducted under the
10 following conditions. Two micrograms (μg) of HMT mRNA was used as the template for synthesis of the tester material and 2 μg of non-HMT mRNA was used as template for synthesis of the driver material in this reaction. The number of cycles used in the selective amplification steps was optimized using the manufacturer's protocols. Optimization resulted in the use of 24 rather than the standard 27 cycles of primary
15 PCR in combination with 15 cycles of secondary PCR rather than the standard 12 cycles.

The products from the suppressive PCR reaction were ligated into the pCR®2.1 vector, available from Invitrogen, Carlsbad, CA, using an Original TA Cloning® Kit, available from Invitrogen. The ligation reaction was then used to
20 transform INVαF' One Shot™ competent cells, available from Invitrogen, which were plated on Luria broth (LB) agar with 50 micrograms per milliliter ($\mu\text{g}/\text{ml}$) ampicillin, available from Sigma-Aldrich Co., St. Louis, MO, and 50 $\mu\text{g}/\text{ml}$ 5-bromo-4-chloro-3-indoyl β -D-galactopyranoside (X-Gal), available from Fisher Biotech, Fair Lawn, NJ. Transformed colonies were amplified and the DNA isolated using the standard alkaline
25 lysis procedure described by Sambrook et al., *ibid*.

Automated cycle sequencing of DNA samples was performed using an ABI PRISM™ Model 377, available from Perkins Elmer, with XL upgrade DNA Sequencer, available from PE Applied Biosystems, Foster City, CA, after reactions were carried out using the PRISM™ Dye Terminator Cycle Sequencing Ready Reaction Kit or the
30 PRISM™ dRhodamine Terminator Cycle Sequencing Ready Reaction Kit or the PRISM™ BigDye™ Terminator Cycle sequencing Ready Reaction Kit, available from

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PE Applied Biosystems, following the manufacturer's protocol, hereinafter "standard sequencing methods". The resulting sequences are presented in Table II. Sequence analysis was performed using the MacVector™ sequence analysis software, available from International Biotechnologies Inc., New Haven, CT, and the SeqLab sequence
5 analysis software, using default parameters. Each sequence read was trimmed of vector sequence at either end and submitted for a search through the National Center for Biotechnology Information (NCBI), National Library of Medicine, National Institute of Health, Baltimore, MD, using the BLAST network. This database includes SwissProt + PIR + SPupdate + GenPept + GPUpdate + PDB databases. The search
10 was conducted using the xBLAST function, which compares the translated sequences in all 6 reading frames to the protein sequences contained in the database.

An unsubtracted HMT cDNA library was constructed as follows. Approximately 10,000 HMT tissues were dissected from equal numbers of unfed and cat blood-fed adult *C. felis* with a male to female ratio of 1:4. Total RNA was
15 extracted using a guanidine isothiocyanate lysis buffer and procedures described in Sambrook et al., followed by isolation using a mRNA purification kit, available from Pharmacia, according to the manufacturer's protocols. The library was constructed with 5 µg of isolated mRNA using a ZAP-cDNA® cDNA synthesis kit, and packaged using a ZAP-cDNA® Gigapack® gold cloning kit, both available from Stratagene, La
20 Jolla, CA. The resultant HMT library was amplified to a titer of about 5×10^9 plaque forming units per milliliter (pfu/ml). Single clone excisions were performed using the Ex-Assist™ helper phage, available from Stratagene, and used to create double stranded plasmid template for sequencing using the manufacturer's protocols with the following exceptions. Following incubation of the SOLR cells with the cleared phage
25 lysate, the mixture was used to inoculate LB broth, and the mix was incubated overnight and then subjected to mini-prep plasmid preparation and sequencing as described for the subtracted HMT library above.

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Example 2

This Example describes the isolation of RNA from the head and nerve cord (HNC) of *Ctenocephalides felis* and the use of isolated RNA to construct subtracted and unsubtracted cDNA libraries.

5 Approximately 4,000 heads and attached nerve cords, including the terminal abdominal ganglia were dissected from equal numbers of cat blood-fed and unfed adult *C. felis* with a male to female ratio of 1 to 4, and total RNA was extracted using a guanidine isothiocyanate lysis buffer and the standard procedure described by
10 Sambrook et al. Approximately 618 µg of total RNA was recovered. Poly-A enriched mRNA was purified from total RNA above using a mRNA Purification Kit, available from Pharmacia, following the manufacturer's protocol. Approximately 13 µg of mRNA was isolated. The same procedures were used to extract total RNA and isolate poly-A enriched mRNA from the dissected *C. felis* bodies following removal of HNC tissues, referred to hereinafter as "non-HNC mRNA".

15 Suppression subtractive PCR was conducted as described in Example 1 using a PCR-Select™ cDNA Subtraction kit, available from Clontech, under the following conditions. Two micrograms (µg) of HNC mRNA was used as the template for synthesis of the tester material and 2 µg of non-HMT mRNA was used as template for synthesis of the driver material in this reaction. The number of cycles used in the
20 selective amplification steps was optimized using the manufacturer's protocols. Optimization resulted in the use of 24 rather than the standard 27 cycles of primary PCR in combination with either 12 or 15 cycles of secondary PCR.

 cDNA pools from various PCR cycling combinations were ligated into the TA vector using a TA cloning kit, available from Invitrogen. Aliquots of ligation reaction
25 were transformed into Ultramax DH5α™ bacteria, available from Gibco-BRL, Gaithersburg, MD. Portions of the transformation mixes were used to inoculate LB broth cultures containing 100 µg/ml of ampicillin. The overnight cultures were plated to generate discreet colonies which were used individually for overnight cultures for plasmid preps. Transformed colonies were amplified and the DNA isolated using the
30 standard alkaline lysis procedure described by Sambrook et al., *ibid.*

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Automated cycle sequencing of DNA samples was performed using the standard sequencing methods described in Example 1. The resulting sequences are presented in Table I. Sequence analysis was performed using the MacVector™ sequence analysis software, available from International Biotechnologies Inc., New Haven, CT, and the SeqLab sequence analysis software, using default parameters.

An unsubtracted cDNA library was constructed as follows. Approximately 6400 head and nerve cords were dissected from *C. felis* and poly-A RNA was isolated as described above. About seven µg of HNC poly-A RNA was used to construct a cDNA library using Stratagene's λZAP-cDNA Synthesis Kit and protocol. The resultant HNC library was amplified to a titer of about 5×10^9 plaque forming units per milliliter (pfu/ml). Single clone excisions were performed using the Ex-Assist helper phage, available from Stratagene, and used to create double stranded plasmid template for sequencing using the manufacturer's protocols with the following exceptions. Following incubation of the SOLR cells with the cleared phage lysate, the mixture was used to inoculate LB broth, and the mix was incubated overnight and then subjected to mini-prep plasmid preparation and sequencing as described for the subtracted library above.

While various embodiments of the present invention have been described in detail, it is apparent that modifications and adaptations of those embodiments will occur to those skilled in the art. It is to be expressly understood, however, that such modifications and adaptations are within the scope of the present invention, as set forth in the following claims:

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Stinchcomb, Dan T.
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 <223> n = unknown at positions 8 and 9

<400> 6
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<210> 7
 <211> 198
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (143)..(143)
 <223> n = unknown at position 143

<220>
 <221> misc_feature
 <222> (167)..(167)
 <223> n = unknown at position 167

<400> 7
 acatttagct ctatcggaat atctgaatat ctgaatatct gaatatctga atatccgaat 60
 atccgaatat ccgaatatcc gaatatccgg atatccgaat atccgaatat ccgaatatcc 120
 gaatatccga atatccgaat atncgaatat ccgaatatcc gaatatncga atatccgaat 180
 atccgaatat ccgaatat 198

<210> 8
 <211> 485
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (475)..(475)
 <223> n = unknown at position 475

<400> 8
 gttttttgtt taacactttt gaataaaaca aaatatacaa tggcggacgt agatgttcaa 60
 atgcaattca caacaaccac gaccaaacg cgtaaagtga agaagtcgtc caagaggcgc 120
 gaatctagcg accatggtga agttactatt acagagatgg agaacggaca ccaacagcaa 180
 ggtggcgagt acaccaaggc catgaacaag gactggcact ctggtcactt ctgctgctgg 240
 caatgcgacg agtcactgac cggccaacgc tacgtactcc gcgacgaaca tccttactgc 300
 atcaagtgct acgagagcgt cttttccaac acctgcgagg aatgcagcaa gatcattggc 360
 attgattcca aggacttatc ttacaaagaa aagcattggc atgaggcatg tttcttgtgc 420
 agtaaagtcc gcgttcttcg tcgtaacagt tcggaagtaa tggacaaatt actgnggaac 480

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tgtat 485

<210> 9
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 9
 aaggatggag tcactgtagc gaagggtatt gatctcaagg acaaatttca gaatattggg 60
 gccaaattag tccaagatgt agctaataac accaatgaag aagctggtga tgggtactact 120
 actgctactg tgcttgccag agctattgca aaggaaggct ttgaaaaaat atctaaagga 180
 gcaaattcca ttgaaatcag acgaggtggt atgctggctg ttgatgcagt caaagaatct 240
 ttgaaaggaa tgtcgaagcc tggtactacc ccggaggaaa ttgcacaagt tgctaccatt 300
 tctgccaatg gagacaaagc tattggaaaa ttgatctcag atgcaatgaa gcgtgttgga 360
 aaggaagggtg taataacggt taaagatgga aaaactttac atgatgaact tgaggtcatt 420
 gagggcatga agtttgatag aggatcattt caccttactt tatgaattcc agcaaagggtg 480
 ctaaagtaga attccaagat ccttattttg tcagtgacaa aaaataactca gtcaagcata 540
 ttctgcttg 549

<210> 10
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (207)..(207)
 <223> n = unknown at position 207

<220>
 <221> misc_feature
 <222> (513)..(513)
 <223> n = unknown at position 513

<220>
 <221> misc_feature
 <222> (515)..(515)
 <223> n = unknown at position 515

<400> 10
 acgccaggct atgcttcaag ccaccaagga tgccaacaag aagggcccca acttcaccat 60
 caccaaaaag gacagcaact tcaacatgtc ttctgcccac attgaaagaa acaagaccaa 120
 ggaacaattg gaagaggaaa agaaaatttc tctgtccttc cgtatcaagc ctctggatat 180
 cgaatctctt agcgttgaaa aactcanaca aaaggccaat gaactttggg aatgcacgt 240

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caagttggaa actgagaaat acgatctgga ggaacgccaa aaacgccagg actacgatct	300
taaagaattg aaagaaaggc agaaacaaca actcagacac aaagcattga agaaaggatt	360
ggatccagaa gccctcacag gaaaatccca cccaaaatcc aagtcgctcc aaatatgaga	420
gacgtgtcgc acaagatcat atgatgataa gaaaaaatta tttgaaggcg gttcgcacat	480
tgtctctgaa gtaatgaaaa gtctggaaca gcntncaact attcagaaac gtagtaaact	540
agcttctaa	549

<210> 11
 <211> 87
 <212> DNA
 <213> Ctenocephalides felis

<400> 11
 aatttccagc gcgctcagta ccaccacgtc gagacgatca accgatgcgc ctttcgaacc 60
 ccagttagcg tactggttgg cgctgat 87

<210> 12
 <211> 268
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (30)..(31)
 <223> n = unknown at positions 30 and 31

<400> 12
 acggttttaca ccctagtcgc gcctaaagan nttttatttta aaaacaaatt gtattacttt 60
 taacaagttt ctctacaaat ttgagaaaac catgttgtat ttttaactac tagtgtaata 120
 tttttgttaa aatatattat ttttgtctgt cccaaacgaa tgattttcct gcggccctgc 180
 ctgttgcaga tattcctaca cacgttatta taagtcacgc tgtttgcgcg ccgtagcaat 240
 tacgcgcccc gttcgcgccc ttcgttgt 268

<210> 13
 <211> 436
 <212> DNA
 <213> Ctenocephalides felis

<400> 13
 attttaaatt ttttataaaa ataatattta aaattataaa aaatatgaaa taatgattaa 60
 attagtataa tataatttat tgataatatt aaattgtag gtttatttaa ggaattcggc 120
 aaatataata ttcacctgtt taacaaaaac atgtcttttt gaaaataata taaagtctaa 180
 tctgcccatt gaagatttaa aaggccgcag taatttgact gtgcaaagg agcataatca 240
 atagtttttt aattgaaagc tggaatgaat gattgaatga aatattaact gtcttaataa 300

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aattggttata gaattttaatt tttatgttaa aaagcgtaaa tattattaaa ggacgagaag 360
 accctttaaa gttttatata taaatataga ttattttaag aatattatta aattttattta 420
 tattaatatata tttatt 436

<210> 14
 <211> 324
 <212> DNA
 <213> Ctenocephalides felis

<400> 14
 accttgaata gtaataatta tctctttcag gacccccatt tcgaatcaat attataatta 60
 aaccttctac tttcagtgtc gatgtatcct ttatctatat atatgcaatt agcaattgta 120
 taattttatat ataaatgtgt atactttcgt aggttatggc agcgcatctc cacattatcc 180
 aattttaagt tcacaaaagt ctctaagtga agtcgtgtct tgtgtgtttc gtagagaatt 240
 tagtcggaca attgtaaaat gtcaaataga cttgtaaaag acaaagttat gtagtggttc 300
 taaagtagtg atattgtgtc gagt 324

<210> 15
 <211> 391
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (385)..(385)
 <223> n = unknown at position 385

<400> 15
 caagtcttta cggatatcaa catcacattt cattatggag ttgtaagtgg tttcatggat 60
 tccacaggct tccattccca agaatgatgg ctggaagaga gcttctgggc acctgaacct 120
 ttcattttcca atgggtgatga cttgtccgtc aggaagttcg tatgattttt ctaaagatga 180
 agagctggca gcggtggcca tttcttggtc gaagtccaaa gctacatagc acaatttttc 240
 tttaatatca cggacaattt ctctttcggc agtagtggtg aaggagtatc cacgttcagt 300
 taagattttc attaaataat cagttaagtc acgggcagcc aagtccaaac gcaagataac 360
 gtgaggggaag gcgtatcctt catanattgg t 391

<210> 16
 <211> 440
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (100)..(100)
 <223> n = unknown at position 100

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<220>
<221> misc_feature
<222> (123)..(123)
<223> n = unknown at position 123

<220>
<221> misc_feature
<222> (132)..(132)
<223> n = unknown at position 132

<220>
<221> misc_feature
<222> (162)..(162)
<223> n = unknown at position 162

<220>
<221> misc_feature
<222> (178)..(178)
<223> n = unknown at position 178

<220>
<221> misc_feature
<222> (182)..(182)
<223> n = unknown at position 182

<220>
<221> misc_feature
<222> (184)..(184)
<223> n = unknown at position 184

<220>
<221> misc_feature
<222> (248)..(248)
<223> n = unknown at position 248

<220>
<221> misc_feature
<222> (286)..(286)
<223> n = unknown at position 286

<220>
<221> misc_feature
<222> (342)..(342)
<223> n = unknown at position 342

<220>
<221> misc_feature
<222> (403)..(403)
<223> n = unknown at position 403

<400> 16
aatattattg tattatttag gcagcaggac attcaagagt tccatcattt atgtcatcta 60

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```

ttaagtcatg tgggtgccctg ccatcaatgg tgcatacctan acttttgggct gttcccaaaa      120
ccnctttaaa cnttcccgaa aattcaccaa ccaagggacc anggcccaat tgggggggnaa      180
ancncaacta tgtcatcaaa agtgatattg ccattgtgtt taatgttctt ttgcttcttg      240
cggtcacnag ggggttcctt caatgcttta ataactaaag aggcantga aggtactact      300
gaaattgttg cttgcctgtt ttggatggac aattgaacag tnattttcaa acccttccaa      360
tccccggtag ccttagcaat atcatcacca acttttcttg ganacagacc aatggaccaa      420
ttttgggggc aaaggatgat                                          440

```

```

<210> 17
<211> 498
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (399)..(399)
<223> n = unknown at position 399

```

```

<220>
<221> misc_feature
<222> (448)..(448)
<223> n = unknown at position 448

```

```

<220>
<221> misc_feature
<222> (462)..(462)
<223> n = unknown at position 462

```

```

<220>
<221> misc_feature
<222> (486)..(486)
<223> n = unknown at position 486

```

```

<400> 17
aatcaataag aatattgggg ccagttccat caggaccaa gcaccagatt ttacgagctt      60
cagttacatc ataatcatat tgttcaccaa gataacgagc acgagctttg aattcatcac      120
gggggttgac ttttccactg tcgatgtctt ctgcgaggcc atcaggcata ggttgtgcct      180
tcatgaataa tctgttgtgc ttgtttggag atttagacaa gcacatttgg tctgattctt      240
cagatacagt ttctctgtaa gatacaacag ggtcagattt ctttaatgga atgcaagcat      300
ggtcttcttc caaatctttc aagcaaattt ccaagtgcaa ttcaccggca ccagcaatga      360
tgtgttcacc agattcttca atgatacatt ggaccatang atctgattta accagacgtt      420
tcaaaccttc taccaatttt ggcagatnag caagggtttt angttcaaca gcaacacgca      480
caacangaga aactgaga                                          498

```

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<210> 18
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<400> 18
 aaccactggg gctcgtgtgt tcggagccat gaaggggtgct gttgatgggtg gcttaaatat 60
 tccacactcc actaagcgtt tcccagggtta tgatgctgaa agcaaaagct tcaatgctga 120
 agtgcacaga gctcacatct ttggaaaaca tgtagctgac tacatgaaat ctcttgaaga 180
 ggaagatgaa gatgcattca aacgtcaatt tagcaaatac atcagtcttg gaattactgc 240
 tgataatatt gaagagctat acaagaaagc ccatgcggcc attagagctg atccttcatt 300
 gaaacctgca gataaaatga aggcagctga tgtcaagggtg aaacgttgga accgggctaa 360
 actttcactc tctgaacgca agaatcgcgt tgcccaaaag aaagcttcat ggcttcagaa 420
 gctcaaagca gagaatgagg cataaatgac ttctaaatat ataaatgttt atattacttt 480
 gaaataaacc ggtaaaat 498

<210> 19
 <211> 488
 <212> DNA
 <213> Ctenocephalides felis

<400> 19
 gccgtcagtg tgctggaatt cggctttcga gcggccgccc gggcagtaca aatacatttc 60
 atcacttgca cacatcctta aattatgaag aacttagttg aacaaaccga agcccatatc 120
 atcatcggac tcctctgggt cagattcctt cttcttttcc tccttagcag cagcagctgg 180
 tgctgcagct ccaccggcag cagcaggggc agcggctgct ggtccggatc caactcctga 240
 accgatgttg gtgatcaggt cttttacgtt tactccttcc aaagccttgg cgaacaatcc 300
 tggccagtat ggctcaacat cgacagctgc agctttcaag atggtagaga tcttctcacc 360
 agttacagca acatcatcgt caaccaatat cagagcggag taaacgcaag cgagttcagc 420
 ttttgtggcc atttttatat atatttgaaa taacttttgg tgcaagtcgc cgaaatttgg 480
 tcttagct 488

<210> 20
 <211> 321
 <212> DNA
 <213> Ctenocephalides felis

<400> 20
 caagaagggt ggaattactg gtaaatatgg aactcgttat ggagcttcct tacgtaaaat 60
 ggtcaaaaag atggaaataa cccagcacgc caatacact tgcacatttt gtggaaagga 120
 tgccatgaaa cgcagttgtg ttggaatttg gtcttgcaaa agatgtaaaa gaactgtagc 180

FC-8-C2-PCT.ST25.txt

tgggtggtgcc tgggtatatata ccacaactgc tgctgcctct gtccgatctg ctgttaggag 240
 gttgagagaa acaaaggaac agtaatttat attgatctta ataaataatt aataaaaaaa 300
 aaaaaaaaaa aaaaaaaaaa a 321

<210> 21
 <211> 404
 <212> DNA
 <213> Ctenocephalides felis

<400> 21
 tttttttttt tttttttttt tttttttttt tagtttaatg tttattttta atcataattt 60
 acaaatatga ttcaggaaat tcaaagtta cctcacgtcc tgtcaacttt ttgtaaacgg 120
 aagtgaacgt atcaacttta tgttcaattg tagtttggtg acttttgtcc aaatgaactt 180
 taatgagctg ggatccatct agcttgacac ggatacgttt accaacaatt tcagctggga 240
 atactaagtc ttctaaaata gcatcataca cagatgtcaa agttctgcta cgtggacgct 300
 tctgcttatt cttagtgcga gttttacgtg ttggtttttg aaggatttta cgctctccaa 360
 caaatacaac atgattgcca gaaaatttct tctccaactc tcgt 404

<210> 22
 <211> 269
 <212> DNA
 <213> Ctenocephalides felis

<400> 22
 gtgttgagtg gtatcaaaac ttggtcaccc agtttatgag agaagtcttg ccacaacatt 60
 tccaaagcat ttgtctggtg tagcaaaaca tcgtgccac tccatgggct ttcgtagact 120
 tcagatactg cttccattaa agacttgga gcaacttgca cagctcta atcatctatg 180
 tagttattaa attccttttg cagtctatta gcactatttt gctgcctggg gaagttttgt 240
 aaatgctcat caaaaatatc atctgcggg 269

<210> 23
 <211> 216
 <212> DNA
 <213> Ctenocephalides felis

<400> 23
 ggcggctgat gccattagtg ggtttgtcca gaataagatt gtcgatgggt atgttatttt 60
 aacatttagc tgctcatctc taattcaaca aatatttgaa gatacttcaa agaacggaat 120
 tgattttcat gttgtggttg tggatggctg cccatctcta gaaggtagag aaatgctacg 180
 cagactcatt gaacgtggta tcaagtgttc ctatgt 216

<210> 24
 <211> 500

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<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (230)..(230)

<223> n = unknown at position 230

<220>

<221> misc_feature

<222> (334)..(334)

<223> n = unknown at position 334

<220>

<221> misc_feature

<222> (394)..(394)

<223> n = unknown at position 394

<220>

<221> misc_feature

<222> (459)..(459)

<223> n = unknown at position 459

<400> 24

tttttttttt tttttttttt ttttttaatt tcataaagct tctatatatta tatatttttaa	60
ataatcagaa attactatag ttaatgacat tttgtttgtg ctccttacat aaaatacaat	120
tttatacatt ttaattttta tacatatattt ttatatattaa ttgcacagat catttggtgta	180
tttattatat taattgacta ctttatgata atttgaatcc taattagtcn attcaagatt	240
gttttcctgg tttaagcctt acttagcaat ctacttttg cattcttcgc cgggtggcgt	300
gggtatgcat cgcaactccg ttttatcaaa gtgnaagcca tttggacaat cataatgttt	360
tatttgccat ttgttggtta ccaagaaaca ttgntaatat tttttacaat ctcttcgatc	420
ggaaaaaacg ttttcaacct ttgcacgcag ttctgcccna gaaagatttt ggggtcaaacc	480
attcgttgac gtcgtcctca	500

<210> 25

<211> 146

<212> DNA

<213> Ctenocephalides felis

<400> 25

ttttccatca actttgatta aacgctgcat aacaatcttc gtaacctcgg tattggtcaa	60
agcatatttc aaacggttac gtagaaaaat aactaaaggt aaggactcgc gaagtttgtg	120
aggtccagtg gatggccgag gtgcgt	146

<210> 26

<211> 498

<212> DNA

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<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (403)..(403)

<223> n = unknown at position 403

<400> 26

```

ggcctggac aagatgccct tcgactcacc accgaatatg gagctgtcta cgatcaaaat      60
gccaccattg aagttcttaa taaacagaag aggaaaactt tgtgccacac tgatggcgaa     120
ggagttgaat gcgaaacaga agaagggagc atcgcacctc aaataatact atttgctgcc     180
caattaattt ctggagtcgg tggatcttta tactacactt taggtgtatc ctatatggac     240
gataacacca aaaaatctaa aacaccagca ctgataagtt tttcttattt tcttcgtatg     300
ctcggacctg caaccggtta tgccttggct agcgtctgtc taaagttcta catttcgcca     360
acgttgacgc caacaattga taataatgat cctagatggg tangagcatg gtggttaagt     420
tgggtgatac taggatcaac tttaatatatt tttgcaacgt tgattggatt gtttcctaaa     480
attctgccaa gagctgca                                     498

```

<210> 27

<211> 489

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (445)..(445)

<223> n = unknown at position 445

<400> 27

```

aacaatatgt aaccgattcc acactatttt taacagaatt caaaattcgt aattgtcaag      60
aaattatttc atctctacag aatgttttat gtgatcaaga agtcaagtat attccaaagc     120
ggaaatttgg gttcaaaaat aaaaagctct tattaaatga taaaattatt ggtaaggact     180
tggatacaaa aagtaaagat acgacagatt tatgtctcaa taagtgtaat gattggaatt     240
tatcagaatg tggatttcat tttaaaggaga atgaaattct atatctttat gctgaacagg     300
ttaataaaaa ggatattaca ttgagtagca tatataaatg cactgtaata attactggct     360
atcctaatac ttcaaacatt caagacagca ctgtgatttg tggtcctgta actacatcaa     420
tatttgctga taaatgcatt aatangtaag ttagtcattg cttgccagca attgagacta     480
cattcttct                                     489

```

<210> 28

<211> 582

<212> DNA

<213> Ctenocephalides felis

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<220>
 <221> misc_feature
 <222> (422)..(422)
 <223> n = unknown at position 422

<220>
 <221> misc_feature
 <222> (479)..(479)
 <223> n = unknown at position 479

<220>
 <221> misc_feature
 <222> (520)..(520)
 <223> n = unknown at position 520

<400> 28
 agctgccaat tatagtaatt agctactaaa gctttccagt taactctgga actgctttaa 60
 ataaatcagc tactaaacca aagtctgaaa cttgaaatat gggcgcctct ggatctttat 120
 tgattgcaac aatagtttta gaatctttca ttccagctaa gtggtgaatt gctccagata 180
 ttccaacagc aatatagagt tcaggtgcaa caatcttccc tgtctgaccg atttgcatat 240
 catttgggca aaatccagca tctaccgcgg ctctagaagc gcctactgca gctcctatct 300
 tatccgctaa gtcaaataat aatttgaaat tatcaccaga ctttaaacca cgtcctcctg 360
 atacaatagt cttagcactt gataattcag gcctgtctga tttacttagt tcttgggata 420
 tnaatgtggt caaatcggga ttatagtcac ctctgggaac atctttcact tcagctggng 480
 aagaatttaa tgcagctggg ttcaaagctg gtgccacgan tagatatgac tttagtggat 540
 ctttcacctt cagtgtctga atacgttacc ggcataaatt gt 582

<210> 29
 <211> 314
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (185)..(185)
 <223> n = unknown at position 185

<220>
 <221> misc_feature
 <222> (258)..(258)
 <223> n = unknown at position 258

<220>
 <221> misc_feature
 <222> (283)..(283)
 <223> n = unknown at position 283

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```

<400> 29
taatgtcgta gaaggtgaaa aactgcgagt tgtttgcaca gttgtaggca aacctacacc      60
aacagtgtca tggaaagtta ttaatgagac ttatgacgaa tcatccgata gaatcaaatt      120
gtagatcat gacaatatac caaattctgc ttgggaaatt gatttggctg aaaaaagcga      180
tcgangagaa tatacatgta ttgctactaa tcaaggcatt ggaattactg ttattctaca      240
accttggttc gagttcanga taaaataact gctttgtggc canttttggg tatctgtgct      300
gaagtaatta cttt                                     314

```

```

<210> 30
<211> 133
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 30
ccgggcaggt acggcctctt gcaaggcttc gtggtgcatt tcaacggatt taacttcagt      60
ggccaagttg gctggggcaa atacaacaac agtgcctggg ttcaagactc cagtttcaac      120
acggcctact ggt                                     133

```

```

<210> 31
<211> 485
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (2)..(2)
<223> n = unknown at position 2

```

```

<220>
<221> misc_feature
<222> (216)..(216)
<223> n = unknown at position 216

```

```

<220>
<221> misc_feature
<222> (332)..(332)
<223> n = unknown at position 332

```

```

<220>
<221> misc_feature
<222> (406)..(406)
<223> n = unknown at position 406

```

```

<220>
<221> misc_feature
<222> (463)..(463)
<223> n = unknown at position 463

```

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<220>

<221> misc_feature

<222> (467)..(467)

<223> n = unknown at position 467

<400> 31

```

angggatctg ttctcacgca gattccgcac ccgaggagtc atccctctgt ctacttatat      60
gaaagtgtat aaagtgggag acatagtaga cataaagggg aatgggtgctg tgcagaaagg      120
tatgccttat aaagcctacc atggtaaaac tggacgtggt tataatgtaa cccctcatgc      180
gcttggtgta atagtaaaca aacgtgtccg tgggtanaatt attccaaaga gaataaatat      240
tcgtattgaa cacgtaaagc attcaaaatg cagagaagat tttttgaaac gtgtgaagga      300
aatgaacgt cttcgacatg aagccaagga anagaaagtt catgttacat tgaagagaca      360
acctgctcaa cctcggccag caaatattgt caaaggaact gatganccaa tacgtttggc      420
accaattcct tacgaattta ttgcataaat ttgtaaactt tanatanata attaagattt      480
gtaaa                                         485

```

<210> 32

<211> 439

<212> DNA

<213> Ctenocephalides felis

<400> 32

```

gtcgatagag atttggagag gttcaacaaa gaagttgaaa ggaaacttag caaaaaagtg      60
agtgaagccg caaaggaatg ccttaaaggc caacacccaa aagctctagg ctacgcacaa      120
gaagcccgtg ccaaggtcaa ggcttgcaga gatgacaaac gtgatgaatt caaccaagtt      180
cgccaaaatg gcttggccgc ctggagagaa gccagggaga acgccgaagc cctcagagca      240
caagccaagg agtgcgttgt gaccgcagcc gatgtcgatg aagccagagt ttgcttgaaa      300
ggggttctcc aagctgcca cgaaggagca aaagacttgg ccaaggcact caaagaaacc      360
tgggtccaat tgggcaactt agtccgtgaa gtcggaaaat gcgcaagggg agccttgaaa      420
gaattaggga caacttagt                                         439

```

<210> 33

<211> 498

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (344)..(344)

<223> n = unknown at position 344

<400> 33

```

attacacaga attcgtgcaa agaacactgt tttggcgact ggtgggttatg gacgagcata      60

```

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```

tttttcatgc acttcagcac atacctgcac aggtgatggc accggtatgg tagccagagc 120
tggattacca gcacaagatt tagaatttgt gcagttccat cctacaggta tttatggagc 180
tggctgttta attactgaag gatgcagagg tgaaggtgga tttttggtta attctcaagg 240
agagagattt atggaacgat atgcacctgt tgcaaaagat ttggccagta gagatgtggc 300
ttctagatca atgacaattg aaatcaatga aggtcgcggc gtangacctg agaaagatca 360
cgttttattg caattacatc acttaccagc tgaacaatta gcgagcagac ttcctgggtat 420
ttccgagaca gctatgatat tttgtgggtg tgatgttact cgtgagccaa tccccgtttt 480
accaacagtg cattataa 498

```

```

<210> 34
<211> 427
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (403)..(403)
<223> n = unknown at position 403

```

```

<400> 34
tgaaatgtga agacgacgtc aacgaatggc ttgacccaaa atctttctcg tgcagaactg 60
catgcaaaag tgaaaacggt ttttccgac gaagagattg taaaaaatat tatcaatggt 120
tcttgggtta caacaaatgg caataaaaac attatgattg tccaaatggc ttgcactttg 180
ataaaacgga gttgcatgac ataccacgac caccggcgga agaattgcaa agtgagattg 240
ctaagtaagg cttaaaccag gaaaacaatc ttgaatagac taattaggat tcaaattatc 300
ataaagtagt caattaatat aataaataca caaatgatct gtgcaattaa atataaaaaa 360
tatgtataaa aattaaaatg tataaaattg tatttttatgt aangagcaca aacaaaatgt 420
cattaac 427

```

```

<210> 35
<211> 362
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 35
cagtgcgggg gcacctttga cactcgattt aataaagaaa cgggtcacat tagttttgca 60
actgtatgac aaaattgatc cagcaaagtt gaaattggag tcacacttta tcaacgactt 120
aggttttagat tccttagatc atgtagaagt tattatggcc atggaggacg agtttggttt 180
tgaaatccca gatggtgatg cagaaaaact gacccgacct gcagatattg ttcgatacgt 240
agcagataga gaagatgttt atgaataaac taaataaatg gttgatttgt aaaacatttt 300
agaataataa tttcaatatc tgcacaaaaa ttatgtgcag tttgattatg tctgaacctt 360

```

FC-8-C2-PCT.ST25.txt

gt

362

<210> 36
 <211> 462
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (445)..(445)
 <223> n = unknown at position 445

<220>
 <221> misc_feature
 <222> (451)..(451)
 <223> n = unknown at position 451

<400> 36
 ttgtcgaatt ctatgctcca tgggtgtggac actgcaaagc tttagcccca gaatacgcaa 60
 aagcagccaa acagtttagaa gatgaaaaat ctgaaatcaa acttgccaaa gttgatgcca 120
 ctgaagaagg cgatttggct gagaaatatg gtgttcgagg atatccaact ttaaaattct 180
 tccgtagcgg aagtgaaatt gattatacag gtggacgcca agctgatgac attattactt 240
 ggttgaaaaa gaagactgga ccaccagcta aagaactgga atctgttgat gacgccaag 300
 catttgttga ggaaagccaa gttgtcgta ttggtttctt taaggatcgt gaatcagctg 360
 aagctaaggc attcttgtca actgctaact ctgttgatga ttatccattt ggtatcacga 420
 gcaatgaaga agttataaca attangattt naatgtgggt ca 462

<210> 37
 <211> 0
 <212> DNA
 <213> Ctenocephalides felis

<400> 37
 000

<210> 38
 <211> 429
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (286)..(286)
 <223> n = unknown at position 286

<400> 38
 gatcggttgc aatttgtcat tgcaccaagc ataaattgat ggggtccggt gcataggtta 60
 taaaagaatt gggatttgtg catttcatga cggtgcaatc agcttctgac gatttctttt 120

FC-8-C2-PCT.ST25.txt

```

tacacatatt tttaaaatga tcatatacat aagttagggtg ggcattcgaa aacctgacct 180
ttaacatctt tgcagaataa gtatcttgtg caagtctttc gggatctggc tgatatccct 240
acaaaccgcg catggtagtt tctggccgtc ttacagtttt cccangttt tgatgagcac 300
atatcatcta cacaaaatgg agcatcggat ttgagtctct gcaattgatt gttgtattgg 360
ggtttcttgt ccagcgcaca acttcaaagt agaacaatcg tgacaaaatg ttcccaactg 420
cttattagt 429

```

```

<210> 39
<211> 498
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (426)..(426)
<223> n = unknown at 426

```

```

<400> 39
tgtatgagag ttttgcacg ccaggcggga tttattgctg aagttcaaca aagatgcttt 60
catgtctcgc cattaactgc catggccagc aagggtggcca tgagcaaatt cgacagtgat 120
tcttatctgc cttatggaaa attatcaaga aaatttaaaa gttgttaaaa agcgtttgaa 180
caggccatta actctttccg aaaaagtatt atattctcat ttagatgaac ctgaaaaaca 240
agaaattgaa agaggaacta gctacttacg ttttaagacc gatagagttg ctatgcaaga 300
tgctactgct caaatggcca tgttgcaatt tatttcatca gggctgccta aagttgccgt 360
tcctagcacg attcattgtg atcatttaat cgaagcacia atcggaggag atcaagatct 420
tgctanagcc aagacattaa taaagaagta tacagtttct tatccagtgc tagtgctaaa 480
tatggggtgg gcttttgg 498

```

```

<210> 40
<211> 498
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 40
tgcttgacga aattctcaaa gaagtcgttc ctgggtaata taagaaacgc agaacacttt 60
gtaggatttc tgaaaagatt tgtcgaatac atcaaaacca ggcttcgggt acagcatgtc 120
gtgcaggaat caccagcagg ttttctcaaa gacatccagt caaaagtatg catcgaaaga 180
aagcctctga gattttgtgc agaaagactc gcttctctgc ttcggactct ggaagtgcgc 240
gatatgactg attttggagc cctggttttg atcacacatt tagctacatt ggtttccacg 300
tatacacatg gatttactat tattgttgaa ccattcgatg ataagactcc gaatgtttcg 360
aacccgattt tgtatttcag ttgttttagat tcatcattag ccatgaggcc agttttctca 420

```

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FC-8-C2-PCT.ST25.txt

agatttcaat cagttgtcat cacatcagga actttgtcac ctttggatat gtatccaaag 480
 attttggatt ttcaacct 498

<210> 41
 <211> 177
 <212> DNA
 <213> Ctenocephalides felis

<400> 41
 aagggcaatt ttcggtttta ggcatattgg aatgaggcat tagcgaaatc tacaattgaa 60
 ctatcgggtgt tgaacattcc catggcgact ccaggtcctt ggtaagtgtg gacgggtgaag 120
 ctcatcggac ttcccgattc gggggtaaata gtcaattcta atttaccctt tcctgggt 177

<210> 42
 <211> 211
 <212> DNA
 <213> Ctenocephalides felis

<400> 42
 tgttccaata cctccaattt tgtagacatc ttgcaatggc agacggaggg gcttgtcgggt 60
 gggacgagct ggaggtaaga tggcatccaa agcttcaatc aagcatttgc cgtcagcctt 120
 gccttcttta cgttcaatgt tccatccctt gaaccagttc atcttggtgg aaacttccaa 180
 catgttgtct ccgtgccatc cagagatggg t 211

<210> 43
 <211> 452
 <212> DNA
 <213> Ctenocephalides felis

<400> 43
 tgaatgtatg aatttgggaag tctttagaat tctgtattgg gaaatcttcg cgataccatt 60
 taatcgtagg taaaggatcg ccatcaaatt ccacttcaaa acgagcttgt tcttgttcaa 120
 aagctctgca aggttgaatt ttctttgtga aaaatggagc tttagatgggt ttacaggac 180
 cttgaacaac tctttcaaata gttttgccct tgtgttcaac ttctgtcgtt tcggtcgcag 240
 taatcttgcg gggtatttct aaatctccca ctgtttcctt ttgtgtttgc ttttgtttgg 300
 caacatgaac ttcttttcca tgcactgttg attctgaagg ttcagggtggg tgacctggga 360
 catgttgaga atctattata tattctgttg tatgtggctt ttggatatat tttgctttag 420
 gaggagcatc aacagctgtc tcagtagttt gt 452

<210> 44
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<400> 44

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FC-8-C2-PCT.ST25.txt

```

tgcattctagt tccagtcaca tgttgatatt tgggtcttgc aagcattgaa tgcattgcat      60
gtcccatttc atgaaaaaga ttatctacca tagctgggct taaaagcgtg gggcttgacc      120
atcgcggtgg tgccaaatth aatacaacta ctactatagg attctgatat gaaccatcgg      180
atthctgtth accaccttgt atggtaaaat ggcaatcttg atthggctth cctgggtctth      240
cataaaaatc acaatatata tgacctagag ttccttcagt ctcatgaaca atththtaatt      300
tatatatatc attagcccaa gcttcaccag gtgccatttc ttcaattaca aatthtaatac      360
caaataaaga ttgcattaat atgtccaatc ctccataca accaccaagg ctaaaataag      420
gagcaaactc agatgctcca acttgtaacc attgcttcct gattthtttgt gtaagtaagg      480
tgtatcccaa gcagctaa
                                                                                   498

```

<210> 45
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (488)..(488)
 <223> n = unknown at position 488

```

<400> 45
caaccgaggc tcaagttaaa gcactgtcaa aggaatgggc taaccgtgcc acattaccag      60
ctcatgtagt cagthttatta aataatatgc ctagcaacct tcaccctatg tcacagttat      120
catgtgccgt cacagcatta aacagtgaga gcaaatttgc aaaagcctac agtgaaggag      180
tcaacaaagc taaatactgg gagtatgtat ttgaagacag tatgaactta attgctaaac      240
tgctttagt agcagcaaca atataccgca acacatacag ggatagtaaa ggaatttagt      300
ccattgatac aaacaaagat tggctctgcta atthcacaaa aatgttgggt tatgaggatg      360
aaaaattcac tgaattaatg cgtctatacc tcaccattca cagtgatcac gaaggtggca      420
atgtatcagc gcatacagtt catttagtag gatcagccct cagcgatcct acctctcatt      480
tgctgcangt atgaacgg
                                                                                   498

```

<210> 46
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

```

<400> 46
thththththth thththththth thththththth ttattgaaat tcattthattg aatataatta      60
aaatttcaca taththattat cataaththth ctacaththct aagcctthcat tataataccc      120
gttgcttgca gctccactag thththcttgc attagaatta atattgtthtg gataatcgtc      180
atththtaata ctthgtaththg taththgttaa atthththggcc catggctgca ctthcgccgga      240

```

FC-8-C2-PCT.ST25.txt

tgcaaaaaac caatatatca cagctcctaa caaatatatt ccacttgaaa tgtaaaatac 300
 aatttgccac gatgtgagta aatcatctcc aacctttcca ttaacaatga aaccagtcaa 360
 ttgagggctg attattcctg gcaatgttgc aaaagtattt gacaatccca tcagaacgct 420
 agcatattgt ggtgcgatgt ccaaattgatt tacactgaat ccagaccaag caaaagcgcc 480
 caaacccaca gcgactgcag 500

<210> 47
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<400> 47
 attgccttat tatcaatgct tttgtctaag ttcttgatga acacattgcc tacacctgac 60
 ttacgcaaag aggatctctt tgagaccaca taatgcgaat aggtctgccc ttgagcatat 120
 cgaagttcat ggtgtctatg gctcgctcgg catcggcagg ctgctggaaa ttaacgtagg 180
 cgtagcccaa ggagcgcctc gtgatcatgt ctcggcatac ccttatcgac aatacgggcc 240
 ccgcagtcga aaactttctca aacaacatcg cctcggtgat gtcggaatgc agatctccaa 300
 cataaaggga cgccatcggg tagttaggag cccctggatt catatcttac ggcctttata 360
 tacttaaacc acgaacaaat taattattaa taagaattga ttaaaaatat ctatatttcc 420
 aacgtggcgt atatctcctc aaaatggctc gtctgtcagt caaaccacgt tgaatgcgcg 480
 cactagtttc aacatttg 498

<210> 48
 <211> 375
 <212> DNA
 <213> Ctenocephalides felis

<400> 48
 tttcagaaga gaacttgctg ggtgttagat tcaacattta tgatgtcaca cttcatgctg 60
 atgctatcca cagaggaggt ggccaaatca ttcccacaac acgtcgttgc ttgtatgctt 120
 gcttaataac agctgcacca agattgatgg aacctgtata tcaatgtgaa attcagtgtc 180
 ctgaagttgc tgttgggtgg atctatgggtg tgtggaactg gtatagttat ttgacgctcc 240
 ttctcgaaaa catacaaac agccatggga aaggaaaagg ttcatattaa catcgtcgtc 300
 attggacacg tagattcagg taaatccacc acaactggac acttgatcta caaatgcggc 360
 ggtatcgaca agcgt 375

<210> 49
 <211> 168
 <212> DNA
 <213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<400> 49
 caaacggtgt gaactccttg cgcagccttt catcatcgat tgtgtcatca aggttcttga 60
 catacagggtt aacaccttgg tagcgattca gacgttctat tttcagctgc tcaaacttac 120
 gcttgagttc ttgttggcgt tcagctttct tttgagcacg gccaacgt 168

<210> 50
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<400> 50
 attttccttt aactttaatg agaatgggtca tatcagtaag atctttacca tcccatttat 60
 caaatgggttc caacaattgc aatcggtctg atttaggatac aacattaact ttcacacttg 120
 agccatctgc aggaggttgt tcatatgtat cttgacctgc atcgaaacct ttgcttgga 180
 gttcatcgcc aaagggtgaa tcaagtttga attctttgcc atcgcttcct ttcagagtat 240
 ctgttactgg attaaaatct aagcggccag caattgatag agctgtgact aattcaggac 300
 ttgtgacaaa acagtgagtg gcaggattag catcattacg gcctgtgaaa tttctattat 360
 atgaagtaac aattgtgttt ttctctcctt tcttcacatc cttacgatcc cactgaccga 420
 tgcaagggtcc acaggcattg ctaaaacagt gcccccaaaa ttcacgggag aagtttgggc 480
 aattccatct cgttcgat 498

<210> 51
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<400> 51
 aatcaataag aatattgggg ccagttccat caggaccaaa gcaccagatt ttacgagctt 60
 cagttacatc ataatacatc tgttcaccaa gataacgagc acgagctttg aattcatcac 120
 ggggggttgac ttttccactg tcgatgtctt ctgagaggcc atcaggcata ggttgtgcct 180
 tcatgaataa tctgttgtgc ttgtttggag atttagacaa gcacatttgg tctgattctt 240
 cagatacagt ttccctgtaa gatacaacag ggtcagattt ctttaattga atgcaagcat 300
 ggtcttcttc caaatctttc aagcaaattt ccaagtgcaa ttcaccggca ccagcaataa 360
 tgtgttcacc agattcttca atgatacatt ggaccatagg atctgatttg gccaggcggt 420
 tcaaaccttc taccaatttt ggcaagatca gcagggttct taggttcaac agcaacacgc 480
 acaacaggag aaactgag 498

<210> 52
 <211> 310
 <212> DNA
 <213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<400> 52
 cggcgcgacg atacgcgtgg agtcttcgcg ggggccggag tttatgatga cggttaccaa 60
 gatctgtaat ggattttctc cagtaagcaa atgaatgatt tcaaaagcgt gcttgacaat 120
 acggatggcc atcagttttt tgccattggt acgtccgtgc atcatcaggg agttggtcag 180
 acgttctacg atggggcact gggctttgcg gaaacgcttg gcagcgtatc taccagcaga 240
 gtggggtaga tatttggcgt tcttttcttt gacggcgatg taatcctgta gtgacatatt 300
 agagacttgt 310

<210> 53
 <211> 325
 <212> DNA
 <213> Ctenocephalides felis

<400> 53
 aatcacagca ggaagcaaat gacgacaggg agtgccataa agatggatgg aacttcttca 60
 acacagatat tgtttttcgac agaaatggag cagttgtggc cagatatcga aaattcaacc 120
 ttttttagtga aaaacaattc aataccacta aatttcccga acattcgaca tttgtcacag 180
 atttcaatgt aacgttcggg ctgttcacct gtttcgacat aatgttcaac gaaccagcct 240
 tggccatggg gagagaaggc gttagagact ttgcattccc aactatgtgg tttagcgaat 300
 tgccattctt aacagctcgt caagt 325

<210> 54
 <211> 623
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (581)..(581)
 <223> n = unknown at position 581

<400> 54
 caactaataa aacaagatcg gcttcttcag ctcttgcaat agaattattc agtatataat 60
 ttgatctcaa atctgtgccg gcaccttctg atggaaatga ttgttcagtg tataaatttt 120
 ccgatactat tttattgaac aagtctttga gtgataccaa tgcctctgca tcagcaagac 180
 caccagcgac tgcagcaatc tggcatggct ccacaccttg caaggcttta catacagcaa 240
 taagtgctga ttcccaatca acaacttcta attgtgatcc tgatttcctt aacatgggtg 300
 tgactaatct ttgtcgttta agaccatcaa tagcaaactc agatttatcg gataaccatt 360
 cttcattaat ttctcatta gttcttggtg aaactcgtaa aacttcccca gatcttgagc 420
 taacaacaat attgctccct atagcatcta aaatatcaat agaatcgatc cggcgagttt 480
 cccaagagtg aaaagtaaac gctgtagggt tcgacgttaa agcaccaaca ggacacaagt 540

FC-8-C2-PCT.ST25.txt

caataacatt accagataat tcaagtcata aaaagggtttt ncacatatgt gccaaacttgc 600
atgtcgtttc cagcactgt agt 623

<210> 55
<211> 527
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (528)..(528)
<223> n = unknown at position 528

<220>
<221> misc_feature
<222> (540)..(540)
<223> n = unknown at position 540

<220>
<221> misc_feature
<222> (556)..(556)
<223> n = unknown at position 556

<220>
<221> misc_feature
<222> (595)..(595)
<223> n = unknown at position 595

<220>
<221> misc_feature
<222> (615)..(615)
<223> n = unknown at position 615

<220>
<221> misc_feature
<222> (631)..(631)
<223> n = unknown at position 631

<220>
<221> misc_feature
<222> (658)..(658)
<223> n = unknown at position 658

<220>
<221> misc_feature
<222> (672)..(672)
<223> n = unknown at position 672

<220>
<221> misc_feature
<222> (688)..(688)
<223> n = unknown at position 688

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (698)..(698)
 <223> n = unknown at position 698

<220>
 <221> misc_feature
 <222> (702)..(702)
 <223> n = unknown at position 702

<220>
 <221> misc_feature
 <222> (705)..(705)
 <223> n = unknown at position 705

<220>
 <221> misc_feature
 <222> (707)..(707)
 <223> n = unknown at position 707

<220>
 <221> misc_feature
 <222> (711)..(711)
 <223> n = unknown at position 711

<220>
 <221> misc_feature
 <222> (744)..(744)
 <223> n = unknown at position 744

<400> 55
 ttaatttttaa taaaagtgca tgcgaaaatc tagccgcaat gtctggaatg ttgacgattt 60
 catcgcggaac cattccgcga aaagtttttac gacttgcgac agatctcgta gaggcaaata 120
 attcaaaggt tctgaaagca gccttaagta ctaaagcctc acacaaacaa tgcgttctaa 180
 gactagccaa accagaggta tataacatac ctagaacaaa ggtgttaatg aagtggcctc 240
 aacataatcg attagtgcac tcttctgcag ctttttatgc atcaaaagta gttaatgtac 300
 ctccatttgc agattctgta tcagaaggcg atgtcaagtt ggacaaaaag gtaggtgact 360
 atgtgtctgt cgatgaagtg gttatggaaa ttgagactga caaaacatcc atgcctgttc 420
 cggcaccaga aggtggtggt attgaagaaa tcttagttaa agatggtgac actgtcaaag 480
 ctggacaggc tttgttcaaa ctgaacactt cagctgcacc accagca 527

<210> 56
 <211> 0
 <212> DNA
 <213> Ctenocephalides felis

<220>

FC-8-C2-PCT.ST25.txt

<221> misc_feature
<222> (5)..(5)
<223> n = unknown at 5

<220>
<221> misc_feature
<222> (37)..(37)
<223> n = unknown at 37

<220>
<221> misc_feature
<222> (41)..(41)
<223> n = unknown at 41

<220>
<221> misc_feature
<222> (206)..(206)
<223> n = unknown at 206

<220>
<221> misc_feature
<222> (248)..(248)
<223> n = unknown at 248

<220>
<221> misc_feature
<222> (279)..(279)
<223> n = unknown at 279

<220>
<221> misc_feature
<222> (298)..(298)
<223> n = unknown at 298

<220>
<221> misc_feature
<222> (306)..(306)
<223> n = unknown at 306

<220>
<221> misc_feature
<222> (346)..(346)
<223> n = unknown at 346

<220>
<221> misc_feature
<222> (352)..(352)
<223> n = unknown at 352

<220>
<221> misc_feature
<222> (356)..(356)
<223> n = unknown at 356

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<220>
<221> misc_feature
<222> (364)..(364)
<223> n = unknown at 364

<220>
<221> misc_feature
<222> (371)..(371)
<223> n = unknown at 371

<220>
<221> misc_feature
<222> (386)..(386)
<223> n = unknown at 386

<220>
<221> misc_feature
<222> (401)..(401)
<223> n = unknown at 401

<220>
<221> misc_feature
<222> (409)..(409)
<223> n = unknown at 409

<220>
<221> misc_feature
<222> (431)..(431)
<223> n = unknown at 431

<220>
<221> misc_feature
<222> (448)..(448)
<223> n = unknown at 448

<400> 56
000

<210> 57
<211> 498
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (496)..(496)
<223> n = unknown at 496

<400> 57
acacatgatc taatcatcct tctttgaatc tgtctttcca ccacgtattc taccagtacg 60
tcttgcagca ataagaccaa tcttacgacc agcagatggt cctctcttaa cagtagatgc 120

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```

tttaccaata tgttgatggt taccacctcc gtgaggatgc tcaacagggt tcatagcaac      180
accacgaacc ttaggccagc agttcctctt aaccttgtat ttgtggtatg ctctaccagc      240
tttcaaaata ggtttgtcaa tacgtccacc accagacaca ataccaacca tagcacgatt      300
gttagaaggc ataacctttt tagctccaga tggaagcttg acacgagtct ttttagtgtc      360
cgggttgtga gcaataacag tagcgtagtt tccagaagca cgggctagcc gacctcggtc      420
accagttttc tcctctaagt tgcatacaat ggttccttct ggcatagcac caactggcat      480
tacatttcct atttgnag                                                    498

```

```

<210> 58
<211> 190
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 58
acgtttgggc aatgggaacc tgattttcgc atcgtggaat tgtgtaactt gagggcgtct      60
acaattagca gctttcactt cttccacttt gattacttga atagagttag caccagccct      120
gtggcgtgca cccatgtcac gatagcactg agtgacggca cctccgacag ttaagtctct      180
gtattccctg                                                                190

```

```

<210> 59
<211> 393
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (61)..(61)
<223> n = unknown at 61

```

```

<220>
<221> misc_feature
<222> (69)..(69)
<223> n = unknown at 69

```

```

<400> 59
tctccaatat caaagcaggc tacagacaga acaaggggat caccagagct ttcaagtaag      60
nggatcaana tacgcaataa ctcataattc ttctcattga gacgtggggc attctctctc      120
cagaacttag cagatttgtg aacagggtgac cattccaatc tgccggactt gatttctgta      180
gcatattcat caaatgagct aaggtcttga atggaagctt gtaatttttc ggtcaaatat      240
tcaacatcag caacgatatc ctcatcatct gaacgtcttt gttccaggat ggataattgt      300
ttcaatacct tgctttgcac cattgcaatg caatgctcct tggccacctg ttgatcttcc      360
actttctcaa ttaaattcct ataaacagcc agt                                    393

```

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<210> 60
 <211> 307
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (62)..(62)
 <223> n = unknown at 62

<400> 60
 tggcgacacc tgactactct cacaccggtg agctacaaac gctcaacatg aagctaagaa 60
 anactctaga gttatatgcc aatgttgttc atgttaaaag ttgcccagga gttcgctcta 120
 ggcataagaa tattgactgt gtaatcattc gtgaacaaac tgagggagag tatagtgttt 180
 tggagcacga aagcggtaca ggagttgtag aatgttttaa aattataaca gctaagaaat 240
 ctgaaaggat tgccaaattc gcttttgact atgcaacaaa gcacaatcga aagaagggtga 300
 ctgctgt 307

<210> 61
 <211> 229
 <212> DNA
 <213> Ctenocephalides felis

<400> 61
 gaaaggccgt gatcttttttg ccattttttga tcaattggac acggacacac ttgcggatgg 60
 cagagttggg ctgttttggt tctacgcaa ctttctcaa aacgattccc ttagcgtgag 120
 aagcacctcc gaaaggattg gccttccacc tggttcctaa atgagccttt ttgtagtctt 180
 tgtcggccca cctttggtca cgacgatggt taacatgttt tctagcagt 229

<210> 62
 <211> 326
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (194)..(194)
 <223> n = unknown at 194

<220>
 <221> misc_feature
 <222> (248)..(248)
 <223> n = unknown at 248

<220>
 <221> misc_feature
 <222> (279)..(279)
 <223> n = unknown at 279

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FC-8-C2-PCT.ST25.txt

<220>
<221> misc_feature
<222> (327)..(327)
<223> n = unknown at 327

<220>
<221> misc_feature
<222> (347)..(347)
<223> n = unknown at 347

<220>
<221> misc_feature
<222> (362)..(362)
<223> n = unknown at 362

<220>
<221> misc_feature
<222> (369)..(369)
<223> n = unknown at 369

<220>
<221> misc_feature
<222> (374)..(374)
<223> n = unknown at 374

<220>
<221> misc_feature
<222> (381)..(381)
<223> n = unknown at 381

<220>
<221> misc_feature
<222> (397)..(397)
<223> n = unknown at 397

<220>
<221> misc_feature
<222> (400)..(400)
<223> n = unknown at 400

<220>
<221> misc_feature
<222> (426)..(426)
<223> n = unknown at 426

<220>
<221> misc_feature
<222> (432)..(432)
<223> n = unknown at 432

<400> 62
atcactagct catcatgtta tagctgcttg gtttttaaaa tgcaggctgc ctttcaggag

60

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```

agatttttgta aaatttatca ccacgggtatg tgtgaaatat aacaattgtg ttaacttggt      120
agtaaacaaa atatattaat caattcatga cgtatagggc ctaaaatcaa attgcattgc      180
accatttgag gaangaagga tattaattaa accagagggtt acaactttga atgaagaatc      240
atcttacnga aaaagaaagt ctaggttaac agaaccagnt aggtatttgg aggttttcat      300
aagaaaaatg ggtgaaatgg taaatg                                           326

```

```

<210> 63
<211> 525
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (5)..(5)
<223> n = unknown at position 5

```

```

<220>
<221> misc_feature
<222> (15)..(16)
<223> n = unknown at positions 15 and 16

```

```

<220>
<221> misc_feature
<222> (20)..(20)
<223> n = unknown at position 20

```

```

<220>
<221> misc_feature
<222> (24)..(24)
<223> n = unknown at position 24

```

```

<220>
<221> misc_feature
<222> (29)..(29)
<223> n = unknown at position 29

```

```

<220>
<221> misc_feature
<222> (31)..(31)
<223> n = unknown at position 31

```

```

<220>
<221> misc_feature
<222> (43)..(43)
<223> n = unknown at position 43

```

```

<220>
<221> misc_feature
<222> (48)..(48)
<223> n = unknown at position 48

```

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (55)..(55)
 <223> n = unknown at position 55

<220>
 <221> misc_feature
 <222> (127)..(127)
 <223> n = unknown at position 127

<400> 63
 . tgggnactat tggtnngctn tttntaaanc nccccgcctt tcnggtanat cctcncagtg 60
 ggccagtttag acataacgtg gccacatata cctacagcat ccatttcaat gttagataga 120
 cctgatncat cggagtaagt agcctgcgaa agcaaagtgt gtaaggcgtg tccaaatttg 180
 ttgaataaaa ttgatacctc ttttagagac agaagagaag gtatattgcc ctcaggagga 240
 tttagactta aaattaatga tgctaattgt gttgtatcca caattttact tttattgcgc 300
 atactcaaca tccatcctga actcttttgg aatatcttct cttcttctct agtataagga 360
 tctaaataaa atccagccag tggcaattca gctgcagaat catgtatatc aaaatacctt 420
 acatctttat gccaagtatt catatttgac ctttcgataa ttttaatacc atacaacttt 480
 tcacacaact gaaatagccc gttcaaaacc tttggaaatg ggaag 525

<210> 64
 <211> 164
 <212> DNA
 <213> Ctenocephalides felis

<400> 64
 gaaacaacag ctgctgggtt gtaaccgatc ttcttgatgt atgaggatac ttccttcttg 60
 atttcctcga aacggttctc gctgtatggt ggctcagtgg agtccatctt gttgacacca 120
 acgatcagtt gttttacacc gagggtgaaa gccacaagg cgtg 164

<210> 65
 <211> 490
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (4)..(4)
 <223> n = unknown at position 4

<220>
 <221> misc_feature
 <222> (12)..(12)
 <223> n = unknown at position 12

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<220>
<221> misc_feature
<222> (19)..(19)
<223> n = unknown at position 19

<220>
<221> misc_feature
<222> (22)..(22)
<223> n = unknown at position 22

<220>
<221> misc_feature
<222> (41)..(41)
<223> n = unknown at position 41

<220>
<221> misc_feature
<222> (74)..(74)
<223> n = unknown at position 74

<220>
<221> misc_feature
<222> (82)..(82)
<223> n = unknown at position 82

<220>
<221> misc_feature
<222> (107)..(107)
<223> n = unknown at position 107

<220>
<221> misc_feature
<222> (216)..(216)
<223> n = unknown at position 216

<220>
<221> misc_feature
<222> (252)..(252)
<223> n = unknown at position 252

<220>
<221> misc_feature
<222> (298)..(298)
<223> n = unknown at position 298

<220>
<221> misc_feature
<222> (450)..(450)
<223> n = unknown at position 450

<400> 65
ctgncagtcc ancaccctnt gncaatttaa acattagctg naatcttcca gtggctccta 60

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```

agtcaattcc agancgatct anttcatctg tgtcaagtga ggattgncca gtttgtaa
120
at  cttagcctctc agtaacattt ccaactttca taggtcgacc agccaattca aatccattta
180
at  actgctctaa tgcttttttta gcatcatcgt gattgngaaa cgttaaaaag ccatatccct
240
at  tagaccgccg gnttccggat ccattatcaa ttgtatgctg tcaatttttc caaaaggntc
300
at  aaatattcct cttaacatat cttcagttat attgaaatgt aacgaaccaa catataatct
360
at  catgggacca gtatggcctt tgggtgctaaa ttgggcattg aattacccat gcgatttttt
420
at  tcagcctgtg tgcgctgaac tacaatcggg attcctaata acttttgcct ggtagaccta
480
at  aaggcaatgg
490

```

```

<210> 66
<211> 97
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 66
ttctcatgat gggtcggttat gtagaactat tgaagatgtt ccttctggta acatttgcgg
60
tttggtcggt gttgatcagt tcttagtcaa gacaggt
97

```

```

<210> 67
<211> 533
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (30)..(30)
<223> n = unknown at position 30

```

```

<220>
<221> misc_feature
<222> (73)..(73)
<223> n = unknown at position 73

```

```

<400> 67
ctggctaaca cattatntag aaattactgn aattccgaga actcatgtct taaaagaact
60
tgctgaatac tgntctgatg aaaaagaaaa agaacaatta aaattaatga gctcaactgc
120
tccagaagga aaacaattgt atcaagattg gggtgttgac cagaaccgca atattgtgca
180
tattttggaa gatctgccat catgtcgtcc tccaattgat catctgtgtg aattgttacc
240
tcgcttacia ccacgttatt actcaatttc aagtagtgct aagctgtttc ctaccacagt
300
tcatatcact gctgttctag tgaagtataa aactccaact ggtagaatca acaaagggtg
360
tgcaacatct tggctggcca agttcaaccc cagtcctgag aaacctcaag ttgtgcctat
420
atttattaga aaaagtcaat tcagactgcc aaccaggtct cagactccaa ttattatggg
480
tggcctggcc aaatctcttt cttgtataaa tcctctgaaa ggagccaaac ctg
533

```

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<210> 68
 <211> 439
 <212> DNA
 <213> Ctenocephalides felis

<400> 68
 tcgtggggta gttcttggga aaatttcttg gcttccctgt gatacatttc ctgagcccgt 60
 gaacacgaac gtcaatggac ctacagattt tggcatcata cctaaagcga tttcatatcc 120
 agcatccctt atggattgtc tggccatgga ggaatttctg taattgtgag ccaatccaat 180
 atgcatgaaa ggtgtatgat gacccaaagc taaaagacgt aaacctaata cgtgcaaaat 240
 attgatcata ccggcaacac cagcataattt tccaaatgct actactcttt ggcccttttc 300
 gtccatcaac ttttcataat cgataagacg aatattcttt tccataattg catcaagtaa 360
 aggcatatta gattcttggg ctttgataac atgtgaaaac atgcagtagg ttttattggg 420
 aattaattgt tctacaggt 439

<210> 69
 <211> 268
 <212> DNA
 <213> Ctenocephalides felis

<400> 69
 ccacaggaaa ggaggtagct atcaaaatta ttgacaaaac acagctcaat cctggttcgc 60
 ttcaaaaact tttccgagag gtgcgcatca tgaaaatggt ggatcaccca aatattgtaa 120
 aactgtttca agtgattgag acagaaaaaa ctttataatct agtaatggaa tatgcatcag 180
 gtggtgaagt gtttgattat cttgttcttc atggtaggat gaaagaaaag gaagctagag 240
 ccaaatttag gcaaattggt agcgctgt 268

<210> 70
 <211> 145
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (49)..(49)
 <223> n = unknown at position 49

<220>
 <221> misc_feature
 <222> (71)..(71)
 <223> n = unknown at position 71

<400> 70
 ctctcgtcgc taactctcaa ttcctgggtg acttgctcgt agtctccgnt caaagtcgat 60
 aattcctgct ngatatttgct ctttgagctt gccaaattga cgttgattac cgtcaactcg 120

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ttgatgcggg cgacgctctc ctggt

145

<210> 71
 <211> 327
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (207)..(207)
 <223> n = unknown at position 207

<220>
 <221> misc_feature
 <222> (227)..(227)
 <223> n = unknown at position 227

<220>
 <221> misc_feature
 <222> (304)..(304)
 <223> n = unknown at position 304

<400> 71
 gagtgcacag aaaattctct accttgagaa agtttatgga aaaattagag aattgtaact 60
 atgctgttga tcttgga aaa cagatcaagt tctcactagt tggatttgct ggacaggaca 120
 tcaagtgaag gaaatgctac tttaacttta ggcgccatat ggcagcttga tgagagctta 180
 tactttatct gtgttgacac gtttggnaaa cactggaagt ccaatanttg aaagagaaat 240
 tgttcagtgg gtgaatacca agctagcagg tgccaataaa acaacatctt tgagtagctt 300
 tccnaggaca aaacaatttc agatgct 327

<210> 72
 <211> 304
 <212> DNA
 <213> Ctenocephalides felis

<400> 72
 cattgtggat gaggcaaadc ccatatacca tgatgaagtt tgcttggttc gaaagaacag 60
 ttgaattggt atacactcat gtggttccca aaccagagc agaatgcact aaaggtgaac 120
 aattgggtgt cacctttgct gctggttaca ttgccggtgt attctgtgca gtagtttctc 180
 atcctgcaga cacagttggt tccaagctaa atcaagacaa aggagcaaca gccattgacg 240
 ctgcaaaaaa cttggctttg ctggtttatg gaagggatta ggacctagga tcatcatgat 300
 tggt 304

<210> 73
 <211> 232
 <212> DNA

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<213> Ctenocephalides felis

<400> 73

```

caaagtgatt taccagagaa gtttgtgaaa gacttgggtg tcctcaacgc tttatcagac      60
aaagtcttgg aattaacccc cgatgaacgc cctacctgtt cttcttccgc ttatcaacaa      120
at ttcaa atc ccccgaagac accgacaaag ccaaaacaga gctcaccaaa gccatcaaaa      180
ccttgagcga ggctttt gat aaaacctaca aaggcaaagt gctgttcaca gt              232

```

<210> 74

<211> 339

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (108)..(108)

<223> n = unknown at position 108

<220>

<221> misc_feature

<222> (284)..(284)

<223> n = unknown at position 284

<400> 74

```

gtaacccgat tctacacgag ttggtttttaa aactaagctc ggatgacgtt tatgttaatc      60
aataagtatg cagaagaata tg ttttctta aaacattgga caggaacnca cgaagaagat      120
caagtccaaa taaagaaacg tcgtgaagtc ttggagcgtt tttgcaaact tattgaattt      180
ggtatcatat cagttaccag cgcgtccttt gttttgatgt attatgtgaa gtgtgaaaaa      240
tgctatggag atatcataaa gaaaatgggt gccacgatgt gcancctcag caggacaaat      300
tgcaccatgg tcatgttcct gagtttggcg aaaatttat                                339

```

<210> 75

<211> 339

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (108)..(108)

<223> n = unknown at position 108

<220>

<221> misc_feature

<222> (284)..(284)

<223> n = unknown at position 284

<400> 75

```

gtaacccgat tctacacgag ttggtttttaa aactaagctc ggatgacgtt tatgttaatc      60

```

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```

aataagtatg cagaagaata tgttttctta aaacattgga caggaacnca cgaagaagat      120
caagtccaaa taaagaaacg tcgtgaagtc ttggagcggtt tttgcaaact tattgaattt      180
ggtatcatatc cagttaccag cgcgtccttt gttttgatgt attatgtgaa gtgtgaaaaa      240
tgctatggag atatcataaa gaaaatgggt gccacgatgt gcancctcag caggacaaat      300
tgcaccatgg tcatgttcct gagtttggcg aaaatttat      339

```

```

<210> 76
<211> 188
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (39)..(39)
<223> n = unknown at position 39

```

```

<220>
<221> misc_feature
<222> (61)..(61)
<223> n = unknown at position 61

```

```

<220>
<221> misc_feature
<222> (182)..(182)
<223> n = unknown at position 182

```

```

<400> 76
cccagaagta tctgctttgg agcacgattt attgaagtng atccagaaac taaagaaatg      60
ntgagcatgc tagatttcaa gaacatcagt ggtctgcaat taactcaacc ccaaacattc      120
aatgctaggg gttaatatga aaatgtcagt tatattctta taaataaata tatataactg      180
gnaaataa      188

```

```

<210> 77
<211> 468
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (436)..(436)
<223> n = unknown at position 436

```

```

<220>
<221> misc_feature
<222> (442)..(442)
<223> n = unknown at position 442

```

```

<400> 77
ccacagaatt aaggtgggtt caaggcccaa gacttgcaga acactttcat gatcaaagaa      60

```

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```

ttgtcccagt atatttagat atggagggtg aacatccact attcactgaa actattgata      120
tgtgcttatac tgtttatcca cctgatgccg gacctccaca tgtaaagctt cagttagaat      180
ggctctatgaa agaatatgaa gaaattattc aacatccagg ggatgtttta gaagatcatt      240
ttagtggtgct tgaagtgctg ccaaaagtga aaatgcaaat cctctaactt tagagcagtg      300
cttagaacat tataccagag cagagactct ctctgatgaa gatgcctgga ggtgtccaca      360
ttgcaaaagt atatgccggt tgtaagact ttgggcttgt ggcattacct gatatactag      420
taatacattt taaganggtc angcagcacc aaattaaggc aatagaag                    468

```

```

<210> 78
<211> 382
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (13)..(13)
<223> n = unknown at position 13

```

```

<220>
<221> misc_feature
<222> (67)..(67)
<223> n = unknown at position 67

```

```

<400> 78
ttaagtctgg atncacccaa taacaatggt gggtggaac gcccatagaa ttcattcaat      60
tccgggnagt ttttttcttc gcgggggtctc ttcacaggctc tctaattcct ctatttcgcc      120
ttctggacga tctaattcctg gatgggtggt gaacaagttg gctacgaacg ctaaattcaa      180
cttataaacg ccattaacaa catctgctgc tgttacaaag cttctgcatt tgagtttagc      240
agcttggtgc agcatgatct cagctctctt tgtcatatct tgttccatga gagcttcggt      300
cgtaacttga gcttctggag gtgcaatttg tttcaacaga atagtataaa cctctgaatc      360
cgaaatgtcg acttggaagt ta                                              382

```

```

<210> 79
<211> 141
<212> DNA
<213> Ctenocephalides felis

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<220>
<221> misc_feature
<222> (55)..(55)
<223> n = unknown at position 55

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<400> 79
gtttgtgctt gcacatataa atattaaaaa tgtctaaaag aggacctggt ggttnagccg      60

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FC-8-C2-PCT.ST25.txt

gagctaaatt ccgcatctcc ttgggtctgc ctgtcggagc tgttattaat tgtgccgata 120
 acactggggc caagaacttg t 141

<210> 80
 <211> 247
 <212> DNA
 <213> Ctenocephalides felis

<400> 80
 gttgacccat aatcggtttg tagttaacac atcttctact tcacttaaac gtcagcaaa 60
 ctttgaagca aattcgtaaa tatcatccat caatccaatt gggcatatcc tgtgacacac 120
 caccaggacg aatataagca gcatgcattc tagcgctga tactctttca tagaattcca 180
 tcattttttc tctttcctca aaaagccaga aaaagggtgt caaagctcct acatccaatg 240
 catgtgt 247

<210> 81
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (11)..(11)
 <223> n = unknown at position 11

<220>
 <221> misc_feature
 <222> (28)..(28)
 <223> n = unknown at position 28

<220>
 <221> misc_feature
 <222> (31)..(31)
 <223> n = unknown at position 31

<220>
 <221> misc_feature
 <222> (72)..(72)
 <223> n = unknown at position 72

<220>
 <221> misc_feature
 <222> (74)..(74)
 <223> n = unknown at position 74

<220>
 <221> misc_feature
 <222> (105)..(105)
 <223> n = unknown at position 105

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (128)..(128)
 <223> n = unknown at position 128

<220>
 <221> misc_feature
 <222> (170)..(170)
 <223> n = unknown at position 170

<220>
 <221> misc_feature
 <222> (424)..(424)
 <223> n = unknown at position 424

<220>
 <221> misc_feature
 <222> (457)..(457)
 <223> n = unknown at position 457

<220>
 <221> misc_feature
 <222> (490)..(490)
 <223> n = unknown at position 490

<400> 81
 aatttctccg ntaattggtg gagcctgntg ntcttcttga gtagagattt cagtaagaga 60
 attacagttt gngntgccgg aagccaattg cgcttttaaat aaagnatttt ggtcttttaa 120
 ttgattgnta cttatcacta cttcctctag ctgactctgg attgcattgn tttgattgga 180
 taactgctga gcttgcacgc gcaattgcat catctgcata tcttgctctc gaataatatt 240
 tttatatattg cacaataaag cagactcttg ttcagataac gacatttcag ataaattcaa 300
 attattgggtt ccatctccaa atgatgttat tgtcttgaca ataagtgcct ctagagcttt 360
 gaatagttca caaaattcat aatcaagtaa cagctctcta tacttagtag cttttatagc 420
 aggntgcttt gcagctaaac tatacatctc gtgccgngag aattttgata gctttgcaac 480
 aaacgtctcn ctccaatt 498

<210> 82
 <211> 353
 <212> DNA
 <213> Ctenocephalides felis

<400> 82
 agtatacttt gacaaaatat aaatgccaat atgcagtcga agaataggcg ttcttgctgt 60
 cttgcacaaa tctccagaca tattgtggga tgttcaaaat tacttttttag aagcagcacc 120
 aacttttagat tttttcgttc ctgggacttt cttcattctg ttcttacggt ctttacggtg 180
 tttacgtgtc tggttgcttct tttcatagag accgtgcctt cctaacctgt gtttaggttc 240

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FC-8-C2-PCT.ST25.txt

aaattttcttg gcatagtcta atgagtcgta gattaaagca aatccagttg atttgccacc 300
 accaaagttt gtgcggaagc cgaatacaaa tactacatct gatgtaactt tgt 353

<210> 83
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (205)..(205)
 <223> n = unknown at position 205

<400> 83
 ccaaattattg cagttcctac acgaacaata ttgctgcccc tttcaatcgc ttgttcaaag 60
 tcgtcagaca ttcccataga taaattaact tcttttggtt ctaaatttaa ttccttgcat 120
 aattgctcac gacattgttt taaagtgaga aaatctgggt tgggtcctaa acttgatatca 180
 tagccatatt ttccaatagt cattnaacca tcaacaagta gggttgggca attttctttc 240
 acatatttgt atagagttgt tgcctcattt ggggtgaacac catgtttttc tatttcacca 300
 cttgtattta ttggaatcat aactcttaat ttatcaccat gaaatttatt agctgaatct 360
 aattttgacc aagcattctg cacactgcgg ctaatttaaa tgagtgaatt gtttcgacca 420
 tatatatccc aggtatgtta accaccttat taattttatt tctttgaaga tgacctataa 480
 aatgccattt atttcttt 498

<210> 84
 <211> 268
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (4)..(4)
 <223> n = unknown at position 4

<220>
 <221> misc_feature
 <222> (35)..(35)
 <223> n = unknown at position 35

<220>
 <221> misc_feature
 <222> (156)..(156)
 <223> n = unknown at position 156

<220>
 <221> misc_feature
 <222> (181)..(181)

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FC-8-C2-PCT.ST25.txt

<223> n = unknown at position 181

<220>

<221> misc_feature

<222> (233)..(233)

<223> n = unknown at position 233

<400> 84

ttgntttccac tttggcccca acagtgagga aaggngtgta ttattttaagt atagcagctg 60

caggattttt ggtattcata attgcattaa caattatacg ttttaataata ttctgtataa 120

tttggatcat aacacttggt aaacatcatt tatggntatt tccaaattta acaaaagaag 180

ntgggggtctt tgcattcattt tggcctctat ataagtatga atataaagga ggngaagcat 240

tagaaaatac tagcaaaaaa aaaaaaaa 268

<210> 85

<211> 223

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (19)..(19)

<223> n = unknown at position 19

<400> 85

aggttcaaca ccaactgtng agtatccaac caatcttgcc aaaggtttta agccatgctg 60

tttgcaggat tcttctgatg ctaaaacaat cgctgctgct ccatccgata ttccggaagc 120

agatccagct gtgacaacgc catctttctt gaaaattgta ggtaatttgg ataaactttc 180

tagagttggt tgtggtcttg gatgttcac tacacagaat tgt 223

<210> 86

<211> 252

<212> DNA

<213> Ctenocephalides felis

<400> 86

attgccttct ttatctagtc gggttttcat tcttgcgata aaatcgttgg caatttcttc 60

aatccatcca acatattgcc ttgtaatctt atgctgcac atgggctgat ttactactga 120

ccgaattttt tgccattctt ccccttgatga gtgaattaga ccataaacag atttgaaaac 180

ttctgggtctt ttttctctca agtaatatc tcgtgattca aaagctgggc tatcaggcca 240

aggcccttca gt 252

<210> 87

<211> 235

<212> DNA

<213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<400> 87
aatccaggga gaccatcaga cttgaagatt ttggtcaagc agttgccc aa tccagagaat 60
tcacgttgac cagcgccttt acctacatca gcggccaatc tggtagcggc gaaatcaagt 120
gggtagacga agcacaatga tgtgggtcca gcagcaccac cagatgccaa gtttcctgcg 180
aagtaacgcc agaattgggt cttcttgtca actccacca agaaaacttg cttgt 235

<210> 88
<211> 498
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (59)..(59)
<223> n = unknown at position 59

<220>
<221> misc_feature
<222> (365)..(365)
<223> n = unknown at position 365

<220>
<221> misc_feature
<222> (404)..(404)
<223> n = unknown at position 404

<220>
<221> misc_feature
<222> (456)..(456)
<223> n = unknown at position 456

<400> 88
ataaagtatc cgttcaatgg taacgtttca gcagcaaacc aataattagt aacatctana 60
aaaggagctg ataatgacaa agctgctaaa aaacaggtat gtcttaaagc aactcttcta 120
cataatgcag gatcagtaac tgccatcatt ctatacccag ctctactgta atccggtctt 180
aaattccaag ataatgcatt aaaatgtgga aattgccacg tatataaaag acctcctaag 240
ataaatgctc ctgcacttaa attaccggaa caagcagccc aaccattag gggtagggatt 300
gctccgacga ttgatccaac ccaagtattc agaatactta ttcttttcat tggagtatat 360
acggnggtat ataattataa attagctgct cctaactctg ctgntaaacc atttacacca 420
aaatatacat acctatccc tagatgcagc aaccgnagca aaacctacag catgtatgga 480
cttaaaatcc cctgacta 498

<210> 89
<211> 293
<212> DNA

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FC-8-C2-PCT.ST25.txt

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (24)..(24)

<223> n = unknown at position 24

<220>

<221> misc_feature

<222> (50)..(50)

<223> n = unknown at position 50

<220>

<221> misc_feature

<222> (92)..(92)

<223> n = unknown at position 92

<220>

<221> misc_feature

<222> (282)..(282)

<223> n = unknown at position 282

<400> 89

ttttttttttt tttttttttt tttngcacat tatattaata taatcacttn ggccttttta 60

gacttgatct tcctcatgta gaattccaat tnttttcctt ctaagatata accatctgca 120

cgtccacatt gtccaggacg agaggaaaca gcagctaata gacgaccagt agcaaactgt 180

tcttccagag cttgctcaac tttagcaaca cgttgtcttg ttgcatattt tttagccacc 240

ttcttactgc gtttttttatt cataactgct tcttcttcag gngtgagctt agt 293

<210> 90

<211> 498

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (28)..(28)

<223> n = unknown at position 28

<220>

<221> misc_feature

<222> (66)..(66)

<223> n = unknown at position 66

<220>

<221> misc_feature

<222> (73)..(73)

<223> n = unknown at position 73

<400> 90

cattcatgca aatggggcat catttttntt tatttgtatt tacattcata ttggacgagg 60

FC-8-C2-PCT.ST25.txt

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aatggnatta ttntagttac aaattacatg aaacttgatt tattgggtta ttaattttat      120
tttttagtaat aggaactgct tttataggat atgtattacc ttgaggacaa atatcatttt      180
gaggagcaac tgttattaca aacttaattt ctgctattct atatattgga aattcaattg      240
ttcaatgatt atgaggagga tttgcagttg ataatgctac ttttaactga ttctttatga      300
ttcattttttt attaccattt attatttctg cttttgtaat aattcatttg ctttttcttc      360
atcaaactgg atctaataat cctttaggaa ttaatagtaa tatttacaaa attccttttc      420
atccttattt ctctctaaaa gatttattag gatttatttt tttatttaca atattaatta      480
tattaactct tattaatc                                          498

```

```

<210> 91
<211> 339
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (46)..(46)
<223> n = unknown at position 46

```

```

<220>
<221> misc_feature
<222> (208)..(208)
<223> n = unknown at position 208

```

```

<220>
<221> misc_feature
<222> (223)..(223)
<223> n = unknown at position 223

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```

<220>
<221> misc_feature
<222> (234)..(234)
<223> n = unknown at position 234

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```

<220>
<221> misc_feature
<222> (289)..(289)
<223> n = unknown at position 289

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```

<400> 91
gggatatatt ataagatctt tattttataa taaattatat aatcgntatt tacttgaaag      60
acaaaatatt gaaattattt gaacaattct acctgcattt atattaattt ttattgcttt      120
accttctctt cgacttttat atttattaga tgattcaaat aggcctttaa tttctttaaa      180
agcaattggt catcaatgat attgaagnta tgaatatact gantttaata atanttcttt      240
tgattcatat ataattccat ctaatgaatt aaatttaaatt tcatttcgnt tattagatgg      300

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FC-8-C2-PCT.ST25.txt

tgataatcga attatcttac ctattaattc acaaattcg

339

<210> 92
 <211> 234
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (49)..(49)
 <223> n = unknown at position 49

<220>
 <221> misc_feature
 <222> (59)..(59)
 <223> n = unknown at position 59

<220>
 <221> misc_feature
 <222> (61)..(61)
 <223> n = unknown at position 61

<220>
 <221> misc_feature
 <222> (68)..(68)
 <223> n = unknown at position 68

<400> 92
 cagtgcaaca gcatttaacc atgcttatgc tgataccggt ctattctgna ttcattgccng 60
 ngcacctnca acacatatac ggggggtaac agaagtgtc tgcagagaac tagttgccat 120
 gtctacagtt ccagggggtc aagaactaag gagagcaaaa acacaacttc aatcaatgtt 180
 attgatgaat ttggaagctc gtcctgtggt atttgaagat ataggtagac aagt 234

<210> 93
 <211> 434
 <212> DNA
 <213> Ctenocephalides felis

<400> 93
 ccaatctttt taaaggtaat ggcttatctt ctgtgatacc tcttgctgtg gaaagagaag 60
 caacttgatc acaataaaca tcagcaccta attcttccat atcaacttct acatcagatt 120
 ttgctatttt tgtggcttca tctacttctt tcctaacttg cgtttccatt tccttcagtt 180
 cttcaggtgt agctagttct gatgaaacca ttctttcacg gaatgaagtg attggatctc 240
 ttgtctgtct tacttcttga atttcttctc ttgttctgta actggtgcca ggatctgaca 300
 ttgagtgtcc tgaatatcta taagtcatag tttctaaaac aattggacct tttccagttg 360
 tgcaatgttc aattgcatat tttgatgctt cacgcaccgc taacacatcc ataccgtcaa 420

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FC-8-C2-PCT.ST25.txt

cccaaattcc aggt

434

<210> 94
 <211> 347
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (58)..(58)
 <223> n = unknown at position 58

<220>
 <221> misc_feature
 <222> (243)..(243)
 <223> n = unknown at position 243

<400> 94
 aatggaaaga ggatgtcaca gaagcttatc ctggcaaagg gcaagcgcta ttccaagnat 60
 tccagtggct gatgtggttg caggaagccg aatctactga tgaggatgga gaagcttaag 120
 tgtggaaata agaaacaaaa aatatgaaaa actctgataa aaaggaattg taagtttagg 180
 tcacccttca tattgaacca atataaatgc ttaacatctt ccaataaacg aattatatat 240
 ggntttaatg aagtcagatg aaaggatgaa cagcatatta tctagaagaa aaactaaagt 300
 atgctcgtca cacttcggaa aatgctaaga atgttttatt gactcgt 347

<210> 95
 <211> 440
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (38)..(38)
 <223> n = unknown at position 38

<220>
 <221> misc_feature
 <222> (129)..(129)
 <223> n = unknown at position 129

<220>
 <221> misc_feature
 <222> (134)..(134)
 <223> n = unknown at position 134

<220>
 <221> misc_feature
 <222> (164)..(164)
 <223> n = unknown at position 164

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (188)..(188)
 <223> n = unknown at position 188

<220>
 <221> misc_feature
 <222> (230)..(230)
 <223> n = unknown at position 230

<220>
 <221> misc_feature
 <222> (239)..(239)
 <223> n = unknown at position 239

<220>
 <221> misc_feature
 <222> (289)..(289)
 <223> n = unknown at position 289

<220>
 <221> misc_feature
 <222> (303)..(303)
 <223> n = unknown at position 303

<220>
 <221> misc_feature
 <222> (307)..(307)
 <223> n = unknown at position 307

<220>
 <221> misc_feature
 <222> (349)..(349)
 <223> n = unknown at position 349

<220>
 <221> misc_feature
 <222> (417)..(417)
 <223> n = unknown at position 417

<220>
 <221> misc_feature
 <222> (419)..(419)
 <223> n = unknown at position 419

<400> 95
 gaaaggacca ttaatttata ataattat tt taatttgnga aaaaaaaaaa aaaaaaaaaa 60
 ggggggggctt gtacaagctt tctttttttt tttttttttt ttggctatat cgaaatttat 120
 tactcaagnt tttntacagc tttaaacaat tattgatacct tatnttttggc attgtagtag 180
 ggcaagtntt gtaaaactaa tttccaatca gtgaagtagc aaagggcatn tgcaccagnt 240

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FC-8-C2-PCT.ST25.txt

```

agacccaaaac cagcagacgt tcctacccac tgtttttgctt gctcaatgng tttactcccg      300
agntttntca aaatactcat tttgcttact taaatcaatg ctctctggnt tcaataaata      360
attttaagcg cagaatttag ctttgcgcta ttgtttcaaa aaaaaaaaaat aaaaaanana      420
aaaaaaaaaa aaaaaaaaaa                                         440

```

```

<210> 96
<211> 498
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (493)..(493)
<223> n = unknown at position 493

```

```

<400> 96
tttccttggtg ctaattcaat tgttcgggga tgaagtgcc gctctggaac cccttgaaca      60
acttcagaaa ccaaatacgc aactctagcc tgacttgtct gtgaaccagt ttgtccagggt      120
gtgttagcag aactttgaat gataagattt tggttggcag caagactctg tccacacata      180
tttctccgtt tatgagatgc taaatcatta ctttgggcaa aagctctacc acaaaccata      240
caagcgtagg gcttttcacc tgtatgtgtc ctcatatgta tagctaactt atcagatcgt      300
gcaaatacctc tgttacaaac actgcataca aatgggttttt ctctctgtatg ttttctcata      360
tgcaatgtaa gatctgtagt tcttggataa cctttaccac agattttgca aaaatttgtc      420
atttgaccag tatgtctccg catatggacg gctaaattac ttcttgaact gcaactttta      480
ccacaaacac tgnataat                                         498

```

```

<210> 97
<211> 186
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (30)..(30)
<223> n = unknown at position 30

```

```

<220>
<221> misc_feature
<222> (63)..(63)
<223> n = unknown at position 63

```

```

<400> 97
accacgaggt gcaggcggaa ttccagttan tttaaagggt cctaaacgat tgttatcttt      60
ggncataacc ctttctcctt catagacttg aattgttact gcaggctgat tgtctgcatg      120
agtgctgaag gtttgtgttc ttttacatgg aattcttgca ttgcgttcaa taatcttagc      180

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FC-8-C2-PCT.ST25.txt

cattgt

186

<210> 98
 <211> 270
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (36)..(36)
 <223> n = unknown at position 36

<220>
 <221> misc_feature
 <222> (40)..(40)
 <223> n = unknown at position 40

<400> 98
 catatatttac aactgtatga gtttggatta aaaatnaatn cctatgtata ataatatgaa 60
 aataactatt ataattacaa caattatagt tttgaataaa aatcagttat aaaatcacaa 120
 aaactgattt atattttaca gcaaaattgc ttataattaa gcttcttatt ataattaatt 180
 ttttatttca tttctttgca agctcatttg ataaccaatc gaggccttca tataaaccgt 240
 gcccttgtgt tgcacatgta gcttgaatgt 270

<210> 99
 <211> 279
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (23)..(24)
 <223> n = unknown at positions 23 and 24

<400> 99
 agattaataa attttaatat gtnnaacaaa tttaaactggc aaggaacttt gcactatgag 60
 cttattgatg taatgatttt tcaactggtat cgttatctat aagtaaaatg ctataattaa 120
 tcttaaaagg ctaaaccggc ttcagcataa gttgtgaaga tcttttcaat agagtttaca 180
 tatgctgctg ttctcaagtc caatcccaaa ttgaatttca ttgctgtctt cacgatagct 240
 cttgcagacc tttccattgt gtagtccaag ccagaatgt 279

<210> 100
 <211> 193
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature

FC-8-C2-PCT.ST25.txt

<222> (31)..(31)

<223> n = unknown at position 31

<220>

<221> misc_feature

<222> (33)..(33)

<223> n = unknown at position 33

<220>

<221> misc_feature

<222> (38)..(38)

<223> n = unknown at position 38

<400> 100

cgacacgccc caagttaccg acctccagtg ntnatgcnc aagtttcctgg aatcaaactt 60

aatataatct gtgatcttag aactggcaat atccacctga acagtatcgt ttactttgat 120

taaaggatct gggtagcgaa tgggtgcggcc atcatgtgtt gtcaagaatg gaatattttt 180

gggtcccat tgt 193

<210> 101

<211> 110

<212> DNA

<213> Ctenocephalides felis

<400> 101

tcatgaatat caagagtcta ctataggtgc tgcgttttta actcaaactg tgtgtctgga 60

tgacacaacg gttaaatttg aaatttggga tacggctgga caagaaaggt 110

<210> 102

<211> 323

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (5)..(5)

<223> n = unknown at position 5

<220>

<221> misc_feature

<222> (16)..(16)

<223> n = unknown at position 16

<220>

<221> misc_feature

<222> (23)..(23)

<223> n = unknown at position 23

<220>

<221> misc_feature

<222> (66)..(66)

FC-8-C2-PCT.ST25.txt

<223> n = unknown at position 66

<220>

<221> misc_feature

<222> (75)..(75)

<223> n = unknown at position 75

<220>

<221> misc_feature

<222> (82)..(82)

<223> n = unknown at position 82

<220>

<221> misc_feature

<222> (406)..(406)

<223> n = unknown at position 406

<220>

<221> misc_feature

<222> (436)..(436)

<223> n = unknown at position 436

<220>

<221> misc_feature

<222> (441)..(441)

<223> n = unknown at position 441

<220>

<221> misc_feature

<222> (471)..(471)

<223> n = unknown at position 471

<220>

<221> misc_feature

<222> (499)..(499)

<223> n = unknown at position 499

<400> 102

aagcatcagg aggccactct gcaatggcta aaacagtcgg tttcccagca gcaattgcca 60

ccaggatgat tttggatgga gaaatccaaa aacgtggagt tgttttgcca ttcagtgaag 120

atattttata ggccaattct tagcagattg agagctgagg gacttcatgc cacagaaacc 180

gttaaagttt tgtaagatgg aggagaaaca ctttgtttta ttatcgtgaa ttcattaatc 240

gattttgaaa atatgactgg ctcttttagc attatacata tttttaagct cgctttgata 300

tatcaagaca taagtattta ctt 323

<210> 103

<211> 462

<212> DNA

<213> Ctenocephalides felis

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<220>
 <221> misc_feature
 <222> (23)..(23)
 <223> n = unknown at position 23

<220>
 <221> misc_feature
 <222> (36)..(36)
 <223> n = unknown at position 36

<220>
 <221> misc_feature
 <222> (426)..(426)
 <223> n = unknown at position 426

<220>
 <221> misc_feature
 <222> (431)..(431)
 <223> n = unknown at position 431

<220>
 <221> misc_feature
 <222> (442)..(442)
 <223> n = unknown at position 442

<400> 103
 ttttgatgtc atataaatgc cancaattaa accaantaga ccaatagcag aaccaaagat 60
 ttcaacaatg agaattttga caaatagtgc agaattggca gcatcagcaa gagctgctcc 120
 agatccaaca ataccaacag cgataccgca gaataaattc acaagaccaa cagccaaacc 180
 agctccaaaa agaacataac caccatcca atttgcttct ttatatcctg ctttttcaaa 240
 aacagatttg tctgtgtatt ccgctaacag tcctgacaga acaattgctg taattaaacc 300
 ataaatagca acagcttcac agaaaataac tgaaattaag ttttttgttt tgattctggg 360
 cgctttcaca ccacctcta caatggatgt gcctgtggta tgaattccaa caagctgctc 420
 caacanctga naatgctacg gntaaacaat tcctaaggga gc 462

<210> 104
 <211> 484
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (16)..(16)
 <223> n = unknown at position 16

<220>
 <221> misc_feature
 <222> (25)..(25)

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<223> n = unknown at position 25

<220>

<221> misc_feature

<222> (31)..(31)

<223> n = unknown at position 31

<220>

<221> misc_feature

<222> (39)..(39)

<223> n = unknown at position 39

<220>

<221> misc_feature

<222> (89)..(89)

<223> n = unknown at position 89

<220>

<221> misc_feature

<222> (116)..(116)

<223> n = unknown at position 116

<220>

<221> misc_feature

<222> (287)..(287)

<223> n = unknown at position 287

<400> 104

agccgtggaa aacctnacgg aaccncaatt nctttcggna gcccgcccag ggacgactac 60

agggaaacaaa tgtcgatgaa gcccgtttnc ttattaagga aagcaaacta aagatngtag 120

cccaagatga tttggatgat gcagctgcat tagttgtcag tttatctcat tacatatata 180

ctttgcgggtt aattttaatga gatatgcata gtatatatta atctttcttt tttttcactg 240

cacatgcaaa gctaaattta gccagcagaa tgtgttattc aacacangtc gtattgttta 300

gtcgtgtaat gtcaacatgt attgcccatt ttgattggat tccttaatac aggatatcag 360

caccacttgt taagtttgaa actctaggta ggatatgatc atatttatta taatgcacat 420

ttattatggt actaatgttc aaaatgattg atgatcgatg attgatatca ttgtcagtaa 480

tagt 484

<210> 105

<211> 373

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (55)..(55)

<223> n = unknown at position 55

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<220>
 <221> misc_feature
 <222> (330)..(330)
 <223> n = unknown at position 330

<400> 105
 gaggctcatc agcgtggtcc acttcttttg acggcaacac ttcgtaaggt tcctnggact 60
 ctaacggatc actgagtcca acctcgtttc gcgcaaata tctgtatcaag tattcgttct 120
 gctcctgtaa atccctgata gtaaaattct gaatagaagc ctgaacgcgt cctacttcca 180
 tccacatagt tttcttaaca tctctaata ctatgttgta accctcgatg ggagcaccac 240
 cgtcggattc cggaattccc caacttatca caatattatt tggacctaca cttctcatct 300
 ctaagggggc agttggagga gatggcacan ttgcgtgagt ttttagagta acattccttg 360
 ttactgcggg cgt 373

<210> 106
 <211> 231
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (60)..(60)
 <223> n = unknown at position 60

<220>
 <221> misc_feature
 <222> (88)..(88)
 <223> n = unknown at position 88

<220>
 <221> misc_feature
 <222> (119)..(119)
 <223> n = unknown at position 119

<220>
 <221> misc_feature
 <222> (157)..(157)
 <223> n = unknown at position 157

<220>
 <221> misc_feature
 <222> (192)..(192)
 <223> n = unknown at position 192

<220>
 <221> misc_feature
 <222> (232)..(234)
 <223> n = unknown at positions 232, 233, 234

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<220>
 <221> misc_feature
 <222> (263)..(263)
 <223> n = unknown at position 263

<220>
 <221> misc_feature
 <222> (280)..(280)
 <223> n = unknown at position 280

<220>
 <221> misc_feature
 <222> (284)..(284)
 <223> n = unknown at position 284

<220>
 <221> misc_feature
 <222> (342)..(342)
 <223> n = unknown at position 342

<220>
 <221> misc_feature
 <222> (354)..(354)
 <223> n = unknown at position 354

<400> 106
 tattccttgt ctggcacata atattttcgg ctttgatata caaatgaatg atattctttn 60
 ggtgcatatg gttaacacct tcacaaantt gtctcatgta atctatgact tctgcttcng 120
 acatacgata accgtcagcg gtgatgcgtt caaacanttc accaccagat aagaattcca 180
 aaatgagaac cntttcatca tcattcttcga atgcatcatg aagattaatc a 231

<210> 107
 <211> 411
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (145)..(145)
 <223> n = unknown at position 145

<400> 107
 aaaaaaatgc aagaagaagt gtaggcataa tcactttccg cctccctctc gtatcggcta 60
 aaaatcccca taaatgtgaa ctgcttataa tacctataaa agctatagcg cttaatatc 120
 ctttttgttt tgttgttaat tccanatacac attgtgctga aggaacgaca aaactcatc 180
 caagagtttc catcaaaaca catactaata cgcattccact caccaccaga agaaggtaat 240
 tgaattttcc aaaacctgtg agtgccaacg catcttcaaa ctgccttggt tttggttctt 300

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tggaagctat tatttgaatc cccgtgttac tgtccatatt tattaatttc caaactacag 360
 attcaattaa accgttttgt ttaacagtct aacagtaaaa aaaaaaaaaa a 411

<210> 108
 <211> 261
 <212> DNA
 <213> Ctenocephalides felis

<400> 108
 tctcgggtgga atcgatttct gtagtttcgt cgtttaactga caatattaga gccaataaat 60
 atttctttaga aacatcaaca gcccacgtag tctgtgcaag attggtagtt ggtatatccg 120
 taatgataat ctgaggttgt tgctggttta ccgattgttg ctggttttatc gattgttgct 180
 ggtttagcaa ttgctgctgt tgccagagaa atttttgttc ctgaactttt tggattgtc 240
 gcaactgctg ttgatgtaag t 261

<210> 109
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (33)..(33)
 <223> n = unknown at position 33

<220>
 <221> misc_feature
 <222> (62)..(62)
 <223> n = unknown at position 62

<400> 109
 atttgtatgt aagaaataat tcacatctat tcntaatgaa gaccaaataag ataattgaaa 60
 anccacaaaa acaacatccg taggttcatt attttgatca tatttaaata gcatgttggt 120
 ggtccacaaa tcacatgat ttaatacatt tatacagcca ggacgcattt tagttgaagc 180
 cattgctctt tggataattg tatecttcat attatataat ttttttgaat atttttgata 240
 gccatcccaa attgatgtag cttctgaaag ctccaccagc gcttttaaca gcaattgatt 300
 catcagatgg tcttcagatt ctgtttgtat aaaacctaata gtgtaatcat caactgaatg 360
 aggatccttt agctccatga caatggatgc agcatgcata tgtgcaattt tgtccataag 420
 taaagtagaa tgtgcaatat ctaggcctct tgcctttttt cccattttgt aaccacctat 480
 tgccaaatcc gtcataac 498

<210> 110
 <211> 356
 <212> DNA
 <213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (142)..(142)
 <223> n = unknown at position 142

<400> 110
 tttttttttt tttttttttt tttttttcct cttttattag tataataata tctacaatca 60
 tctaattata tcaaattaat tattaatgat gtccatgacc atgatgatca tcttttaggat 120
 tcattttttt ccacgccttc tntaatgcga ctgttactac tgtagcagcc agtccccatt 180
 tgaatcctcg gaataaaaag cccatcgctc ggctccttct tgttccaaat tcttttgtat 240
 taaatcgcca tacttcattt ctcagccatg ggtctttaag tcctttactt gcaagagcct 300
 tttggacttg aactaattca ggggcatctt caactttgta aatcctataa tctggt 356

<210> 111
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (498)..(498)
 <223> n = unknown at position 498

<400> 111
 gctcattgag tatccgcgaa tgaaactaaa tgagctttca acattggact taagcaacaa 60
 tgatttttca atattaccag aacaactcga cataaatcta atgccaatt tgagacacct 120
 ttcactaagt ggaaatccaa ttcgcaaaat taaatttgaa aatatacctt ccttggaac 180
 gctcgagata aacgatatgt caagacttac agaaatttcg ggactcgaaa acatacatgg 240
 aagaatatat gtcgaatcaa ataaaccttg tgttcatctg agcatttcaa attgtgaatt 300
 gctgggttaa atacaaaatg atgcttttga aaatataaat ttatgtagtt taaatttgag 360
 tcataacgct ctgaaagaag tgccgctctc ggtgccaaac gacatagaac ttgatttaca 420
 gggaaaccct ttgatatgct cttgcagcct acaatgggtt tagacgatat attaccattt 480
 tgtataaaca tcacccanac 500

<210> 112
 <211> 189
 <212> DNA
 <213> Ctenocephalides felis

<400> 112
 tcatcgttca ggtcagggtg ctttttgaaa tatgtgtagg ggaggaagaa tgtttgcacc 60
 caccaaacc tggcgcagat ggcatcgcaa gatcaatgtg aaccaaaaac gctatgcttt 120
 ggtttccgca attgctgctt ctgggtgtgcc agcttttagtt atgtctaaag gacatgttgt 180

FC-8-C2-PCT.ST25.txt

tgatcaagt 189

<210> 113
 <211> 131
 <212> DNA
 <213> Ctenocephalides felis

<400> 113
 aacaagtgtc tctgggtcata aattatgatt tgccttccaa cagggaaaac tatatccaca 60
 ggattgggtcg aggtggacgt ttcggtcgta aggggtgttgc tataaacttt gtcacagatg 120
 aggacaagcg t 131

<210> 114
 <211> 102
 <212> DNA
 <213> Ctenocephalides felis

<400> 114
 attccctgaa taagaggga taatcgctct ccaagcatct gtttctgttc atgagccggt 60
 gctgcggcaa gcatggaagc ggtgagtgggt tcttggcctt gt 102

<210> 115
 <211> 299
 <212> DNA
 <213> Ctenocephalides felis

<400> 115
 gcgaaagaac atgtcgtata ccgtctgaaa gaagtaatga ggactggcag gactcaaaaa 60
 atggcccttc cagcgaaaaa gaagcacatg cttatgatgg gcctcccggc atggaacccg 120
 atggcgtcat cgaaagtaat tgggatgagg tggttgataa tttcgatgat atgaatttaa 180
 aagatgaatt acttcgtgga atctatgctt atgggttttga aaagccttca gcaatccaac 240
 agcgagccat catgccatgc atagtcggtc atgatgttat cgcacaagct caatctggt 299

<210> 116
 <211> 403
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (60)..(60)
 <223> n = unknown at position 60

<400> 116
 cccggtattg ctgaccgcat gcaaaagggt aatcactgcc ttggcccat ccaccatggn 60
 agatcaagat catcgctccc ccagaaagga aatactccgt atggatcgga ggatccatct 120
 tggcctctct ctccaccttc caacagatgt ggatctccaa ggaagaatac gacgaatccg 180

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```

gacccggaat tgtccaccgc aagtgttctt aagcgctttc taccctctag caaacaccaa      240
agaaagtgcc gtccggaaga aatggcggtt aagaaattat gcgcggccca tcgcgctttg      300
cgcatcgtaa ttgcgcttcc ggtcaatatc accggatatg ctattgcacc agcgaccatg      360
tgcacaaaat tatttgtaat ttattaattt attattggac tgt                          403

```

```

<210> 117
<211> 229
<212> DNA
<213> Ctenocephalides felis

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<220>
<221> misc_feature
<222> (181)..(181)
<223> n = unknown at position 181

```

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<220>
<221> misc_feature
<222> (185)..(185)
<223> n = unknown at position 185

```

```

<220>
<221> misc_feature
<222> (187)..(187)
<223> n = unknown at position 187

```

```

<220>
<221> misc_feature
<222> (192)..(192)
<223> n = unknown at position 192

```

```

<220>
<221> misc_feature
<222> (205)..(205)
<223> n = unknown at position 205

```

```

<220>
<221> misc_feature
<222> (207)..(207)
<223> n = unknown at position 207

```

```

<220>
<221> misc_feature
<222> (211)..(212)
<223> n = unknown at positions 211 and 212

```

```

<220>
<221> misc_feature
<222> (215)..(215)
<223> n = unknown at position 215

```

```

<220>

```

FC-8-C2-PCT.ST25.txt

<221> misc_feature
 <222> (217)..(218)
 <223> n = unknown at positions 217 and 218

<220>
 <221> misc_feature
 <222> (222)..(222)
 <223> n = unknown at position 222

<400> 117
 caggatttca tgggtcttcat gttttaattg gaacttcttt tcttattatt tgtttactac 60
 cacttagatt atttcatttt aatcctaaac atcattttgg atttgaagca gcagcttgat 120
 attgacattt tgttgatgta gtatgattat ttttatatat ttctatttac tgatgaggtc 180
 nattnancag anaggaaacc tgtanancca nntgnannaa anaaaaaaaa 229

<210> 118
 <211> 469
 <212> DNA
 <213> Ctenocephalides felis

<400> 118
 atttcggacg accccaaaaa taatatcgac gaggaaaaac atttgaaagt cgtgcaattt 60
 aaggacaaca agcccgaaga cgacgcggtg gaaatttccg aatatttcag atacaatgac 120
 gttatcaaag aaggcgatat tttagtgcgg gctccggcgg aacgacttat tcacaaacta 180
 aaggacggcg acgactgcgt ctgcatgaac tggaggggtt gcaaagggaa aataatcgac 240
 ggtcacccgt gtcctcagag ttacatagac gtctgctgcc aaactgagca gaattttgat 300
 gaagataaaa acgaggagca gttgacattt aggaaattat tgttatcgaa acaataatca 360
 tgatattttt tgtaacattt ataagtgcac ttgtgaaatg taccaaactt tgcaatttgg 420
 taaataataa ataaacaaat ttgttttaaaa aaaaaaaaaa aaaaaaaaaa 469

<210> 119
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (428)..(428)
 <223> n = unknown at position 428

<220>
 <221> misc_feature
 <222> (444)..(444)
 <223> n = unknown at position 444

<220>
 <221> misc_feature

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<222> (460)..(460)

<223> n = unknown at position 460

<220>

<221> misc_feature

<222> (467)..(467)

<223> n = unknown at position 467

<220>

<221> misc_feature

<222> (475)..(475)

<223> n = unknown at position 475

<220>

<221> misc_feature

<222> (491)..(491)

<223> n = unknown at position 491

<400> 119

gttcttactt atatctagat tatcagggtt atcgagctct agaatacgtc taagaatacc 60

atattgtata ctcatattatt aaatggaaca tattttttaaa gtgaatcaaa ataaaattcg 120

tatttgacac tttggtattt gtaaacaaaa aatgagcagc aaatcaacca atagtcacca 180

atatagtagt atctgtctag aagtgactca aatgataaac acaactgtga tcataaaaat 240

tcaataaaaag acgagaaaat caagatcatg ttaaatcaaa gcatcgttca agatctcgta 300

gtcgttcata tgatagaatt gattcacatg atagattttc tagtaaagaa attacaacag 360

agattcaaac tttctcatag tatgaaaaag ttccaactta gaatcatccc gttcaaaaac 420

attgcttngc cttttccaca catnagccac cttggggccn aggatantag catangcaca 480

aacttgaatt ngctgatcaa 500

<210> 120

<211> 218

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (186)..(187)

<223> n = unknown at positions 186 and 187

<220>

<221> misc_feature

<222> (197)..(197)

<223> n = unknown at position 197

<400> 120

ctcgagtttt tttttttttt ttttagaaat ttactgaaac agaatacttt agattaatta 60

ttatatacag taaacaatct tgatgtgata gtttattttt gagcaatata tttatctctt 120

FC-8-C2-PCT.ST25.txt

aggcaaaata ttattttatg cataactgta catttattat caataaaaaa tataatatga 180
ccacannttt tttaanaaaa aaaaaaaaaa aaaaaaaaaa 218

<210> 121
<211> 500
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (460)..(460)
<223> n = unknown at position 460

<400> 121
gttattttct aatctgtacc atcacagttt actcgagaag ttatggatga tttcaatttg 60
ctgttagaat tgccatgtcc agataaaaga attgcagaaa tattatacga agtggtgatg 120
atcgacgcgg aaccttcccg gagtaccgtg aaaaagaagt ttacattaga aaacaacggt 180
ataaaagtgc cggtgttcaa gtccaaatgt gaaaaattta cgtgtcgccg tgaatgggtt 240
gtttgacaat ttttatttgg ttctgcaaac gattgatact tttgggcccg caaacccac 300
ctatgattac tattttgctg atttaattgc ttccaagtga ttcttagcaa ttcaaaatgc 360
cagaacacac acctgccct acaccgagca gagcgggtgta tggatttgca ttatatatta 420
caatgaaatc ttgttttttg cttatgttgt atgggtctatn gtacctgatg atattctctt 480
atgctgaatt atattatctc 500

<210> 122
<211> 500
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (490)..(490)
<223> n = unknown at position 490

<400> 122
tataaatgat ttaattcaga agcaaggcag ttatgtaatt ttttgaatat atgtgataag 60
aaaaacattt aaaattatat tagtggttaag tagaatttac gtgaaagtaa gatgtgggtt 120
tattttaata gaatttttgc tgcgggtgttg attatattgg cagtgtcagc aagggaatcg 180
aattcccaaa aacttactgt tgatggattt aaaggtgatc ctatagaaga atttcgtcag 240
gaatattcta cgtttttaaa aaagggcgaa gtatcaaaga agttacaaaa acttactgat 300
ttactattaa aaccgagtga tgaaaatgat tgtgcaaaat gccaaatttt ggcaacattt 360
gcaatcgaaa gaagacgtaa tgggacttcc aatgcagaga tgaattcttt gatgaatgat 420

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atgtgtataa gattaaatat atggatagga aaatgtgtga aaacatgata tatatgcatt 480
 tggatatcgn ctgatataat 500

<210> 123
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<400> 123
 ggatgataag gatcttgtat tcatacaciaa ccccgatcaa agagaaaaag attgtaaagg 60
 tttcttgatc aatttgattg attcacctgg acacgttgat ttctcatctg aagtaactgc 120
 tgcacttcga gtaactgatg gagctcttgt ggttgtggat tgtgtttcag gtgtgtgcgt 180
 tcaaactgaa accgtattgc gtcaagctat tgctgaacgt attaagcctg ttgtgttcat 240
 gaacaaaatg gaccgtgcac ttttgggaatt gcaattggac tctgaagaac tgtaccaaac 300
 tttccaacgt attgtggaaa atgtgaacgt tatcattgcc acatactctg atgatactgg 360
 tccaatgggt gaagtcgtgt tgatcccagc aaagggtcag tggttttgga tctggcttca 420
 tggatgggct tttactctaa aacaattctc tgaaatgtat gctgagaaat tcaagattga 480
 tgtactaaat tgatgaacag 500

<210> 124
 <211> 0
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (5)..(5)
 <223> n = unknown at position 5

<220>
 <221> misc_feature
 <222> (86)..(86)
 <223> n = unknown at position 86

<220>
 <221> misc_feature
 <222> (134)..(134)
 <223> n = unknown at position 134

<220>
 <221> misc_feature
 <222> (177)..(177)
 <223> n = unknown at position 177

<220>
 <221> misc_feature
 <222> (189)..(189)
 <223> n = unknown at position 189

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<220>
<221> misc_feature
<222> (254)..(254)
<223> n = unknown at position 254

<220>
<221> misc_feature
<222> (285)..(285)
<223> n = unknown at position 285

<220>
<221> misc_feature
<222> (306)..(306)
<223> n = unknown at position 306

<220>
<221> misc_feature
<222> (332)..(332)
<223> n = unknown at position 332

<220>
<221> misc_feature
<222> (339)..(339)
<223> n = unknown at position 339

<220>
<221> misc_feature
<222> (411)..(411)
<223> n = unknown at position 411

<220>
<221> misc_feature
<222> (419)..(419)
<223> n = unknown at position 419

<220>
<221> misc_feature
<222> (485)..(485)
<223> n = unknown at position 485

<400> 124
000

<210> 125
<211> 436
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (346)..(346)
<223> n = unknown at position 346

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```

<400> 125
cgccaacctc agatatagtg gcaggtcctg gttccaatat tcgaataatg ggtgggtcca      60
actcgcgcct aaacgcacga tatgctacca aacaacttct gatgagccat gctgagaaac      120
gaattaatcg gaatagttac tccacggata tttattaagt tatttcataa taagtgcctt      180
gacatgttag attaaaagct ttatcttctg aagcaacttt aaattttagg aatttgtatt      240
ctacaaatgt tgtagaacia aacggatata aagatacgca caaggtgcat aaaatagaag      300
aaaatgaaaa agtaagccaa agatttagca aatgttcaaa tattgnagtt tcaaatatc      360
tctcaattct ttttgataaa tatctaattg cgaattaata aaatgtctga attattaata      420
ataaacagat tagcag                                          436

```

```

<210> 126
<211> 500
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (6)..(6)
<223> n = unknown at position 6

```

```

<400> 126
ctggcncctt gtatacatc cccgagaact tccgtgctta caaatcttta atcgtgcca      60
aattttcggg tgctaattgt aaagtagcag ccgattttgc attcggagag acgaataagt      120
cagaatcggt cctcaagaag ttccctgcgg gaaagggtcc agcgttcgaa agcaacgatg      180
gaaaatactt aagcggcagc gatgctattg cttattatgt atcaaagcc caactacgtg      240
gcgccctccg cttggaaaag gctcaaattc tacaatgggt agattttggc aatggagaga      300
ttgtgcccc atcgtgtgca tgggtgttcc caattttggg aataatgcag ttcaataagc      360
aaaccactga ccgtgcaaag gaagatgtca aaagtgcctt ttccgtcctc aatactcatt      420
tagtaaataa cacatatctc gtcggtgaaa gaataacttt ggctgatatc agtgtgttct      480
gtcattactt cacctgtcca                                          500

```

```

<210> 127
<211> 500
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (468)..(468)
<223> n = unknown at position 468

```

```

<400> 127
gagttcttta ccctcactga aaattgcttt attttcctca aattgcataa tttaaaaatg      60

```

FC-8-C2-PCT.ST25.txt

```

cttttgacaa tagttcattt gaacatgtgc acattttaaa tactttattt tatttaagtg      120
tgatttagct taattgttaa tttttaattc atctactgta gactacaaca atggccaaat      180
ttctgggtaca ctcttcaatt ttggttggtg tcagtattgt gagttatttc atcgggtgca      240
atatcgaaag aaaaaatata ttaaaccatt tcaaatccca aaacattgat ttgaatgttt      300
tgagcaaggt atgtacatac ataaaaattg gttgcggttg gtagtccaga aaatcgcgaa      360
tctgtgtaac tgaggactgg ataaatgaga ttagttggtc atcctataca ctgaacactt      420
gaagaatata aaaattgtat ttgtaattca cagatcaaga aaggctgntt accgattttg      480
gcactgttca gcagcaactc                                     500

```

```

<210> 128
<211> 500
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (6)..(6)
<223> n = unknown at position 6

```

```

<400> 128
gcagtncggt aaaaacctca ccaagtaatt cgctccatga ttagatatcc ggagtgatta      60
cccttatcag tgcagttgtc gcaacgtggt gttagcagtt gtggttatgt gcgtagtttt      120
ttagtacatt agtgcccgtt tgagtgttaa tattgagttt ttttttgcac caaaaaggat      180
taatgacacg tgcttttcca agtatacttt ggcatgaggg aatgtcttgc gcgctgagcg      240
caacgtaatg cgaagaactc gtgctgcggt catttgctgc agcagcagaa ggccgcgtgg      300
gcggagacgg cgcttcactg gataatagaa aattcaaaat ttttatctaa ccatttgtct      360
taaaaataat catacgaaat actctaccat ttagtaatta atcttccttc tgcaaacctt      420
caactgatca atttgatatg tgatatacta atatctatta tattatttaa taactaagat      480
tttatgaatc tgtattatat                                     500

```

```

<210> 129
<211> 500
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (4)..(5)
<223> n = unknown at positions 4 and 5

```

```

<400> 129
gatnnatccg atttcggttg tgcttgggct agtgtgttcc tgctatcatt tgatcttttc      60

```

FC-8-C2-PCT.ST25.txt

cctccggaag aatttgaaaa tgcaccagac cttacattac tttgatacgg agatggtgct 120
gctcttttgca ttacagaatt gccagcattg tttgtcggac cacttggccc tacagctggg 180
ggcggagtaa aacttgttct ttgtggaaag tttggccctg catattgacg aatgtttgaa 240
ttttgtggag gtggatatct attttgtgta ggactggctg tattggctgt cactcccgca 300
acaggaaatc tttgcgccat aataacttaa cttaaatgca ttcagaaaaa taccttaaac 360
ggtatcaatg attttcacaa ttcataatta aaataggtaa aaatgcataa ccttataaac 420
taataataca tcgaaatgat tttgcagttg tataataacg atattctttg aagttggata 480
aacacgaata ttaaaactta 500

<210> 130
<211> 500
<212> DNA
<213> Ctenocephalides felis

<400> 130
aaaataaact cttacacata tttttagata tacagacaat atattttatat cttattacgt 60
atacaatatg tgtatctata ttataaatac atatattgca tcataaataa tttggtgtat 120
tctacatttg tcaatggtcc taaaattaca atcgatcaaa attaacactt caaacctcat 180
tcattcttga aaatgtaaca caatattaga aaattaaact aaaaaagcat attttcacac 240
gctattaaat ttacacaaat aacatcaagc aattaagcac ttactttacc acatctaattg 300
catataataa aaaaaaaaaat ctaagctaag gtttgtatta ttaatgtaat tatttggttt 360
ctattgcgca attcatattt ccaaggtgtc aattaacaag tgatctttta attaaatata 420
aactgttact ttatattggt ttaaactatc accaaattta tgtgatgaag tctataattt 480
ggtgattggc aaaaatttcc 500

<210> 131
<211> 494
<212> DNA
<213> Ctenocephalides felis

<400> 131
tgtaactaga attttatattt tgtattaata tttaatttaa taatttgaca tgaaaattta 60
tcgttcagct ctctgatttc aaaggattct aagcaagact acttgtttaa acggtataag 120
ggcgactcct gaaaaaacga aatgaagaaa gtgaagcgag tcagtgatgt gggggcagtg 180
ggtccaccgc cgacagcccc tccatcctat atggctgagc ctcaatatgc acctataccg 240
caaatcaaa actttaatgg aagtataaat cctaattatg ggtacaatca acaaactgca 300
aaccaaccat ttgtgccata ttccggtcaa ccaaattacg gacaacagag tcctgctcag 360
ttccatcaaa cgccgtctaa tccaatgatg tcttcgcaaa taccaaatac acaaattcct 420
ggtccccaaa atatgaatat tccaccacaa ttctcaatgt ttcaacaacc cttggtcaag 480

FC-8-C2-PCT.ST25.txt

gaatggcaat tcag

494

<210> 132
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (4)..(5)
 <223> n = unknown at positions 4 and 5

<400> 132
 ctgnnacagt gaatgacata agatggcgac tagtatatgt gtttctaggt gccagatatt 60
 gtttaaaaat gaaataaata ggataggact gcggggcactg ttttatacac ttcaggggctt 120
 taaagaatct cgacataatt ccatccacac gtgcgcctct tcacacccaa cgctagtgcc 180
 taatgatcgc aacaatttga cgctgtcat cagcgcagct aaaaaatcat cggaaaatga 240
 ggctgtcgag gtgacgtacg ctgccgggct gccacaaata accgttccgc tgccaagcag 300
 gcgagagcgg tgccgattca cgttgcgacc ggtcaciaaac accgtcggcg acttcatatc 360
 tatgctgcgc tccgaggacc agggcgctcga tcgagtagtt tgcgtaacct gctccggaat 420
 acgaattgct ctccgacagc atcgaagctt tactcgaacg gccttctttt ggatcatcaac 480
 gacaggaagt tgaggtagat 500

<210> 133
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (4)..(4)
 <223> n = unknown at position 4

<220>
 <221> misc_feature
 <222> (10)..(11)
 <223> n = unknown at positions 10 and 11

<220>
 <221> misc_feature
 <222> (17)..(17)
 <223> n = unknown at position 17

<220>
 <221> misc_feature
 <222> (36)..(36)
 <223> n = unknown at position 36

FC-8-C2-PCT.ST25.txt

```

<400> 133
atgntttatn nctaaangtg ttcaatgcat tctgantttg cggtgatgag aagtgattag      60
tatcaaaaat ttataaaata tgtggaagtt tattcaattc acgatatttt tcagcgtgct      120
gcgatttggg gcaagtttgg agtggttacag ttgtgaactt gcaaagaatt cgaactgcac      180
agttcctctg gctggtactc taccagttgc aacaaagcac gaccatattc taggaacaaa      240
attttttcatt cttttttgaa agacaattcg acatatgatt tagatgaact tgagaaaaac      300
aaagaagaag aaagcttccg atgtctgttg gttactggag aaagagtttt caatcatgga      360
tttatagaaa aaggtgtgat tagagaatgt gtccctgccg agtcacatgt gaagaaataa      420
agaaagattt aacaaataaa ggagcccggg atctaaattg caccatgtgc gacactgact      480
tggtaatggg tcttagacct                                     500

```

```

<210> 134
<211> 0
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 134
000

```

```

<210> 135
<211> 500
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (4)..(4)
<223> n = unknown at position 4

```

```

<220>
<221> misc_feature
<222> (7)..(7)
<223> n = unknown at position 7

```

```

<220>
<221> misc_feature
<222> (35)..(35)
<223> n = unknown at position 35

```

```

<400> 135
gatnttntcg aacaattcaa tctaccaagt ttatngcgaa caattgataa taaaaaataa      60
ataaataatt acttgtgtcc ggatgaacga atcatgctcc taacccatt tggtgaagat      120
ggactctact aaaccttttt gtgaataatg aacagttttt gtcagtgttc accaactatc      180
aacccccgat actaattaag tgcgactgat cattaattga catgtctcga gtgatttacc      240
caaagcaatt aactaattaa ccaattactt agtacagct aattacaaac ccagcgaaag      300

```

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FC-8-C2-PCT.ST25.txt

```

gtacacatac ctgcacaact gcatatactc acatttcaat aatatgaata tttcctgttc      360
atgtaaacca ctcaattaat ttaatcactg ataaattgaa catttaaatt tccttcttga      420
atacgaataa atttacctaa attagagtca cggctgttta ttaaacttta attatcaatt      480
aatcaaaaaa tgccatgcca                                          500

```

```

<210> 136
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (6)..(6)
<223> n = unknown at position 6

```

```

<400> 136
aaagtntaat atatatcttt taatataccg tttgtttcat atataaaaca ttaataaaat      60
ctaagataaa caataccaag ttactatcat agataagtaa acataactat actacggtta      120
ctatatgtac ttgagttcac tagaattttg ttttctataa caaatgctac agaagtgtag      180
tattaaaaaa caattagggt ctcgaaaagg cgcggcatct tcagatttcc aaattgcatc      240
taataattca ctgcaactga ctttccaatc atctgatgtc acagacctca aatttcttct      300
agaaactgaa agatacatct attcaatatt ggaaagacca tttttaattt tgtaatgtta      360
tatgaacaaa ttttatatac taaaattgaa tcatttacag taattttcaa attaaccgga      420
gattcacata atcacgctca taacacattc atgcacatgg gaaaatttca agtgtcaggg      480
acttggtacc ttttctacta tcctcaaata ctacttcttg gatcattatc attttctggt      540
tcgctctct                                          549

```

```

<210> 137
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (7)..(7)
<223> n = unknown at position 7

```

```

<220>
<221> misc_feature
<222> (499)..(499)
<223> n = unknown at position 499

```

```

<220>
<221> misc_feature
<222> (523)..(523)
<223> n = unknown at position 523

```

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (537)..(537)
 <223> n = unknown at position 537

<400> 137
 gtgcttntat gctatttcaa taaatgtttg ttgaatgaaa aggaaattta ttgttggtttt 60
 ggggtgcattg ttttggcact agtgataaaa acttaaataa aatttggtgtg tttataaatgt 120
 gatttttcttt aattaaaaat tattttaaatt ctctgggtgta tgttaagttg atcaaagtaa 180
 acatgaaacc ttatcatcga acattagtta attattgatc ataaaataat atttggtgaa 240
 atgacctaaa aattcaataa catttttgctt aaacaatat taccactaca taaaaaacat 300
 gctatgaatt attgcgttga ttaagttccg acactttgct atattattta ataaatatatt 360
 tattttatttt aattgtgatt aaaaactttt atcgggtaat tgctaaactt aattcgatat 420
 ttttttgctaa cgcatttttg cggaatggct ggatttatag aagttgccat atgtttggct 480
 attctttact ggctattcna cgcaagaccg ccagcaatgg tangtgtagt ggcagancga 540
 atgtggtct 549

<210> 138
 <211> 392
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (33)..(33)
 <223> n = unknown at position 33

<220>
 <221> misc_feature
 <222> (380)..(380)
 <223> n = unknown at position 380

<400> 138
 agatttgaaa caaaacaatt tgaagataaa gtngtactta cacagaatga aaaggattttt 60
 gaaaaaaatg ttgaaaagaa agaagcaaac gtaaatttag aaacaaataa ggaaacatct 120
 gtgaaaaata aacttaacga aggatttata aaaatcaaag attttttttaa atttttaaatt 180
 ttattttatc atccaatttt attttaatttt tatgtcatgt atcatcaaat aatgaaatga 240
 aagcatgcat taggataaat gtcaacatat atatagcaaa gtcgttacat attttggttaa 300
 taatatgaaa tacatttact atggtattaa tttttgtttt agatacttta tttagaaata 360
 ataaatataa aagacccggn aaaaaaaaaa aa 392

FC-8-C2-PCT.ST25.txt

<210> 139
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis
 <220>
 <221> misc_feature
 <222> (5)..(5)
 <223> n = unknown at position 5

<220>
 <221> misc_feature
 <222> (7)..(7)
 <223> n = unknown at position 7

<220>
 <221> misc_feature
 <222> (517)..(517)
 <223> n = unknown at position 517

<400> 139
 gtcantnata aaaaaaaaaat ttttttcaaa aaaaaaaaaac aaaaaaaaaat taaaaaaaaa 60
 ttttttttaa aaaaaatttt ttttcaaaaa aaagtaattt tttgtccaat ttatagtttc 120
 ttaaaaaatcg tatttttttcg aagtaaattt tttttaaaaa tgtcaatcgt ttttaaaaaa 180
 ataataattt ttggtacggg aagttccagc aatttgcctt aaggcacgat gccttaattg 240
 ccttaagaca gaattccact tacagctagt ttttacttga tttgatagag gaatagttac 300
 agcaactatc caggtttatt acgtataaat atgatcagtc gatttcaaga tatattaatt 360
 tagaagaaat tgttacaact agcccctatc tagcttcctt acttagatat gtttacttag 420
 atattccctt ccctacgtag atatttttcc atgattagaa atttatttat aagtaaattt 480
 tcttttttat tcgttagtat taaatataag gttatgnatt tataatctttg ggatagggtat 540
 acatgagta 549

<210> 140
 <211> 115
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (3)..(3)
 <223> n = unknown at position 3

<400> 140
 aanttttagtt acatagttat atagaggatg agaagtttaa gtttgtagct tatttttatca 60
 ataaatgttc aaaattatga atcgatatat tcataactca aaaaaaaaaa aaaaa 115

<210> 141

FC-8-C2-PCT.ST25.txt

<211> 549
 <212> DNA
 <213> Ctenocephalides felis
 <220>
 <221> misc_feature
 <222> (537)..(537)
 <223> n = unknown at position 537

<220>
 <221> misc_feature
 <222> (540)..(540)
 <223> n = unknown at position 540

<400> 141
 attttcaagt acccattcgc tcgatctcga agccgcacgc agacattttt atttaaataa 60
 cgattatgta gcataattga ataatttttc cgaattgtaa taatgttttt atcttccgat 120
 attgataaac attgacctga tgttcctgca aataagattt tcttttctaa aacgaaacct 180
 gaaagatacc acatactttt cctcatgcat gtaagataaa gttttgtgga attgttttaa 240
 aataaaggca agatgcggcg aagtactact aaacgttcta tgggtgactga ttacgatgat 300
 agaagtctgg ggccagtgct taaaaaatcc aatgctagtc ctgatttatc aatgggtcaaa 360
 cagtacacat caattagccc tcagcagact actgttagtt atcatttggt ggatcatggc 420
 tacgggtgcta ctctcaaca tcaaattatg cgggacatac cagttgctcc acctaaagacc 480
 acagaggctg tcaaacgtcg acttaacttg acatgacaag ttcagtccca gttcctnctn 540
 ctcgaccaa 549

<210> 142
 <211> 375
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (68)..(68)
 <223> n = unknown at position 68

<220>
 <221> misc_feature
 <222> (210)..(210)
 <223> n = unknown at position 210

<220>
 <221> misc_feature
 <222> (253)..(253)
 <223> n = unknown at position 253

<220>
 <221> misc_feature

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FC-8-C2-PCT.ST25.txt

<222> (292)..(292)

<223> n = unknown at position 292

<220>

<221> misc_feature

<222> (329)..(329)

<223> n = unknown at position 329

<220>

<221> misc_feature

<222> (366)..(366)

<223> n = unknown at position 366

<400> 142

agagcagagg ggcattagaa aataaactat tagcagctgc tgaagatctg agaaaaactt 60

taagagangg tggtaatttg actaatggcg aagttatgga tccttggttc cttgaaaatg 120

ttgatgctga cattgaattc caaacattgc caagttaaag ggagctcttg ccaatgtaac 180

aagtagaggg tttgtctagt ttcaacatan atcacataaa agtgaatgtg ctcttcatga 240

aagctacttt cantatcact ttttgaccac ctcatggcaa aggggtctata cnacatttga 300

aggcaagttg gcagatttgc taagttgtnt ggcaaaggct cctttgatat tcatgttacg 360

tgatantaaa ccgct 375

<210> 143

<211> 533

<212> DNA

<213> Ctenocephalides felis

<400> 143

gaagtttact aacgctttga taaagtatcc taaataaaaag tataacggtg gttttttgatt 60

gaattaattg taaaatcaat aagatataaa gttgttaaag aaggtaatct gtgctagaaa 120

tgtatattgt gctccggagt cgagaaataa tctaaagttt agccgtttgt caccgagacg 180

ctattttctga cagttacata tcaataaaaag tatcatatct tgttctgatt cgtgaaattt 240

acaataatgt ctgagttaat gttatgttct gaacactgat aattactgtt tagtgttttt 300

caatagattt cctcaaaact gttctacagc agtggactca gaattgtgct aaaagcaagc 360

cgaattcggc ttttaataaaa aagtgaaaat tattgacctt ccatccgaga acgatacttt 420

tcacaatcag tcagactttc tgtaatgtac ccaaatatct tccaagagca cacaccaag 480

aaataagctt cgttctcccc gttacttgta cactcaaaaa aaaaaaaaaa aaa 533

<210> 144

<211> 414

<212> DNA

<213> Ctenocephalides felis

<220>

FC-8-C2-PCT.ST25.txt

<221> misc_feature
 <222> (284)..(284)
 <223> n = unknown at position 284

<400> 144
 tgcaaaattt agtgaacaat cgccaaagca aaatgtatag tgtagagac tcattagttt 60
 tagtattgct tgcttgtctg gtcgcgccaa gcttacaggc cactcctacc tacaagctg 120
 gcgtcgtaga atactatccg tcccagaatg agaaattcga agagaaaatt aatgaaaatt 180
 tgaagtttta tgaaaaaaca attgaggaag cagaaggcaa gaaggtagac atcctagtgt 240
 ttcccgaagc aaccttaaat ggtggtatca aaactagaga agangccaag gaacatggtg 300
 ctgagatcaa atttccaaat aaagacagtt taggcccaac aaaattaaaa cagccgccgt 360
 ctttttttga aaaattatcc tgtaaagcta tggaaaagaa atctacgtag ttgt 414

<210> 145
 <211> 350
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (4)..(5)
 <223> n = unknown at positions 4 and 5

<400> 145
 gaanncatct atcaaatgg ccaaactgac caagaagggtt ggaattactg gtaaataatgg 60
 aactcgttat ggagcttcct tacgtaaaat ggtcaaaaag atggaaataa cccagcacgc 120
 caaatacact tgcacatttt gtggaaagga tgccatgaaa cgtagttgtg ttggaatttg 180
 ggtcttgcaa aagatgtaaa agaacagtag ctggtggtgc ctgggtatat accacaactg 240
 ctgctgcctc tgtccgatct gctgtagga ggttgagaga aacaaaggaa cagtaattta 300
 tattgatctt aataaataat taataaaaat taaaaaaaaa aaaaaaaaaa 350

<210> 146
 <211> 217
 <212> DNA
 <213> Ctenocephalides felis

<400> 146
 cccttcagta tttcttttat tttcaattac gaaaatcaga aaacagttat tccaagatca 60
 tggttcttgt tcccttcttt aagtttatct cctatcctaa agtgtaaact attactacct 120
 aaactgcat gatatttggt atgaatgatg ttgacatgat gtccgaagac gttggctaag 180
 atgcggtaaa attctgttcc tggatcatcat cgttccc 217

<210> 147
 <211> 489

FC-8-C2-PCT.ST25.txt

<212> DNA

<213> Ctenocephalides felis

<400> 147

```

catttgcaag aattatcagt gtaatccaaa aacaatcctg tccgcacgca agcaaagggt      60
tgcgatggtc ctggtcctgg tggcgggtgg ggaggtgcag ctgtcgccaa gcactcggat      120
aaaggcgctt gcacgcattg tgggtaaagc gcgctgaagt atgtctgtcc ggcgcatgta      180
aaacgaccca cgttgaaatt tcctccagag agtctcacac attcaaaata tactttgcat      240
gttttgtctg ctggatctgc aaatgagccg ctctgcacgc agctgtatat gggcggcggc      300
gtaggtggtt gccaaggcgc tggaggattt cttaggcact ccgaaaggga agcgaccaca      360
cattgctgat agaagtaagt agaaccaagg acaattgtaa cgcgctacac tgaatcctcc      420
gcctgctttc aaagcacatt tgtagtatcc ttgcaagtg ctgtcatagg gatctataaa      480
catcccttc                                     489

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<210> 148

<211> 489

<212> DNA

<213> Ctenocephalides felis

<400> 148

```

aaaaggttta caagtctcaa agattccgtg caggtaaagg taaaatgcgc aacaggcgctc      60
gcatccaaag acgtgggtcca ttgatcattt acaaccaaga ccagggattg aagaaagctt      120
tccgcaatat ccctggaatt gaattaatca atgttgaaag acttaacttg ttgaagttgg      180
cacctgggtg tcatgttggg cgtttcgtga tttggactga atctgctttc aaaaaactag      240
atgagttgta tggaacctgg aaatcgatcat caaaatctaa agctgggttac aatctaccac      300
aacctaaaat ggctaacact gatttggctc gcttgttgaa atctgaagaa attatgaagg      360
ttcttcgtgc tacagttact cgcagggtta aaaaattgaa cccattgacc aatgcacgag      420
ccatgcttaa attgaatccc tatgcagcag ttactaaacg taaagccatt cttgctacta      480
agaagaagc                                     489

```

<210> 149

<211> 289

<212> DNA

<213> Ctenocephalides felis

<400> 149

```

agttaaggct ctatatgct ggctacctct tgctgtcaaa ggtgcgaagc caggcatgaa      60
gaaatgtaaa cgtgggaatg gaaccatggt tacagctaata tttctcaaat cagcattaag      120
ttgaccaggg aaacgaaggc aggtgggtgac accagacatg gtaagagaaa ctaaattgatt      180
caagtctcca tatgttggag tgctaagttt caatgttctg aaacaaatat catacaatgc      240
ttcattatca atacaatagg tttcatcagt gttttcaact aattgatgt                                     289

```

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<210> 150
 <211> 171
 <212> DNA
 <213> Ctenocephalides felis

<400> 150
 tgcttggaga aagtgcagtt ggaaaaagtt ctttggtggt aagatttgct aaggggcagt 60
 ttcatgaata tcaagagtct actatagggt ctgcgttttt aactcaaact gtgtgtcttg 120
 atgacacaac ggttaaattt gaaatttggg atacggctgg acaagaaagg t 171

<210> 151
 <211> 413
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (405)..(405)
 <223> n = unknown at position 405

<400> 151
 acacaattag caataggaaa atctagccac aaatatTTTT aacaatttat ttaataactta 60
 tgttctagaa atacaaagtg taaagttcaa ggtttgtata gcttaataaa gtaaacattt 120
 taaaatgtaa tgaatttatc tgcaaatagt caaaatcaaa attactatat aatgattatt 180
 gaaataatgc ttttatagat tgcatttcaa tctgtattaa attgtatgta aatcacagca 240
 caagatctaa cacacaattc atctaacaga aagaacaaaa taattttaat gttattaaaa 300
 attacatata aaataacttt tacaataaag taaccttaca tgagatgtgt tgatttcaga 360
 tacttttcat acaacagtgc tttctgtata aacaatataa tatanataac ggt 413

<210> 152
 <211> 418
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (402)..(402)
 <223> n = unknown at position 402

<400> 152
 ttgacaagca aaataaaata catcaacggt gttttttacg gccacttgca agttatttaa 60
 tggttccatt ttttgaacaa ctccatttgt tccaagaacc aatgatgttt catatgtttg 120
 tgatggttgt aaattcggaa cttgtaatgg tgcaccaggt gccagaccaa agctgttttt 180
 attcaactgt atggcaaac cactcatagc ttgcattgct ttgttggtgt agctcatgtc 240
 catgtaaata tgtccacttc tcctggagaa tgttccatat atttccaaac ctttgcctt 300

FC-8-C2-PCT.ST25.txt

ttcagctggc aaccacaatg ctttttggtat aacaaaaggg ccagctgatc ccacagagaa 360
 tattttctccc agaagtcacag agttaccgat gttattaagt anaattgaca tctgatgt 418

<210> 153
 <211> 340
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (196)..(196)
 <223> n = unknown at position 196

<220>
 <221> misc_feature
 <222> (285)..(285)
 <223> n = unknown at position 285

<400> 153
 gaatactggg tcataaaatt tagaagccct aatttaccgc ctacggcgat atgatgatca 60
 gacatatgtc cgggcttggt caaaaatgta aaatgcacat ggggaattttc caatggcggtc 120
 cacttatgaa taatattggg aagtcctagc aattgcggtt tcaaattttc ctgcacgggt 180
 tgaaaacaat ccttangcat cttcaaatca tcccttacia ttttaccctg gttaattaat 240
 ttggtaaact cgtcaccgga tttgtcaggt gtcttaactt tctcngcgat gctgggttctg 300
 cacgcgtcca attttcggcg tgttttgtcc aaatcttggt 340

<210> 154
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<400> 154
 tacgagtgc cattaaacgc tcgaggtgta ttcgacgtgg cccgatatgc ttgtgcagct 60
 gagttatatt tcaacagcgt tctgcagcag tgcgtacctg cataccagtc agactgttta 120
 ggtgcaagtg tcacttcttc cccatccata ccatccttac catccttacc atctttccca 180
 accttgccaa catcttcccc aacagcagga tttccttttg gccgaaaatc tcttgatatg 240
 caaacaaaaa ctggaactaa atgtacaaaa ggagaagttt ctaaagacga tttaaattct 300
 acatgtacct agtgagtgtg ttatatgaaa ttgctattgc atattacata caagcttaat 360
 aaaggttatg gtgatttatt tcatttaaag gcaatgtatc gggttaaatg ttttaaattt 420
 atttttatatt aatattaaat agattaatta aaaatctata aagtgataag aggctgatat 480
 ccataatatt attgaata 498

<210> 155

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<211> 102

<212> DNA

<213> Ctenocephalides felis

<400> 155

agaccaagta aaaatctcac tcacagcttt taccttatta ggatcattta aaaatctatc 60

tagaatgcca ggttttgcca gagattgctg cactttctta gt 102

<210> 156

<211> 462

<212> DNA

<213> Ctenocephalides felis

<400> 156

aatttgcgga aacacctcag atttttagcgg cagcggaga aatttgtgga ccttatgtct 60

ggggccgtta tgatttactt gttttacctc cttcattccc ttatgggtgga atggaaaatc 120

catgcttgac atttgtaaca cctactctat tggctggcga cagatcgcta gtgagtgttg 180

ttgctcatga aatagcacat agctggactg gaaatttagt cacaaattgc agttttgaac 240

atttctggct aaatgaagggt ttcactgtat ttgtagaata caaaattcag ggaaaattgc 300

atgggtgaaga tgtagagac tttcattcgc tttgcggact cacaaacattg aaagaagagg 360

ttcaactatt aggtgaaacc aatcaactga ctgctctcgt tgtaactta caaaatttaa 420

gtcctgacga tgcattttct tctatacctt acatgaaagg ct 462

<210> 157

<211> 194

<212> DNA

<213> Ctenocephalides felis

<400> 157

atcctttttt tctatgaacg gttttaggta acggagaata atgtaaggca tcactaaagt 60

cgtttttatt tgtgatttca tgattaggct cgggtcttct gaccgcata aattgacccc 120

gcaattttgc ttcctttgcc tcgtttgatg atacagcccg ccaatccaaa aataataatt 180

ttggtaaattg atgt 194

<210> 158

<211> 265

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (58)..(58)

<223> n = unknown at position 58

<400> 158

tttttttttt tttttttttt tttttttttt ttctgcatca gataatacct cataagcngg 60

tcctagatct tgaaacttcg aggctgcac tggatcgttt ttattcttat caggatgcaa 120

FC-8-C2-PCT.ST25.txt

ttcctttgct tgtttcctat aagctttctt aatttcattt aacgtcgcac tacgagatac 180
 ttttaatat gaatagaaat ctcgccagc gctggctagt aaaaaataaa tacttaagtt 240
 aactaacact aaataacaca gtttg 265

<210> 159
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis

<400> 159
 cttggcatct agttttgtaa attcagtttg gctgtttatt ttgctgcgat atttcaatgg 60
 attttttcgta tctggaggaa gtgcaacaat atatgcatat ttaggagaat ttcataatcc 120
 taggcatcgc agcagggcta ttatgggagc gtcaagcatc ttcggtattg cgtgtcttgc 180
 attaccgacg gttgcatggg taattataaa tcagaaatgg tcattctata ttgacttttt 240
 gggatataca tacaagccct ggaggttgta tatgggttgca tgtgggttgc catcactgct 300
 ttgttggtttt gctttgtgga aattaccaga aagtcccaa tttttgatga atcaggggaag 360
 aaacgaagaa gctcgtcaaa ttattgccaa aatgtataga attaatactg gtaaaccaga 420
 aagtgaattc cccgtatcat caatcttaga tgaatatcca ggagtggatg gtgaaaatac 480
 aaataaaaca aagaaatc 498

<210> 160
 <211> 617
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (573)..(573)
 <223> n = unknown at position 573

<220>
 <221> misc_feature
 <222> (577)..(577)
 <223> n = unknown at position 577

<220>
 <221> misc_feature
 <222> (579)..(579)
 <223> n = unknown at position 579

<400> 160
 ccatTTGcaa ggaattatca gtgtaatcca aaaacaatcc tgtccgcacg caagcaaagg 60
 gttgcgatgg tcctggtcct ggtggcggtg gtggaggtgc agctgtcgcc aagcactcgg 120
 ataaaggcgc ttgcacgcat tgttggtaaa gcgcgctgaa gtatgtctgt ccggcgcatg 180

FC-8-C2-PCT.ST25.txt

```

taaagcgacc cacgttgaaa tttcctccag agagtctcac acattcaaaa tatactttgc      240
atgtttttgtc tgctggatct gcaaatgagc cgctctgcac gcagttgtat atgggcggcg      300
gcgtaggtgg ttgccaaggc gctggaggat ttcttaggca ctccgaaagg gaagcgacca      360
cacattgctg atacgtgctg ctgaagtaag tagaaccagg acaattgtaa cgcgctacac      420
tgaatcctcc gcctgctttc aaagcacatt tgtagtatcc tttgcaagtg ctgtcatagg      480
gatctataaa catccctttc tgcacgcatg aaaaaagaag cggcgggtgct ggtgtaattg      540
gccgtagtcg tagtaatcgg acaattggag gangcanang tgtaattaaa cattccgaat      600
atgtagggcc cacacat                                          617

```

```

<210> 161
<211> 450
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (34)..(34)
<223> n = unknown at position 34

```

```

<220>
<221> misc_feature
<222> (65)..(65)
<223> n = unknown at position 65

```

```

<400> 161
agaattagaa ttgacacaaa atgcttttagt gaangaaatg aaattaaaat tgatgattat      60
tgatngattt tataccaaat gaaatcaaag ataaatttta tgcaaatgca aagtttgatg      120
aagatttgga catatggaca gttgcaataa ctaaagaaat gttgccacca agacgaccga      180
tatccaaacc aggacggcgc aggcctattt ctgaggtctc tttggttaaa agacattacc      240
ctggccttggc aggtatacgt cacagagggtg agaatattat tgagtatgac ttgggcatgc      300
catttcgcac cacatttgaa tacgaagccc caacagtgtc cccagcgtta caatcagtat      360
tagaagatgc tttacaacca gaaggagatt tagaaatcac ttcaccccgt caaccgtctt      420
cagactgccc aaatcatgaa aagacctagt                                          450

```

```

<210> 162
<211> 420
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 162
ctgaattcca gatgtagtga agtaaggaat ctcaaatttc acttgtattg ggggttttcc      60
ttccgtatct tcacattcca cacttggcaa tccaaaatgt gctctcatta ggtattcttt      120
accacctgga aatgatttta tggaccaagt aaatgcattc aaatcaggag catatttaac      180

```

FC-8-C2-PCT.ST25.txt

acttccaatt gttgttttaa acttcgggga atctgcatca gctgggtacag gaatcagtat 240
 ctccacatta tttgcagttg accgtctttt aaattgtgac ttagctttga tcatgtattc 300
 tacacggctg tgtgcgtgcc tttcaattac tgattcaatc catatcaagg gttttacatg 360
 tgtgttaagt cgataagaca ttaactcaaa ctctccatca ggaggaataa atgatatggt 420

<210> 163
 <211> 498
 <212> DNA
 <213> Ctenocephalides felis
 <220>
 <221> misc_feature
 <222> (27)..(27)
 <223> n = unknown at position 27

<400> 163
 tacaatggga attgtcatgt tcaaatnctt ggctgcggca attatacctt cggctataac 60
 atcacacctc attattcctc caaatatatt cactaaaata gcactgacct taggatctgt 120
 tgtgataatc ttgaaagctt ctttgactgt agaagcagtg gccgcaccgc ccacatctaa 180
 aaagtttgct ggggtctcctc catgtaattt aattatgtcc atagtagcca tggcaagacc 240
 agcgccatta accatacatc caatatttcc atccaatgct atataattca aatcaaattt 300
 tgaagcttct acttccttag gatcttcttg agtccagtct cttagggcaa aaagttcttt 360
 ttgtcgaaaa tgagcattgt catcaaagcg cattttgcag tctaagctga aaaatatatc 420
 ctcagatttc cttgatattt cttttgaatc ttcagcaa at ggattgattt caatgagtag 480
 tgcattctttc tttaaaaa 498

<210> 164
 <211> 0
 <212> DNA
 <213> Ctenocephalides felis
 <220>
 <221> misc_feature
 <222> (12)..(12)
 <223> n = unknown at position 12

<220>
 <221> misc_feature
 <222> (70)..(70)
 <223> n = unknown at position 70

<220>
 <221> misc_feature
 <222> (74)..(74)
 <223> n = unknown at position 74

FC-8-C2-PCT.ST25.txt

<220>
<221> misc_feature
<222> (87)..(87)
<223> n = unknown at position 87

<220>
<221> misc_feature
<222> (108)..(108)
<223> n = unknown at position 108

<220>
<221> misc_feature
<222> (125)..(125)
<223> n = unknown at position 125

<220>
<221> misc_feature
<222> (129)..(129)
<223> n = unknown at position 129

<220>
<221> misc_feature
<222> (157)..(157)
<223> n = unknown at position 157

<220>
<221> misc_feature
<222> (160)..(160)
<223> n = unknown at position 160

<220>
<221> misc_feature
<222> (163)..(163)
<223> n = unknown at position 163

<220>
<221> misc_feature
<222> (206)..(206)
<223> n = unknown at position 206

<400> 164
000

<210> 165
<211> 373
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (44)..(44)
<223> n = unknown at position 44

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (50)..(50)
 <223> n = unknown at position 50

<220>
 <221> misc_feature
 <222> (300)..(300)
 <223> n = unknown at position 300

<220>
 <221> misc_feature
 <222> (334)..(334)
 <223> n = unknown at position 334

<220>
 <221> misc_feature
 <222> (359)..(359)
 <223> n = unknown at position 359

<400> 165
 caaaaatggg cacctcaact ggtgcaaaac gtttttggct tttnttgggn ccgtgggtctt 60
 tagacaaacg tgccagaggg cttttcacga aaaccaaggg gagggcattg tcattcctga 120
 gaagggcgca agcaaaaagt tctcaagggc agagttattg cagttggccc ggcaaagaaa 180
 ccaactgggtg aacatgtgcc cctaggaatc aaaagtgggtg acatggtttg ctgccgaatc 240
 cgaggcccaa aagttgagct cgaagagaac aagaattcct tattcaaaga atccgatatn 300
 cttgccaaagt tggatatcga cgaataaatt gccnaaaatt taccatcttt cacaatttnc 360
 ccaacacaaa ctg 373

<210> 166
 <211> 390
 <212> DNA
 <213> Ctenocephalides felis

<400> 166
 aaatctccgc cctgcaatct tccccaaacc aaccaaccga tcaaatagga agccaactcc 60
 aagctgtcca agttctccca acaaacctcg gtttgcacac acacagacac caaaacaact 120
 atgctgtacc ccaacaaacc aactttggat cttttcacca tcaccaacaa atcgcaccca 180
 caaatattgg gggctactac tccccccacg gaattctacc aatctactac gataatgggc 240
 acggattggtt gaattttaat cttttgaagc ctcaaaaacta ctacgccagc tattatcctt 300
 actaccagaa cacgagacag tattatcctt acaatttttg atattattat catcacagtt 360
 tgccgaattc gcactactac aggcagcagt 390

<210> 167
 <211> 500

FC-8-C2-PCT.ST25.txt

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (6)..(6)

<223> n = unknown at position 6

<220>

<221> misc_feature

<222> (8)..(8)

<223> n = unknown at position 8

<220>

<221> misc_feature

<222> (10)..(10)

<223> n = unknown at position 10

<220>

<221> misc_feature

<222> (14)..(14)

<223> n = unknown at position 14

<220>

<221> misc_feature

<222> (17)..(17)

<223> n = unknown at position 17

<220>

<221> misc_feature

<222> (35)..(37)

<223> n = unknown at positions 35, 36 and 37

<220>

<221> misc_feature

<222> (52)..(52)

<223> n = unknown at position 52

<220>

<221> misc_feature

<222> (56)..(56)

<223> n = unknown at position 56

<220>

<221> misc_feature

<222> (231)..(231)

<223> n = unknown at position 231

<400> 167

aggggngntn tatnatnaat ttttctttga cgacnnnggt taaggggggc cncggncggg 60

tattttttca taatcattca atattaatta ttttattaat tacaatttta gtgggatata 120

ttatgagatc tttattttat aataaattat ataatcgtaa tttacttgaa agacaaaata 180

FC-8-C2-PCT.ST25.txt

```

ttgaaattat ttgaacaatt ctacctgcat ttatattaat ttttattgct ntaccttctc      240
ttcgactttt atatttatta gatgattcaa ataggccttt aatttcttta aaagcaattg      300
gtcatcaatg atattgaagt tatgaatata ctgattttta taatatttct tttgattcat      360
atataattcc atctaataa tttaaattta attcatttcg tttattagat gttgataatc      420
gaattatctt acctattaat tcacaaattc gtattttaat tctgctaccg atgttcttca      480
ttcatgaacc attccctctc                                          500

```

```

<210> 168
<211> 498
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (30)..(30)
<223> n = unknown at position 30

```

```

<220>
<221> misc_feature
<222> (57)..(58)
<223> n = unknown at positions 57 and 58

```

```

<400> 168
atatatctta catcgaatct aataacattn aagagttatt aattttcatg tcgatgnntt      60
agaaaatgat tcagtagcaa cttctgaatt ttctttgtaa tcgataatac tttctcaaag      120
tataattgca tttcacaaca cacgacggaa atatggttat ggtccatatg aagcaatgct      180
cgttcttcta tccacttgct tctgataaat gttcgggtata aagaatgcaa tcactccaca      240
tgctatcaga gatgttcctg atattaaaaa tgttaaatcg caattataat ctagaattat      300
tcctacaaca ttgcttccaa caacacttcc taatcgaccc atcattaaag atatacatac      360
tgccattgcc ctgagttgtg tagggtagag atctactaat gccgcgttta cactgtcac      420
agcaattccg caaaccagca accacaaata taaatatgat gctattgtta aatgttcaat      480
aatgcacaa attattcc                                          498

```

```

<210> 169
<211> 232
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 169
tgtaaacagc actttgcctt tgtaggtttt atcgaaggct tcgctcaagg ttttgatggc      60
tttggtgagt tcagttttgg ctttgtcggt ttcttcgggg gatttgaaat ttgttgctaa      120
gcggaagaag aataagctag gacgttcac aggggttagt tctaagactt tgtcagataa      180

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FC-8-C2-PCT.ST25.txt

aagcgttgag gacaccaggt ctttcacaaa cttctctggt aaatcacttt gt 232

<210> 170
 <211> 288
 <212> DNA
 <213> Ctenocephalides felis

<400> 170
 gataagaaca gtggactctc gtgctcttgc acttctctat gttgaatagg agcaccgccc 60
 aatttgtcat caagttctac agtcataatg gctgcggcac ctgcctcatc ttgtgacggt 120
 tccaatccaa gccagaaatg aacatcccag ctaaattggc ccttcttgtc ttcttttagta 180
 ttcaggatga tgtatgagtc tcctgtgtag aattttccaa aatcattttt aggatacgcg 240
 acgggttcaa aattctctac acgccacacc tccaagcctt tggtagta 288

<210> 171
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<400> 171
 gttaattccc attaacacgc ggcgtttttc gtttagcaat tcaataaatt acacacttca 60
 caatggctga tatggaagat actcatttcg aaactggaga ctctggagct tcagcgacct 120
 atcccatgca atgttctgca cttcgaaaaa atggttttgt aatgttaaaa tcccgccccg 180
 tgtaaaattg tagaaatgtc cacttccaaa actggtaaac atggatcatgc taaagttcac 240
 atggtcggaa ttgatatttt caacggcaag aaatatgaag atatatgccc atctactcac 300
 aacatggatg tcccacatgt aaaacgtgaa gattatcagc tcaatgacat tgatgacggt 360
 tacttaacat tgatggctga caatggagac cttcgagaag atcttaaaat tccagatggc 420
 gaattgggac agcaacttcg taatgatttc gaatctggaa aggagctttt gtgcctgact 480
 aaaatcttgt ggagaagaat 500

<210> 172
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (5)..(5)
 <223> n = unknown at position 5

<400> 172
 gccgntgaag ccgcaccagc tccagctgca gcccccgccg ccagcgaacg ccaatcatcc 60
 aggggatccc gcaaagccgt caagcgcagt ggatctaacg ttttctccat gttctcacia 120
 aagcaggtag ctgaattcaa agaagccttc caactaattg accacgacaa agatgggtatt 180

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FC-8-C2-PCT.ST25.txt

```

cattggaaag aacgatctcc gtgccacttt cgacgaattg ggccgtttgg tacaagagaa      240
agaactcgac gacatgatcg gtgaggcttc aggaccaatc aacttcaccc aattgttgac      300
cttgttcgcc aaccgcatgt ctggatcagg tggtagtgat gatgatgatg ttgtcatcaa      360
cgccttcaag accttcgaca acgacggcaa aatcgacagt gacaggttac gtcatgccct      420
catgacctgg ggagataaat tcactgcaa gaagttgatg acgcctacga ccaaattggca      480
ttgacgataa aggcttcatt                                     .      500

```

```

<210> 173
<211> 500
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 173
gatgccaaaa cagaaccgtg tcgcaatcta cgagcacctc tttaaggagg gagttatggt      60
ggccaagaag gactaccatg caccaaaaca cccagaatta gagcaaattc caaacttgca      120
agttattaag gctttgcagt cgttgaaatc tagaggatat gttactgaac aatttgcatg      180
gaggcatttc tactgggtatc tgacaaatga aggtattgaa tacttgagga catacttgca      240
cttgccccca gagatcgtgc cctccactct caaacgtcaa accaggccccg aattggcaag      300
gccaagacca gctgccggcc caaggactga aggatctcgt ccagctgaag acagatctgc      360
ctaccgtagg gcacctgggtg cacctgggtg cgctgacaag aaggctgatg tcggtgctgg      420
cactggagac ttggaattcg tggtagtat ggacgtggca gacctgccct caataaatTT      480
atataagtaa ttataataa                                     .      500

```

```

<210> 174
<211> 500
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (4)..(6)
<223> n = unknown at positions 4, 5 and 6

```

```

<220>
<221> misc_feature
<222> (41)..(41)
<223> n = unknown at position 41

```

```

<220>
<221> misc_feature
<222> (61)..(61)
<223> n = unknown at position 61

```

```

<220>
<221> misc_feature

```

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<222> (179)..(179)

<223> n = unknown at position 179

<400> 174

```

aggnnnncacg cctatgctca aaagaacttg cgcagatctg ntcgtcgcat taaggaactt      60
ncctttccaag ctgaagaaga ccgcaagaac cacgaacgta tgcaagacct tgtagacaaa      120
ttacaacaaa agatcaagac ttacaagagg cagatcgaag aagccgaaga aatcgccgnc      180
ctcaatcttg ccaaattcgc aaggctcaac aagaattgga agaggctgaa gaacgcgctg      240
acttggtgta acaagccgtc agcaaattcc gcgcgaaggg acgtgggtgga tccatggcac      300
gaggtggcag cccagtgtcc gcaagaacag cagctcgccc acaatttgac ggaatggctt      360
tcccgttagg ttcgacttga accctgacag cgagttctaa attatttata attaatttta      420
aaaaagcgaa cgtggctgct tgacagtaaa cattaatatt ttttaaaaat tattaaaagt      480
aaaaaatatc agctcgttca                                     500

```

<210> 175

<211> 500

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (489)..(489)

<223> n = unknown at position 489

<400> 175

```

gtaaaaacaa aataaaatca ttttagtttg agttagaaca tgtgttatta taagttagcg      60
taacacacaa aaattaatca taaatgtctg ataataattg gtagtatact tgtacagtaa      120
attcttttatt ttcctttttcc caatcttttt ctaaaagcga gtgtgggtcat actgctgtgg      180
taattcgtca ccgagaagcg gatgaagttt atcctccatc attagtgaag gctttgcttg      240
tcagaagaga gaggagtgtt gggtgcccgt gtttattgta gttttaattt aattttaaac      300
taagttatgc gtatgacca agacatggac gatgatgaaa agggaaagct ttcgtcgga      360
gggctatcat gggagactac tcaggagaac ctgcagaggt tcttctcgag gtacggcgaa      420
gtgatcgatt gcgtcgcatg aagaacagcg agtcggcagg tcgcgcgggt tcggcttcgt      480
cacatttgnc gatccctcga                                     500

```

<210> 176

<211> 500

<212> DNA

<213> Ctenocephalides felis

<400> 176

```

aagccgtggg agtttcgctg tatgaggaac ctattcagcc tcaacaagct gcttctgtcg      60

```

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```

tggagaaact tgggtgactac ctcataactt gcggtacta aatgtgaaac actggagtgg 120
ccccttatta atttttaaga aaactataat aattataatt acgattaatg aataaattta 180
aacaatgaag accggccagc aaaaaggagc agaatttttt tctcatgcct cctgcaatgc 240
agtaaaatat tttgtgccat ttttgtgcct ttgttcccgg tgaccttttt ttcctcagaa 300
gggacacctg gagtgactg gcaaaatcga ggacattagt ttaaacattt gtattataaa 360
accgtgcgga cggcaaaatg aataaaaaat cttactacga ttaaatttgt attaatttcg 420
atgtgaggtt atcgacttgt ggatttaaata atactttctc ctttaataaa actcgtgctt 480
ttgcaattta tgatttgcta 500

```

```

<210> 177
<211> 500
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 177
atcaacttgg attttgtcgg ttaattccga aatcgaaaaa gtttttaagt gcaaaacatt 60
taactgtgac atcagtttgt aatgtatctg ggaaggaaat gagatctgta aatccgattg 120
aaaggtttcc tccttatgac tataagaaga aaggatacgg atttatcaat gcgttttttg 180
attacacaac taagagattc aatgataaca caaaggttat tacagtggaa ggtccaccag 240
ctgttggcaa aactgcattt gctaaagctt tggccgaaga tttagatatg aaatactttc 300
cagctgttac tatggatcac tactatatta atgaatatgg gtatgatctc agacaacttg 360
atgataaatt acctgaatca tgtaaaagca tcgattttga taaatttcat aaagatccgc 420
ataatagaaa tgtagcaaca atgcaaattg tgttatatat gaaaaaatat gaacaatatc 480
ttgcggctct tgccatttat 500

```

```

<210> 178
<211> 500
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (492)..(492)
<223> n = unknown at position 492

```

```

<400> 178
gtcattcact ttttacgagt tcttttagtgt cctaatttat taataagtat cagaatggtg 60
ccgaaaacaa aagtatttgt tggaagcttg ccgccaggct ccaagcctga agaattacgt 120
cgtttggtcg aagcttacgg tggtgtaaca gaatgtgata ttatgaatcg ttgtggcttt 180
gtacatatgc agaccgaaga gatggctttt agcgcgattc aagcgttgaa taatactaca 240
tttaatgggg ccacgataag tgtcgaaagg ggccgcatca aggaacgcgg atcaggtggt 300

```

FC-8-C2-PCT.ST25.txt

ggtcgtggag gcggtggccg cggcggtcga ggatttggag gacgaggagg tggatatgaat 360
 cgtagtggtg gaggacctgg gggatatgct aatgggtggtg gcccctatggg aggtggcatg 420
 cgtcgtggag gcggtggccc aggacctatg cgtgggtggtg gccgtgacat gaatcgtgga 480
 caccctattc tngtgatggt 500

<210> 179
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<400> 179
 atttgaatcc tcttatcgat tactaatctt ttgtacagtt taatatattat tatcaaggcc 60
 ttgtacgcca gtgtgtgtaa aggtctcttc agtcgacgac agaggataga agtcagagga 120
 catttataat acgcagtttt taagtttttt ctgggtgaatt tgaatatatt tgaagaaaat 180
 gaagaggttt ttggttgctt tggcggtttt ggtgggtcgtt gctgaggcta agctgtcatg 240
 ttcgagtaca aaagcctcga tccccgaaga atggatcgac atgacagccc agtgcacgag 300
 gagcatgagg aaccagatcc aagaagaact gagcgcttcg atgcaatact tggccatggg 360
 ggcgcatttc tcaagagaca ctgtcaacag gccaggattt gctgagatgt tcttcaaate 420
 ggcaagcgaa gagagggaac atgccatgaa actcatgtct tacttgatga tgagaggaga 480
 actgccgaga ggctgcagga 500

<210> 180
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<400> 180
 aagaagatca agaagaagaa ggcaaaagaa gagtctggag atgccccagc cgctgaagcc 60
 gcaccagctc cagctgcagc ccccgccgcc agcgaacgcc aatcatccag gggatcccgc 120
 aaagccgtca agcgcagcgg atctaactgt ttctccatgt tctcacaaaa gcaggtagct 180
 gaattcaaag aagccttcca gctaattgac cagcaciaag atggatatcat tggaaagaac 240
 gatcttcgtg ccactttcga cgaattgggc cgtttggtac aagagaaaga actcgacgac 300
 atgatcgggtg aggcctcagg accaatcaac ttcacccaat tgttgacctt gttcgccaac 360
 cgcattgtctg gatcagggtg tactgatgat gatgatgttg tcatcaacgc cttcaagacc 420
 ttcgacaacg acggcaaaat cgacagtgac aggttacgtc atgccctcat gactggggag 480
 ataaattcac tgccaagaag 500

<210> 181
 <211> 500
 <212> DNA

FC-8-C2-PCT.ST25.txt

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (5)..(6)

<223> n = unknown at positions 5 and 6

<400> 181

```

acttnnctcc atgcaagcct ctcttgaagc cgaagccaag ggcaaggctg aggctttacg      60
catgaagaag aagttggaag ccgacatcaa cgagcttgaa attgctctgg accatgctaa      120
caaggctaac gccgaggccc agaagaacat caagcgttac caacaacaac ttaaggatgt      180
acaaaccgcc ttgaggaaga acaacgtgca cgtgatgatg cccgtgaaca acttggcatt      240
tctgaacgcc gtgccaatgc tctccaaaac gaattggaag aatcccgtac cttattggag      300
caagccgaca gaggccgccg ccaagccgaa caagaattgg gagatgctca cgagcaattg      360
aacgaacttt ccgcacaaaa cgcttcagta tctgctgcaa gaggaaattg gaatccgaat      420
tgcaaacctt gcattctgac ttggacgaac tctcaatgaa gccaagactc agaagaaaaa      480
gcaagaaggc atggttgacg                                     500

```

<210> 182

<211> 500

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (5)..(5)

<223> n = unknown at position 5

<220>

<221> misc_feature

<222> (34)..(34)

<223> n = unknown at position 34

<400> 182

```

agacngctgt ttttgtgttc aaaaagcagt aaantataga aaaaaaaaaac ttattactag      60
tgcacattaa caaaaataag cagaacaact attaaaaata tgttttccat gtcaaacctt      120
ttctaaaaac cattcaatgc atagaaatgt aattttttaa atcaatagta tgatttttta      180
aaatatttgg ttttatacca ggagtggact actgaatttc tgcagtgttg ctatggctct      240
caatgatcta gggtacaaag ctgttggtat acgaatagac tctggtgatt tagcatatct      300
ctcagttctg gccagagaaa catttgagag gatagcagag aaatacaaca ttccttggtt      360
tgcaagactc atgataattg catcaaatga tatcaatgaa gacacaatac tcagtctcaa      420
tgaacaggga cacaaaatag attgttttgg aattgggacg catttagtta catgtcaaag      480
gcaccagcac ttgttgtgtc                                     500

```

FC-8-C2-PCT.ST25.txt

<210> 183
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<400> 183
 gtggttcaaa gataatccaa gatgggtaag ggaaataata tgatccctaa tgggcacttc 60
 cacaaagatt ggcaacgttt tgtgaaaact tggtttaacc agcccgcaag gaaaattcga 120
 agacgtcaaa acaggattaa aaaagctcgt gccttggtcc ctgcctctgc tgctgggccc 180
 ctgagaccaa ttgtgcattg cccacagtg cgataccaca ctaaggttcg agctggcaga 240
 ggtttttaccc tcgaagaaat caggggagca ggtttgaatg caggatttgc tcgctcgatt 300
 ggcattgcat tagatgttag acgtcgtaat aaatctgtag aatctttaca acagaatata 360
 caaagattaa aggaatacag atctaaattg atcttggtcc caagaggtgg aaagaaattg 420
 cataaggggtg aagcaactga agaggaatgc aaggttgcat ctcaattaga aggcgtcgtg 480
 atgccaatta aacaaacttc 500

<210> 184
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (4)..(5)
 <223> n = unknown at positions 4 and 5

<400> 184
 aatnntattc tgaatactat gttcgatttt agcgttttcc cggcgagctt gatataatat 60
 taattgtttg gagtaaaaac aacaaatttt cgaggattaa tttatacaaa aaataattaa 120
 aatgaaatta gttaggtttc ttatgaaatt atcacacgaa acagtgtcga tagaattgaa 180
 aatggaact caagtaaattg gaacaataac tggcgtggat gttgccatga atacgcattt 240
 gaaagctgtc aaaatgacta ttaaagatcg agatccagta tttcttgata ctataagttt 300
 gagagggaat aatattaggt actatattct cccagatagt ttaccattgg agaccctttt 360
 gatagatgat acacccaaag ccaaagctag aaagaaggaa gcagctcgag gtggaatacg 420
 aggaaggggt cgtggtcgtg gtggcccaga ggcggtcgtg gaggtggtag gggacgtgga 480
 cgaagataat aatatttttg 500

<210> 185
 <211> 500
 <212> DNA
 <213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<220>

<221> misc_feature

<222> (5)..(5)

<223> n = unknown at position 5

<400> 185

```

gaatntgcta ctttacaagc cgctattgaa gcaatcagtt caatgaacat gtttgaccta      60
ggaggccaat ttttaagagt gggacgtgct ataacgccgc cgaacgctct tatgggaccg      120
acaactggat ctatgatgcc gactgctgct gctggtgccg cagctgccgc cacagctaaa      180
attcaagcga tggatgcagt tgctagtaat gctgtcgctt tggggctgcc gagtttgagt      240
tcttcaccta caattccggt atcagtgccg acgatagcgg tgccgcccac cgcaacgata      300
acgccatcag ctcccgttgc tatatccggt gctgttaagt taccagggtg cgtcataaccg      360
cgcagggtgtc gtcgtacctc aagtcataca gcctccagga attgtgacgc cgacatcgca      420
accagttata attccagtat cagtattacc taattgtgaa tcttctccga cgatgatatc      480
aacaagctca cctgcacaca                                         500

```

<210> 186

<211> 500

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (34)..(34)

<223> n = unknown at position 34

<400> 186

```

atTTTTGCCA aacacgatca atctcaagct attntcaaca gacacaagga tgTTTTAGCC      60
agatggcagc gtctcctggg agactcccgt gctcgcaaga cccgtttgct ggacatgcaa      120
gaacagttca gacagatcga ggaattatat ttgacattcg caaagaaggc atcagctttc      180
aattcctggg tcgagaatgc cgaagaagat ctcacagatc ctgtcagggtg caactcgatt      240
gaggaaatcc gtgccctgag ggaggctcat gcacagttcc aggcttcttt gtcgtctgca      300
caggctgatt ttgaagccct ggcagccctt gatcgccaaa tcaagacggt caatgttggc      360
cgaatcctta cacctgggtc accatggagg ctctcgaaga cacctggagg aacttgcaga      420
agataattgc tgaacgtgat actgaacttg ctaaagaagc tcaacgacaa gacgaaaatg      480
ataaattgag gaaagagttt                                         500

```

<210> 187

<211> 500

<212> DNA

<213> Ctenocephalides felis

<220>

FC-8-C2-PCT.ST25.txt

<221> misc_feature
 <222> (5)..(5)
 <223> n = unknown at position 5

<220>
 <221> misc_feature
 <222> (473)..(473)
 <223> n = unknown at position 473

<400> 187
 caggntttcca caacttgtca ttaatatctc ggtctcttca ctgagacggt aaaagaattt 60
 caaaatgggt tactttttatt gtatatcact tttatgcctg ttcactatag ttagctgtaa 120
 taccggatta gatcctaaag gtccaaaagt tactcatgag gtatactttg acatcagcat 180
 tgggtggtgaa cctgcaggcc cgtgttttga tcggcctttt cggggggcact gtacccaaaa 240
 cagttgaaaa tttcgtagaa ttgtccaaga aacctaaagg tgaaggatac aaaggcagta 300
 aattccacag ggtcatcaag gacttcatga ttcaagggtg tgacttcacc aggggagatg 360
 gaactggagg ccgtcaattt atggagaacg ttttgctgat gaaaacttta agttgaagca 420
 ttatggtgct ggatggttgc catggcaaag gctggcaaag acctatggat ctnaattttt 480
 atcctacaaa ccctgctggt 500

<210> 188
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (5)..(5)
 <223> n = unknown at position 5

<220>
 <221> misc_feature
 <222> (525)..(525)
 <223> n = unknown at position 525

<400> 188
 atgtnttcgg gcatttagtg ttttgaagta tcgtggcata aagcagattt aagttaatct 60
 gcttcattca atacacaaca tggtagggaa acccaacaag atgtatgttt ttaagcgaga 120
 tggccgcaag gaagaaattc attttgataa aatcacttca aggattcaaa agctatgtta 180
 cggattgaac atggattttg tagaccctgt ctcaataaca ttaaaagtca taaatggatt 240
 atatactgga gttacaactc aagaacttga taatctggcc gcagaaactg ctgctaccat 300
 gacaacaaat catgctgatt atgccgttct tgcagcacga atagctgttt caaacttgca 360
 caaagaaaca aagaaacaat tttcagatgt catggatgat ttgtcaatat gactaatgag 420

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tataactaaaa agagatcacc aatgatagca gattatcatc ataaaataat aatggataat 480
gcagatcgca ttaactctgc tattatttat gatagagaat tcagntacaa ttactttggg 540
ttcagacat 549

<210> 189
<211> 549
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (532)..(532)
<223> n = unknown at position 532

<400> 189
gttatttgtg aaataaattt attataaaat gttagatcta tttacaatat ttagtaaagg 60
gggcatagtg ctctgggtgct ttcagagcac tagccacata tttgcaccat ctgtaaatgc 120
acttattaga agtgtcatat tgcaggagcg atctggaaaa aatacctacg accacgattc 180
cttaacattg caatataaat tagacaatga atttgagctg gtgtttgtgg ttgcctttca 240
gaaaattttg caactgtcat acgttgataa atttttaaat gatgtacatt tagagtttag 300
agataagtat aagaatgact taaaaataa aaggtatttt caagaatttg actttgggtgc 360
ttgttataac agtattctgc gggcggctga agaatggggt cggactcagg ctaagttacc 420
taaacaaatg cgttcttttg aagattctat gaaatctaaa aagacagttg cttcaatgat 480
tgaaagaaag ggcgagggaa aaaaagaccc cagaagaatg gtaaacaaaa angcaaaaat 540
ggttggttt 549

<210> 190
<211> 387
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (386)..(387)
<223> n = unknown at positions 386 and 387

<400> 190
gacgttctaa gcacggtcgg ggacatgtga accctgtaag atgcacaaat tgtgctcgat 60
gtgtccctaa agacaaggct atcaagaagt tcgtcattag gaacatcgtc gaagcagctg 120
ctgtacgtga tatcacggag gcttctgttt attccgctta cgtcttacct aagttgtacg 180
ctaagttaca ctactgcgtt tcctgcgcta ttcactctaa ggtagttcgc aatcgctcta 240
aggaagatcg tcgcattagg actccaccag tgagatcatt cccaagagat aatcaaaggc 300
aacaaaatgc tccaagaaag taaatgttca tatttttaa ataaaaaacg acaacttaaa 360

FC-8-C2-PCT.ST25.txt

aaaaaaaaaa aaaaaaaaaa aaaaann

387

<210> 191
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

 <220>
 <221> misc_feature
 <222> (5)..(5)
 <223> n = unknown at position 5

<400> 191
 attgnttaaa tttaaactggt gtcatttaag ctttaaatta cacactgaca acggagaagt 60
 acagttttatt tcgcaatcgt tatgttaacg ttttctctta catgtatgaa agttatttag 120
 ttataattaa aaatggctct gcaaagcttg aaagggtttt ctaaattggt aaacaaatgt 180
 tcgaatcgtg tttcatattt aactgtaaga tgtgcatctc aatattatga catagatgat 240
 aacatatttg gattaaatga ggatcagggt cagttgagga agaccatttt cgattttgcc 300
 cagaaagaat tagcacctaa agcagctgaa attgataaaa ataatacctt taaagaactg 360
 agagagttct ggagaaaatt aggagacttg ggaacattag gaataactgc tccagcagaa 420
 tacggtggaa cagaaggcac atatttagat catgttatta ttatggaaga attatcaaga 480
 gcttcgggag ctattgccct ctcatatgga gctcattcta atctagcaat aaatcaaatt 540
 cgaaggaat 549

<210> 192
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 192
 gctttttaacg ctcttataaa agaaattggt aaatctattg aaatccttat tcatcgggtgc 60
 ctatttttcgg cttaaagatg gttcaaaaga agcctaagaa gaaggctcga aagaaagtgg 120
 cagccgcccc tttggctgtg aagaagtctg aacccaaaaa gttgggttaat cctttgttcg 180
 agaagaggac aaggaacttt ggaatcgggtc aggatatcca gccaaccaga gacttatcca 240
 gatgcgtgag atggcccaaa tacatcagaa tccaacgcca aaagagcgtt ttgcagaagc 300
 gtttgaagggt ccctccacca atcaaccagt tcacgcagac tttggacaaa caaacagcta 360
 cacagttggt caagatttta gaaaagtaca ggccggagac tgctattgct aaaaaggcac 420
 gtttgcaagc acgtgctgaa gctaaagccc aagggaagga agacacacct acaaaacgtc 480
 caaatgttgt acgttctggc acaaacactg tcacaaaact tgttgaacaa aagaaggcca 540
 cttgttgtg 549

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<210> 193
 <211> 493
 <212> DNA
 <213> Ctenocephalides felis
 <220>
 <221> misc_feature
 <222> (395)..(395)
 <223> n = unknown at position 395

<220>
 <221> misc_feature
 <222> (407)..(407)
 <223> n = unknown at position 407

<400> 193
 gctaatttaa aaaccatata cgcttttgcg cgagagatgc attccaaaaa tataaataaa 60
 cctatacaat atggtacagc tggatttcgg accaaagcta cagacttgga ctatgtcatg 120
 tttcgtatgg gggttcttgc agctcttcgt tcccgtgtta aaagcacagc agtaattgga 180
 ttaatgataa ctgcatcaca taatcctgaa gaagataatg gtataaaaact cgtagacccc 240
 catggtgaga tgcttgaaca aagttgggaa gagttagcaa ccactttagt taacgttagt 300
 gattctgagt tagaggctac agttgaaaaa attgtaaaag acttgaatat cgatcttaat 360
 ttgaaggcta atgtgtttat tggatatgat acaangtata gtacgtnccc agtctttgca 420
 aagctgctgt tgatggagta ttatctatct cgggggatct cccagagaat tttggtattg 480
 gtaccgactc cca 493

<210> 194
 <211> 482
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (7)..(7)
 <223> n = unknown at position 7

<220>
 <221> misc_feature
 <222> (36)..(36)
 <223> n = unknown at position 36

<400> 194
 ttttttnata gtgatgcac ctttatcatt aggagntaat actaattatc caaacaattt 60
 gaacaagaat atttattggt ttaatttcaa aaacattttg attttcatat attttattta 120
 tttcatttat tggaggaata ttaattctat ttattttatat aacaagaatt tcaaatactg 180
 aatatttttc tttaaattat tataaaaacta tttttattat tttattatta acattaagaa 240

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```

ttattatttta ttataataaaa aatttttctat taattttttaa caataattcc atattttaatg      300
attttaatttc aaacttactt atatataatt ttaatctaaa taaattatat aatttttccaa      360
ataattttatt aactattata ttaattattht atttattaat ttcattaatt tgtgtagtta      420
aaattacaga tatttttttat ggtcctttac gaaaaaattt ttaaaaaaaaa aaaaaaaaaa      480
aa                                                                                   482

```

```

<210> 195
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (5)..(6)
<223> n = unknown at positions 5 and 6

```

```

<400> 195
gttggnacag atacgtagct gttaaattgtc attgcgttgc tattttttgat tatttcatca      60
gtattttcaat aaatccaaca tatgtctcgg cacacatcat tataattaaa ttattagttt      120
cattttccatt aattttatttt actggcgtca atatgacggg atcaaacgac gaattagttg      180
aatctttttaa agcttttaggt ttaagtgaac aaaaggcgaa agaaacgtta aaaaatacag      240
ttgttacgaa aaatttaaca ttagcattac atgaggtgag gggcattatt ttgccccaaag      300
gagctgggttc tttaattctat tatgtggcaa caaaaatcaa accacagatt atagatcaat      360
tgctgttact tgtaaaatat atatcaacat caaaattaga cacaacagtt agagttgatg      420
cggccttgca atttatgttg tctcatttaa atggatatca aatcgatgaa tttgagaagg      480
cttgtggaat tgggtgttgtt gtacacctga acaaattgaa aaagcagtaa atgaggctat      540
gttggaaca                                                                                   549

```

```

<210> 196
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 196
cttttagtata ttcggatata atttctatgt tttatcaaatt atattgttaa aaatgttata      60
gtgttattgt aaataattag tcattaataa aaaatggcta catatgaaga atttattcaa      120
caaaatgaag atcgagacgg gattaggctt acatggaacg tttggccttc tagtaggata      180
gaagccacta gattagtagt cccgctagca tgtctttacc agcctttgaa agagaggcct      240
gatttaccac caattcaata tgatcctgta caatgtacga gaaatacatg ccgagcaatt      300
ttaaatcctt tatgccaagt tgactataga gccaaattat gggtttgcaa cttctgcttt      360

```

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cagaggaatc cgtttcctcc acaatatgct gcaatttctg agcagcatca accagcagag 420
 ttgattgcaa gtttctctac aatagagtac accatcaciaa gggcaccatg tatgcctcca 480
 atatattata tgtcatggga tacatgcatg gatgatgaag aactgggtgc tttaaaagct 540
 ctttacaat 549

<210> 197
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 197
 tttttattcg ttttacaat cagtctcaaa cgataaacac aaagtgaacg ttttaaaaca 60
 aacataaaac tgtgcctaata cccattcagt gatcgaaaaa actatataaa accagttcga 120
 tagtaataat acataattta cccagcaacg tgcactgtat aacctacaaa tcacgatttc 180
 gactgaatga aattatggac gctgaagatt tgaatcagtt ctacaacggg cgggagatgg 240
 gtgcttggcc tcccaatggt ggcacccctg ccatcgaact gacgtttccg tcgcaatatg 300
 tcgaccaggc cgaactcgag gcattcgatg gagtgtcagc aggaaaatac acaattggac 360
 tcggccaagc aagaatgggc ttctgtggtg accgagaaga tattaattca ttgtgtttta 420
 cagttgttaa aaatttgatg gaaagacatc aagtgcctta tgatagaata ggttatttgg 480
 gagtaggcac agaaaccctt ctcgacaaat caaaaagtgt aaaatctgtc cttatgcaat 540
 tattcgaac 549

<210> 198
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (6)..(6)
 <223> n = unknown at position 6

<400> 198
 gttttntata aattaatata tcgttctcgt tgttaccaa ttatattatt taaattaagt 60
 gaaaaatatg gccagtgttg tgaagcagtt gccagaata tccggctcca aagtagcgaa 120
 atgcatttcg agccgtaatt attattcgta tgtaaagtga cctgccaac aaatcaaaga 180
 caaagaaccg aaatgggtta ctgccgaaga agccgtaaaa attattaaat cagatgactg 240
 ggtgtacgct caggggtgcg ctgctacccc aatcaactta ttaggtgcga tgactgcaca 300
 tgggaagaag caaggcctga agaattgtgc cgtctgccac atgcacactg aaggacctgc 360
 attatacgct cagcctgatt gcgaagggat atttagatct gtatcattct tcatgggagg 420
 caacgtacgt gcagctgtga atgaaggacg aggcgatgca attccaatct tcctatcaga 480

FC-8-C2-PCT.ST25.txt

aatacctctt ctattccaaa agaaaattat tcaacctgat gtagccatag ttcattgttc 540
tcctccaga 549

<210> 199
<211> 544
<212> DNA
<213> Ctenocephalides felis

<400> 199
gcttttcgat gttgatgcca aaacagaacc gtgtcgcaat ctacgagcac ctctttaagg 60
aggagattat ggtggccaag aaggactacc atgcaccaaa acaccagaa ttagagcaaa 120
ttccaaactt gcaagttatt aaggctttgc agtcgttgaa atctagagga tatgttactg 180
aacaatttgc atggaggcat ttctactggc atctgacaaa tgaaggattt gaatacttga 240
ggacatactt gcacttgccc ccagagatcg tgccctccac tctcaaactg caaaccaggc 300
ccgaattggc aaggccaaga ccagctgccg gcccaaggac tgaaggatct cgtccagctg 360
aagacagatc tgctaccgta gggcacctgg tgcacctggc ggcgctgaca agaaggctga 420
tgctcgtgct ggcactggag acttggaatt ccgtggtgga tatggacgtg gcagacctgc 480
cctcaataaa tttatataaa gtaatttata ataaaatatc aataaaacat cttattgata 540
aacc 544

<210> 200
<211> 549
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (4)..(4)
<223> n = unknown at position 4

<220>
<221> misc_feature
<222> (6)..(6)
<223> n = unknown at position 6

<400> 200
tgantnttcc tgttattgca ttcaccaaca ctgattctcc attgaaattt gttgatattg 60
caattccatg caacactaag tccaaccatt ccgttggttt gatgtggtgg ctgttggtcca 120
gagaagtctt gagacttcgt ggatcaattc cccgtgagaa gacttgggat gtcgtagttg 180
atgtgttctt ctaccgtgat ccagaggaag tagagaaaga ggatcttggt cacaaggaag 240
ttgtggccaa agttgagact gctgttgctc atgatactgc tgaagtatgg gcaggagatg 300
agccagccac tcaattatgg actgatgatg cacctgttgc tgcagttccg gctgtttacc 360

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FC-8-C2-PCT.ST25.txt

```

ctgctgctgc cagccaagat tgggccgagc aagtgcaaga agaatgggct gccaaccccta 420
ccccagctgc tgggtcaaact acttgggggaa gctccacaca agaatgggtca taaatcaaat 480
gatacttttt gtattggata aatgaaataa atgaaaatta aaattaaaaa aaaaaaaaaa 540
aaaaaaaaa 549

```

```

<210> 201
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (4)..(4)
<223> n = unknown at position 4

```

```

<220>
<221> misc_feature
<222> (6)..(6)
<223> n = unknown at position 6

```

```

<400> 201
catntntgct ttgtggaagg aaagtctaaa ataagaatat aaactatgcc gggtagccggg 60
acgttcaaata tattcatcgg aaatcttgac gaaaaaactc aagcgtcaga tatacgtcct 120
ctgttcgaga aatacgggac ggtagtcgaa tgcgatgttg tcaagaactt tggttttgtt 180
catatggaga ccgaacagca aggtcgggat gcaattcaga acctaaacgg ctacgtaata 240
aacggcgagg ccataaaatg cgaagccgcc aagagccgga gggcgccgtc aaccccgacg 300
acaaagatat tcgtcggaaa tttgacagat aaaactcgcg cgccggagggt tcgcgaactg 360
tttcaaaaat tcggtacagt cgtcgaatgc gatatcggtc gtaactacgg tttcgtgcac 420
ttggacgcga gcggtgacgt gaacgaggcg attcgggagc tgaacggaat gatggtcgac 480
gggcaaccca tgaaagtgca agtgtccacg agtcgcgtgc gccagaagcc gggcattggg 540
tgatcccga 549

```

```

<210> 202
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (5)..(5)
<223> n = unknown at position 5

```

```

<220>
<221> misc_feature
<222> (174)..(174)
<223> n = unknown at position 174

```

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<220>
 <221> misc_feature
 <222> (502)..(502)
 <223> n = unknown at position 502

<400> 202
 atttnagcca accagcaagc agaaacattg cagactcaat taaatctaata gtcccagcaa 60
 cgagatgaac ttttggccaa gatgagtgac actgaagaca aatataatag acaagttgct 120
 gctctaacca atttgcaatg tgccttagaa caattccaaa gagataaaga tcangaaatc 180
 caccaatgca cagaaaggat aagaaaccaa ttggaattgg aacgacagga acaaactgct 240
 ttaaggaacg aaatccaatc cctaaaaacg caacttagtg aacaacaaca aggcttgatg 300
 gctgcaggaa gacttgccag tcaacttgaa tcctcacaaa caactgtaca aaatctcaga 360
 caagaattga aagagagcca agacaaatac gctgctctga ccgccaaagt ggagtcttca 420
 aaaaacaacc aagccgacaa aatcgagaag agcttgtaaa aacctaatgc tcggtacatc 480
 cagctgggtca acaaaacgac angcacaat ctaaaatata tagcagtctc gacttcacca 540
 gtcggatgc 549

<210> 203
 <211> 1098
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (511)..(511)
 <223> n = unknown at position 511

<220>
 <221> misc_feature
 <222> (1060)..(1060)
 <223> n = unknown at position 1060

<400> 203
 tgtttatatt ccttcaaaat gtccgtacgt gtgcaattcg aaaacaacaa tgaaatcggt 60
 gtttttagca aactaacaaa cgcttattgt ctgtagcga tcggcggatc tgaaaacttt 120
 tatagtgtct tcgaggctga attggcagag actattccgg ttgtccatgc tagcattgca 180
 ggggtgtagga tcattggcag gttgactgtg gggaataaaa atggtttatt ggtgccagct 240
 tcgacaactg acacagagtt gcaacatata aggaattctt taccagaaag tgtaaaaata 300
 caaaggggttg aagaaagatt atcagctttg ggtaatgtga tagcttgtaa tgattatgta 360
 gccctagtag atccagatct tgataaggaa actgaagaaa tcctaacaga tgtctaaatg 420
 ttgaagtatt ccgcaaacag ttgcagtaat gtcctagtag gctcatacac agttttaagt 480

FC-8-C2-PCT.ST25.txt

```

aaccaagggg gcttagtgcc cccaaaacat ncatacaaga caagacgagc ttcgtcatac 540
tcaagtccgt gtttatattc cttcaaaatg tccgtacgtg tgcaattcga aaacaacaat 600
gaaatcgggtg ttttttagcaa actaacaac gcttattgtc tcgtagcgat cggcggatct 660
gaaaactttt atagtgtctt cgaggctgaa ttggcagaga ctattccggt tgtccatgct 720
agcattgcag ggtgtaggat cattggcagg ttgactgtgg ggaataaaaa tggtttattg 780
gtgccagctt cgacaactga cacagagttg caacatataa ggaattcttt accagaaagt 840
gtaaaaatac aaagggttga agaaagatta tcagcttttg gtaatgtgat agcttgtaat 900
gattatgtag ccctagtaca tccagatctt gataaggaaa ctgaagaaat cctaacagat 960
gtctaaatgt tgaagtattc cgcaaacagt tgcagtaatg tcctagtagg ctcatacaca 1020
gttttaagta accaaggggg cttagtggcc ccaaaacatn catacaagac aagacgagct 1080
tcgtcatact caagtccg 1098

```

```

<210> 204
<211> 545
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (4)..(5)
<223> n = unknown at positions 4 and 5

```

```

<400> 204
gacnncggtg atgacagagg ccgggatggc gattggacat gtcctagttg ttccaacacc 60
aactttgctt ggagaaatgc ctgcaacagg tgtagtgaag aaagacctga tgggtgcaggc 120
ggcgggtgact ccggccgagg tgggtggcgt ggaggcggcc gcggcggtgg tgggtggaggt 180
ggtagttacg gtaaccgcgg aggtgggtgat agagattctg gtcgcggtgg tgatagaggt 240
tttcgcggag gtggtggccg cgggtggcgt ggcggttatg gaggtggccg cggaggcggt 300
ggtgatcgta attctggagg aggtggctca atgcgtggag gagatagagg acgagatagg 360
caacgacctt attaaataat tagcttgtaa ttttattcac cctcattttc acatcattcg 420
tactcatatt agatttattg attttttagaa ttatttatat gatttgtatg attcaatgta 480
acacaatatt gtaaattctta tattaagatt taataatata aaataataga aaaaaaaaaa 540
aaaaa 545

```

```

<210> 205
<211> 532
<212> DNA
<213> Ctenocephalides felis

```

```

<220>

```

FC-8-C2-PCT.ST25.txt

<221> misc_feature

<222> (3)..(4)

<223> n = unknown at positions 3 and 4

<400> 205

```

cannatgccca cgaggaaaat ataccaatca caaagggcgt aacaggcatt tcacaaatcc      60
agaagagtta gaggaacaga gaaagcaaga agaacaaaaa aggcaatggc gtagggatca      120
tggaaacgaa tcaagttctg aggaagagga agtagccaaa aaagctgcag gtgataagaa      180
gaaagcccca gggctggaaa gctctgattc agagagtga tccggagactg aatcttcaga      240
agatgagaag gataagaaga aaggtgtatc tggattgata gaagtggaaa atcctaatacg      300
tgttcaaaaa aaaaccaaga aactttctac tttaaataga acattaactg atagcaaacc      360
acaattgtca agacgagaaa gagaagaagt tgagaagcag agagcgcaag cacattacca      420
aaagcttcat gcagaagcaa aactgtcaag caagatctgt ttagcaagac ttgcatcatt      480
aaacacagcg tgaagaacag cttaaagacc gagttggaaa aaaaaaaaaa aa              532

```

<210> 206

<211> 454

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (5)..(5)

<223> n = unknown at position 5

<400> 206

```

atttntgttg gttaactcga gcagtaagaa tatataaaaa tggctgcagt tggcaaagat      60
ttagaaaaac caacagctga ggtgcctcag gtccatcgca tccgtataac tttaacttca      120
agaaatgtac gttcattgga gaaagtatgt accgatttaa taaatggagc caagaaacaa      180
aagctccgtg tgaagggacc agttcgcatt ccaacccaaa tcttgcgtat taccacacgt      240
aaaacacctt gtggtgaagg ttcaaaaact tgggatcgct tccaaatgag aatccacaaa      300
agagtcacgc atctgcactc tccatctgaa attgtgaagc aaatcacttc catcagtatt      360
gagccaggtg tagagggtga agtaacaatc gctgatgctt aaattttgta aattgatgga      420
aataaatgac aaaacctaaa aaaaaaaaaa aaaa              454

```

<210> 207

<211> 549

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (470)..(470)

<223> n = unknown at position 470

FC-8-C2-PCT.ST25.txt

```

<400> 207
cacttttgagg ttttgatcct taaccatggt gaacggacgc atcccggtccg tcttttcgaa      60
gacatatgta acccctcgtc gtccttatga aaaggctcgt ttggaccaag aattgaaaat      120
cattggagaa tatggtctcc gtaacaagag ggaagtatgg cgtgtcaa atacactttggc      180
taaaatccgt aaagctgccc gtgagttgct cacattggac gaaaaggatg gcaaactgtct      240
cttcgaaggt aatgctttat tgcgtcgttt agtacgtatt ggagtgttgg atgaatccag      300
aatgaagctc gattacgtgt tgggtttgaa aatagaagat ttcttggaac gtcgtctgca      360
aaccaagtt ttcaaactgg gattagccaa atcattcacc acgctcgtgt tttgatccgc      420
agagacacat tcgtgttcgc aagcaagttg taatattccc tcttcattgn gcgttggatt      480
acaaaaacac attgacttct ccctcaaata gccttcggtg gtggtcgtca ggacgttaaa      540
gaggaagac                                          549

```

```

<210> 208
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 208
cggtaataag ggttgtgatc aacgaatcaa tgacgctgct caatttaagg ctgtacgagc      60
agccatgtca gtcatcgaaa tttctgaaga agaacaaata caaatccttc gtgtcgtcgc      120
agcagttttg catttaggca atggttgatt tactgaaagc gaaggaaaag cagaaatttt      180
gaaacctgaa gctgtgcaat acgccagcga gttattggga tgttcattgtg aagctttatc      240
caaagcactt acacatcgaa ctatcgaacc aggccgaggg ttggcaaagg tcagttctcc      300
tttatcgcga gaaatggcaa ttcattgcaag agatgcttta gcaaaggctg tttatgatag      360
aatgttcact tggcttgtgt ccaggctgaa cgcttccttg caaccggtca aaaccaggag      420
ctattcggta tgggaatatt ggacatttac ggatttgaga tttccagaaa aatagttttg      480
aacaatttga taaacttttg caatgaaaaa cttcacactc ttatcgagct gcttgaaata      540
gacaagaca                                          549

```

```

<210> 209
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (34)..(34)
<223> n = unknown at position 34

```

```

<220>

```

FC-8-C2-PCT.ST25.txt

<221> misc_feature
 <222> (525)..(525)
 <223> n = unknown at position 525

<400> 209
 attttaataa catgacaaaa aattaaccct atantttggt taagttattg tattaatata 60
 aattattttt atttaatttc attattaaga attataattg gagctttagg tggattaaat 120
 aattcctctt tacaaaaaat tattacttat tcttcaatta cacatattgg ctgaataatt 180
 attgctttta taaataatga aataaatttt tgattttatt tttttattta ctttatcatt 240
 tctttaatta ttacaataaa ttttaatttt ttaaaattat tttatataaa tcaaataatta 300
 tctaattcaa taaattatat aacaaaaatt actttaataa taatattttt atcaatagga 360
 ggtttacctc catttttagg attttttcct aaatgaatta ttattgaatc tataattaat 420
 ataaatataa ttttttattc tattattata attttatgta ctttattaat attatatatt 480
 attacgattt gcttttctat ttaatatata taattccaaa ttctngaaaa ttatatataa 540
 taaattttc 549

<210> 210
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (4)..(4)
 <223> n = unknown at position 4

<220>
 <221> misc_feature
 <222> (543)..(543)
 <223> n = unknown at position 543

<400> 210
 cttntaaaaa ttattaataa ttccttaatt gatcttcctt ctccatcaaa tatttcatta 60
 ttatgaaatt ttgggtcttt attaggacta tgtttaatta ttcaattaat tacaggatta 120
 tttttagcaa tgcattactg tgctaattat gatatcgcat tttcatcagt tagacatatt 180
 tgtcgaaatg taaaattatg gttgattaat tcgtaccatt catgcaaag gggcatcatt 240
 tttctttatt tgtatttaca ttcattattg acgaggaatt tattattcta gttacaaatt 300
 acatgaaact tgattttatt gggtattaat tttattttta gtaataggaa ctgcttttat 360
 aggatatgta ttaccttgag gacaaatatt attttgagga gcaactgtta ttacaaactt 420
 aatttctgct attccatata ttggaaattc aattgtcaat gattatgagg aggatttgca 480
 gtgataatgc tctttaactc gattctttat gatcattttt attccattta ttattctggt 540

FC-8-C2-PCT.ST25.txt

tgnaataat

549

<210> 211
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (4)..(5)
 <223> n = unknown at positions 4 and 5

<220>
 <221> misc_feature
 <222> (34)..(34)
 <223> n = unknown at position 34

<400> 211
 gacnntataa caaaccgaga ttatTTTTga aatnaaaggt attaggaaaa attattgata 60
 ataacataaa agtctaaatg cttttataat atgacagcaa tgcgtactgc aatgaatggt 120
 gtgtatacag ttttgtggat tctattaatt tcacaaggta cccaaagcgt tgaattaact 180
 tttgaactac cggataatgc aaaagaatgc ttttaccaag atattcaaaa aaatacaagc 240
 gtcaccttag agtttcaggt cgtcacgggc ggtcagtatg atgttgatgt aacattagaa 300
 agcccaaata agcaaattat atatagtcaa gtgaaaaccc aatttgattc gcatcatttc 360
 actgcaccga taagtgggtg ttacgttgct tgtttcagta atgaattttc cacgttctca 420
 cacaaattgg ttatatggac tttcaagttg gtgatgaaca gctttaccgc gtgtcgggga 480
 gcatgctaca gtcttaccga acttgaatct ttgccaagag attcatcgaa gtttgccagt 540
 ttctcaatt 549

<210> 212
 <211> 439
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (5)..(5)
 <223> n = unknown at position 5

<400> 212
 aaatncgtta cgtggctgcg tatttggttg ctgttttggg aggcaaagcc gccccgacct 60
 ccggagacat cgagaaaatc ctgagctctg ttggtattga agccgatgct gaacgtttta 120
 agaaagtcac aagtgcagctc aatggcaaga gcatcgatga actcattgaa caaggtcggg 180
 agaagctttc ctccatgcca gtaggtggtg gtggtgcacc agctgcagct gctgctggcg 240
 gcgcccctgc ggctgctgaa gaaaagaaag aagagaaaaa agaggccaaa aaggaagaat 300

FC-8-C2-PCT.ST25.txt

cagagtctga ggacgatatg ggttttcggtc tcttttgacta aggaatacgt atgccttacg 360
 tataatgaaa ttataaattt aaatgtaaca tatgcataag aaataaagtg atttcattta 420
 taaaaaaaaa aaaaaaaaaa 439

<210> 213
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 213
 gtttaagtgt attcaaatca aataattcca taaaactatt ctagaaaata atccaacaca 60
 gttagataag atgaagtctt tgggtgctctt ggccgttttg gctgtaggtt ttgcaaatgc 120
 tgaatattgt tacgatgaaa gtgttactgc ttgttcacgc actgccaata aggaggatct 180
 ccttcattgt aatgccctct actccggttt ccacactgtg gctgccgact tatcatcata 240
 cgttaaaaga gaagtcctat actcctacga ctacttgctg atgtctacac actttggaaa 300
 ctatgaaaag aatcgtgttg gtttcgaaaa actcttcaaa ggcctctccg acaagtcttg 360
 ggaaaacgca atcaatgtca tcaaatacat caccaaactg gggggcactg tcgacttcca 420
 gactactcac aatgtcaaca ctactcgtgt agctgaaaca tcagaattgg aagttgccag 480
 ggctttggag aatgagaaag tgctcgtaag gatgtcaggc tattcacaaa cgtgtatcaa 540
 ctccgacac 549

<210> 214
 <211> 550
 <212> DNA
 <213> Ctenocephalides felis

<400> 214
 attttagaat ataaagcttt aattatattt ttaattttat atttttgttt taattatata 60
 atatttgaga attatttttg taatttttat attgtattta cagtatgtga aggggtttta 120
 ggcctttcta ttttagttgc aataattcgt actcatggta atgattattt taaaagattt 180
 aatataatac aatgttaaaa tttttaataa taatattttt tataatccct attattttat 240
 taaaaaattg ttattgattg gttcaaacia tattatttat aatattattt atttatataa 300
 ttttaggaat aaaaagaatt ataattgtta atattagatt aaatttttgt tatgatatta 360
 tatcttatag attgaattta ttaaggattt gaattattat tttaatatta atagcatcaa 420
 ttttaattta taaaataaat tataattaaa ttatttttat tattattaat tttttattat 480
 taatattatt ttttaactttt agtcattaaa ttattttgat tttatttttt ttgaagaaga 540
 taattccgcc 550

<210> 215

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<211> 550
 <212> DNA
 <213> *Ctenocephalides felis*

 <400> 215
 ctattcggaa aacttttcct gccgtagggc ccaaacctcc gctaatttct agtgagtgac 60
 taaattttaat gtcgtggtaa gtggtgcaac aatgcagatt ttcgtcaaaa ccctcacggg 120
 taaaaccata accctagagg ttgaagcttc tgataccatc gaaaatgtta aagctaagat 180
 tcaagataaa gaaggaattc ctccagatca gcaaagggtta atctttgcag gtaaacaatt 240
 agaggatggc agaacattgt cagactataa cattcaaaaa gaatccacct tgcatttggt 300
 gctccgcctt cgtggtggtg ccaagaaacg caagaagaag aattattcaa caccaaaaaa 360
 aatcaaacat aagaagaaga aggttaaact agctatttta aaatgttaca aggttgatga 420
 aaatggtaaa atatttcgca tgaggcgtga atgccccgga gaggctgtgg agcaggagta 480
 ttatggctg tatgacagat aggcattctg tggaagggtg atcacttatt tcagcaaacc 540
 agaagatatt 550

<210> 216
 <211> 479
 <212> DNA
 <213> *Ctenocephalides felis*

 <400> 216
 tagcacctca aaacctgctt cggctaagag ctcaacaact aaaccagctg ctgccaaacc 60
 tgcagctaag cctgctgcta aaccagcagc tggttaagcca aaagctccag caaaatcttt 120
 gtctaagcca acaagtgctc ctaagaaagt tactaaagtt gcggctaagc ccaaagttgc 180
 tgccaaacca aaacgcaatg tttctgttaa aggacagaaa ggagccaagc ctgcagctaa 240
 agcagcagtc aagaaagctt taagtgtgca aaagaaggta attaaagggtg taaatggcac 300
 acgcacaagg aaaatccgta cctctgtaca cttaggagg cccaagacct tcaggccacc 360
 aagaaatccc aaatccccag gaagagtgtg ccatctagaa ctgcgatggt gcttacaata 420
 ttatcaaatt ccattgccac tgagcagcat gaaaaaatt gagatccaat acttagtgt 479

<210> 217
 <211> 420
 <212> DNA
 <213> *Ctenocephalides felis*

<220>
 <221> misc_feature
 <222> (386)..(386)
 <223> n = unknown at position 386

<220>
 <221> misc_feature
 <222> (404)..(404)

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FC-8-C2-PCT.ST25.txt

<223> n = unknown at position 404

<400> 217

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cacaaatagg gattaaaaaa tggctccaag aaaaaacaaa gtagcaaaag aagaagtgca      60
ggtggcctttg ggacctcaag ttcgtgaagg tgaaattggt tttggagtcg ctcacatttt      120
tgccagcttc aatgatactt tcgttcattgt caccgatttg tctggacgtg aaactattgc      180
cagggtcact ggaggcatga aagtaaaggc tgatcgtgat gaagcctctc cttatgctgc      240
tatgttggcc gctcaggatg tggctgagaa atgcaagtcc ctgggcatca cagccctgca      300
catcaagctc cgtgccaccg gtggaaacaa aaccaagacc ccaggaccag gtgctcaatc      360
cgctttgaga gctttggccg ttcttngatg aaaaatggac gcantgaaga tgtgacaccc      420

```

<210> 218

<211> 549

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (502)..(502)

<223> n = unknown at position 502

<220>

<221> misc_feature

<222> (541)..(541)

<223> n = unknown at position 541

<400> 218

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gcagagtagg caaagtgtga ctggcacttg tcagcgtttg tcgttcccga gtgctagatt      60
aggttattta ggattgttgg ccgatattcc atcatctggg taggctaaaa tcaaggatcg      120
gaaagacgat cgagacgaac aaccatacaa aaatatTTTT tagaacaaaa tcaataaaaa      180
tttcaaaatg ttatctcgga ttctaaaacc tcttttaaata ggatctacta gagcgttttc      240
gactacaaac aagaataatg tcaagggtgc ggttttggga gccgctggtg gaattgggca      300
accccttagt cttttattga aacagtcccc ttgatcagt cgcctgaatt tgtatgatat      360
ccttggaaacg attggtgtgg cagctgactt aagtcacatt gaaacacctg ccaaagtatg      420
tggttacaat ggcaagaagt tttgtgcaag gcttagaagg agtggatgta gtcgcatcca      480
gcagcagccc tcgtaaacct gnatgactcg tgatgattgg ttgcatcatg cttcattgtg      540
ntgaataat                                     549

```

<210> 219

<211> 549

<212> DNA

<213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (444)..(444)
 <223> n = unknown at position 444

<220>
 <221> misc_feature
 <222> (452)..(452)
 <223> n = unknown at position 452

<220>
 <221> misc_feature
 <222> (521)..(521)
 <223> n = unknown at position 521

<220>
 <221> misc_feature
 <222> (542)..(542)
 <223> n = unknown at position 542

<400> 219
 gcgacctgta cacgcggtga caactattct gtgttcaatc gaaagttaac gcgcgtttta 60
 caaaagtttt taaaaaatc caataaggat aactataaaa taacgttttc agtgattcag 120
 ttataaatat tcgtttgtgc atttcatatc attatggcta acaacagagc tgcaaaatcc 180
 ggtttcgccg ctgaggcaca aagaaagata aatagcaa at acagcgatga acttgcacaa 240
 gaatgcttgg aatgggtcaa aaccattact ggagagcccg aaaatgttag cggcgatatg 300
 gacaattttt acgaagtatt gaaggacggc acactgttgt gcaaattagt gaactctcta 360
 caagctgggt ctgtaaagaa agtcaatgag agcaaatgg cttttaaatg catggagaat 420
 ataatgctt tcttgaagc ggcnaagcta tnggcgttcc tgcgcaagaa actttcaaac 480
 ggtgatctgt ggaaagacaa aatcttaatt ctgtgcattt nctcaatcat tagggcgaaa 540
 gntggaata 549

<210> 220
 <211> 301
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (32)..(32)
 <223> n = unknown at position 32

<220>
 <221> misc_feature
 <222> (68)..(68)
 <223> n = unknown at position 68

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (70)..(70)
 <223> n = unknown at position 70

<220>
 <221> misc_feature
 <222> (84)..(84)
 <223> n = unknown at position 84

<220>
 <221> misc_feature
 <222> (88)..(88)
 <223> n = unknown at position 88

<220>
 <221> misc_feature
 <222> (226)..(226)
 <223> n = unknown at position 226

<220>
 <221> misc_feature
 <222> (277)..(277)
 <223> n = unknown at position 277

<400> 220
 ctcatattatt atttatattat ttatatattagt tntgtgagga ttatttgata tcaatcaata 60
 gttattgntn ggagaaatgg cgtncacnac gaaaacttcg aagtattctt acagatcgac 120
 cggcggagga aacgctgatg tcagcatcga gtacagtgtg gatctcagtg ccctcaccag 180
 attggaggat aaaattcgtc ttttacacga tgacctcgaa tccganaggg aactccgtgc 240
 caggatcgag cgcgagaagg cagatttgag tgtacangtc attcaactgt cagaaagggt 300
 a 301

<210> 221
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (374)..(374)
 <223> n = unknown at position 374

<220>
 <221> misc_feature
 <222> (402)..(402)
 <223> n = unknown at position 402

<220>
 <221> misc_feature

FC-8-C2-PCT.ST25.txt

<222> (417)..(417)

<223> n = unknown at position 417

<220>

<221> misc_feature

<222> (440)..(440)

<223> n = unknown at position 440

<220>

<221> misc_feature

<222> (443)..(443)

<223> n = unknown at position 443

<220>

<221> misc_feature

<222> (445)..(445)

<223> n = unknown at position 445

<220>

<221> misc_feature

<222> (532)..(532)

<223> n = unknown at position 532

<400> 221

```

attttcactg gatacaaacg aggtctcagg aatcagcatg aaaacacagc tctcttgaag      60
gttgaagggtt gtggtaccaa agccgatagc tggttctatg ttggtaaacg atgtgtatatt      120
gtgtacaaag ctaagaacaa gacctgcgta cccggcaaac caaagaaggg taaatcaaaa      180
agtacgcgct atttgggggca aagtaacacg gccacatgga tgctctgggt gtgttcgtgc      240
taagttccac agaaaccttc cagcaaaagc aatgggtcat cgtgttcgta taatgctgtt      300
cccatccaga atataaggca taggattcat cttttgttat aaattataaa ataaacccta      360
taaaaaaaat taanaaaaaa aaaaaaaaaa aaaaaaaacc tnggggggggg gcccggnccc      420
aattcgccct atagggagtn gtntncaatt cactgccgtc gttttacacg tcgtgactgg      480
gaaaccctgc gttcccaact taatcgcctt gagacatccc tttcccagct gngtaataac      540
aaaaggccc                                     549

```

<210> 222

<211> 549

<212> DNA

<213> Ctenocephalides felis

<400> 222

```

gcataccgac acctccattt ggtgtggcaa aatcatcagc tgaagcagct aaaatagcta      60
cggatttgaa aacaaatgac attgtactca aagcacaagt tttggctggt ggtagaggga      120
aaggccaatt caaatcgggc ttgaaaggcg gcgttcgaat ggttacaacg ccagagcaag      180
cagaaaaaat atcttcaaaa atgatcaacc aaatattagt aactaagcaa acaggtgaaa      240

```

FC-8-C2-PCT.ST25.txt

```

agggtcggat atgtaattct gtcattggtca cagaaagaaa gtttccccga cgagaatact      300
at ttggccgt tatgatggag cgagcttttt ctggccctgt aattattgct tcatcacaag      360
gaggagttaa tatcgaagaa gtagccgctg aagatccaga agcaataatt tatgaaccaa      420
ttgcataatg aagggaatta cacatgaaca gacaaaaaaa ttgttggcaa ttgacttgaa      480
gatcatgcag aattaccgca gaatttagag aaatgtatga ttggttttta agaaagatcc      540
tctattgaa                                                                    549

<210> 223
<211> 549
<212> DNA
<213> Ctenocephalides felis

<400> 223
gcgctattga gtcgcacgaa taatttaaca aattatatat ttaagtggaa attagataaa      60
ttaataggac aaaacgtagc agtaatttca tgctcttact ccacaaaagg atcaaaagtg      120
tatgaagatg cttcagaagc tggttaaagat ataccaaatg gagcaaaatt actagttggt      180
ggtttttggtt tatgtggaat tccagagaat ttaatcgctg ctgtattaaa acatggtggt      240
tctggattaa ctgttggttc caacaatgcg ggtgttgata cgtttggtct gggattactg      300
ttaaaagaaa aaaggatcaa acgcatgatt gcttcatacg tgggtgaaaa tgctgaattt      360
gaaagacaat atttaagtgg tgaacttgaa gtagaattga ctctcaagg aacattagca      420
gaaagaatcc gagcaggagg agctggtatt cctgtttttt cacaccaacc gttatggacc      480
cttgtcatga aggaggcgct ccattaaata tggaaagaaa ggagaggtag aaattagagt      540
cacctagct                                                                    549

<210> 224
<211> 549
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (538)..(538)
<223> n = unknown at position 538

<220>
<221> misc_feature
<222> (543)..(543)
<223> n = unknown at position 543

<400> 224
aaagtctttt atcaatagtc ttttataaag cactttctac caggatacaa tttaaattac      60
attctataaa taaaaaagct tactattaaa atgaacataa ataccagaat gccataagtg      120

```

FC-8-C2-PCT.ST25.txt

tcttttctct cttatataca taataacatt tcaataaata tttgtataaa aataatatct 180
 gaaatatgta cataactaaa ttaataggca aatctcattt caggattata tcctaattta 240
 tccagactag gctggcatgc aaatttgatc attggtggag gaccacacat aagcactaga 300
 gtatcatcgg aaggaggaaa caaatgttct gcaatcatgt ctgagtttat aaaaccagtg 360
 ctatatattcc aattgtctgg tgggctatca agagtatacc ataatttaaa ttgagttgga 420
 tcatttttag caatttcttc caatctatca cgcctaatat atccttttca gtctgggtgc 480
 aatatcaaag cgattcagtt gatctggggg tttacaattc ctcactaact gagcatgngt 540
 aantctgac 549

<210> 225
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 225
 gccattttca gtttgaagtg tcagtgatat aataataatc ctaaagtgca atgacatttt 60
 tttatataag agatgtttct taaaaagtta aatttcaagt tattctctcc caataacttt 120
 accttagcga taataaaaaa atattcgtgt ttaacgtgcc aaagtctaac cctactttcc 180
 tctagcttta caaagcaaga tgaatatagt ttattaccaa ttagaaatta ttcacaaaat 240
 actaaaaacg aattagctca ttgcaacatt ggcactatag gtcattgtaga tcatggcaaa 300
 acaacattga cagcagcaat acaaaaaatt ttatcaaaaa atggttctgc aaaatacata 360
 tcttatgatg aaattgatcg agctcctgag gaaaaagcca gagggattcc atcaatgcag 420
 ctcatgttgg gtatagcact actaagagac attatgctca tacagactgc caggatcatgc 480
 cgatttgtaa aaacatgata tcagggctta caaatgggtgg accattttaga gtggtgcaac 540
 agaaggcaa 549

<210> 226
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 226
 gaaaaaaagg ctccaaagga tgccctccaa aatcctatga gggaccttca cattaggaag 60
 ttgtgcctta atatttgtgt gggagaatct ggtgacaggc tcactcgtgc agcaaagggtg 120
 ttggaacagt taacagggtca acagcctgtt ttctcaaaag ctcggttatac cgtcagatct 180
 ttcggtatcc gtcgtaatga aaaaattgct gtccattgta cagtcctgtg agctaaggcc 240
 gaagaaattt tggaacgagg tcttaaagta cgagaatatg agttgaggcg agacaacttc 300
 tctggaactg gaaactttgg tttcggtatt caagaacaca tcgatcttgg aattaaatac 360
 gatccatcca ttggtattta tggtttggac ttctacgttg tactcggacg accagggttc 420

FC-8-C2-PCT.ST25.txt

aatgttgcca cagaagcgca agactggcaa agtgggtttcc aacccgttgc gaaagaagat 480
 gctatgaaat ggtccaacag aaatatgatg gtatatTTTA tagtaaaagt gagaagacat 540
 tttctgtat 549

<210> 227
 <211> 365
 <212> DNA
 <213> Ctenocephalides felis

<400> 227
 ctaaaccgag gcttcaaaac tacgaaaata ctttctggta agccaggcgg cgaaaagaaa 60
 ttcaaagtac gccccgctcg cgtaaaggga atccaaacaa aacataccaa atttgtccgt 120
 gatttggtaa gagaagtcgt tggacatgcc ctttacgaga aaagagctat ggaattgtta 180
 aaggtttcaa aggataagag ggccctcaaa tttttgaaaa gacgcttggg aacacatatc 240
 agagctaaga ggaagcgtga agaactttct aacatcttaa cccaaatgcg taaagcacat 300
 gctgctgcta cacatactaa gtagatatga ataaagctgt ttaattgtta aaaaaaaaaa 360
 aaaaaa 365

<210> 228
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 228
 ggacaatgaa gcaaatacgta acaaatcaat ctgtgaagat tccagaaggc cttacgggtca 60
 ctgtgtcatc gagacaggtc actgtcaagg ggcccagggg agtattaaaa cgctccttca 120
 aacatttagc agttgatatt cgtatgggtca atcctagatt attgaaagtt gagaaatggt 180
 ttggatcaaa aaaagctatt gctgcagtta ggactgtttg ctctcacatc gaaaacatgt 240
 tgaaagggtgt aactaaagggt tatcaataca aaatgcgtgc cgtatatgct cactttccca 300
 ttaattgtgt gaccacggaa aacaacacag ttatcgaaat ccgtaatttc ttgggagaga 360
 aatacatcag acgggtaaag atggcccctg gtgttacagt gatgaactcc cccaaacaaa 420
 aggacgagct gatcttggaa ggaaactctt ggaagatgta tctaaatcag ctgcattaat 480
 ccacagtcgc cctgtaaaaa caaggatatc agaagtcttg gatggcttta tgtgttgaaa 540
 actcagtggt 549

<210> 229
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature

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FC-8-C2-PCT.ST25.txt

<222> (548)..(548)

<223> n = unknown at position 548

<400> 229

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gtctacatta ttttgtttca gtacgggttg accaatcgct catcaacgac gataaataaa      60
acactattaa ctgcaaaacg caagttgacg aatatttttt aattttaact tataaatagc      120
atccactgaa atcatttttg ataaatatatt cacgatgtct atcaacgact gtgaagagaa      180
acgagaaatc atcgaaagga agttggaaat tccggatttc gcgttgaagc atccccttca      240
gcacacatgg actttgtggt attttgaaaa cgaccggcaa aagacatggg aagaaaatca      300
acgagaaata gtcagttttg ctacaattga agacttcttg agtgtttata gccatataaa      360
gatggctagc gaattgcgtc aaggatgcga ttattccttg ttcaaaagcg gcatcaggcc      420
aatgtgggaa gatgacgcca ataagcatgg aggaagtggg ccatcaccat ggcaaaaagc      480
agcgacaaat gatttggata gaattggtgg caccctctct gttaatcgtg aacttttgaa      540
attccacna                                     549

```

<210> 230

<211> 549

<212> DNA

<213> Ctenocephalides felis

<400> 230

```

cgctgaaatc atctcgcgat aacgtttttga atgtgtttta tatgaaaaca gtggctatatt      60
atttactcga tatgtgtcca cagtaaagta tttgtgattt attcaagtgt tgtgtgctga      120
tttagtttgt tcaatagaac ctaaaaaaga acaaggtttg tggtgtttgt gcttacaacg      180
ttttaggatt ttgaattcgt gactctacgt ggataacgct agacttccag gcatagcaca      240
atgccggaag agaccaaagt ggaggcggat gcacctcata gtcctgcaa gcaaaaacgg      300
tcatcaggtg gaagaactgt tttggctaaa gtcgacctac tagatggatc agttcttgat      360
ctccatattg aacgtaaagt gaaagcaaag gagctcctgg ataaaatatg tgaagcttta      420
aatatttttg aaaaagattt ctttggctta tctcagtcac catctgatcc agagtctggc      480
tggatccaga aagacagtgc taagttctta aatctgacca tgggtgtgca tcgagtaaatt      540
ctccccccag                                     549

```

<210> 231

<211> 549

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (33)..(33)

<223> n = unknown at position 33

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (189)..(189)
 <223> n = unknown at position 189

<220>
 <221> misc_feature
 <222> (451)..(451)
 <223> n = unknown at position 451

<220>
 <221> misc_feature
 <222> (495)..(495)
 <223> n = unknown at position 495

<220>
 <221> misc_feature
 <222> (547)..(547)
 <223> n = unknown at position 547

<400> 231
 aaggatttaa ttttagaaag tttatcttca atnaatttta attttttaat ttatttatta 60
 tttttatttta gaattgggtt gactgtatgt tattcttttc gactaagaag aatattattt 120
 ttttaattctt ttaattattt tagtttaa atttttaaatg atgaatttaa taaaataatt 180
 aaaataagnt ttattttta atttttttct ttatgttttg gtaagattat gattaatttg 240
 atttttttata ttcttaatat atttttttatt agatttataa taaaaattat agttataatt 300
 atatcttatt aggattatga gtaggggttag aaattaggta ttataaaatt ggggtataatt 360
 attttaatatg aaaaaatta gtatttttttg gaaatatatg atttttccag taattttctgt 420
 gttttatatatt ataaaccgta attatggaat natttaataa agatgggtgac aaggatgatt 480
 agaattatag gatcnaaaac tatttttaa atttcttatta tctaaaaatt ttataattca 540
 aataatnta 549

<210> 232
 <211> 548
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (531)..(531)
 <223> n = unknown at position 531

<400> 232
 tatgcccctc aacattcgaa gagaatctga ttctacaaa tttcaaaggc atagaagatt 60
 ttgtgcaagc aactgcccac ggtaaagctc aagaagtttt ccaaaggcta agtgaacaaa 120

FC-8-C2-PCT.ST25.txt

```

atacaccacc cgatgttggt ataggggctg atacaatggg cactttagac ggtatgcttt 180
ttggtaaacc caattctgaa gaggactctt ataacacact atcaagggtg tcgggaagag 240
tttgtaccgt gtacacagga gttgtaatca aaacacagcg caaaacgggc aagttttgtg 300
acaataccaa agtccatttt ggaaaactca ctccggcagt gataagagca tatattgcat 360
caggagaacc catggacaaa gctggaagct ttggagtcca aggacgaggt gctagtctta 420
ttgaaaaaat ggtggtgatt attttacagt tgtgggttac ctctacataa attatgtgtc 480
gagttaaatt cttatgtgaa aatattaata tattataatg tgatattttg naaatatatt 540
ggttatatt 548

```

```

<210> 233
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (547)..(547)
<223> n = unknown at position 547

```

```

<400> 233
cttgtcatat attagtgaat atgttattac aaataacgat tgttttaagc actattggat 60
tagtttgtga caggtgccac gggaatgaaa tcattacca gtttgatgaa gtaacagagt 120
cagattttgc atttccagaa gattttcaat ttggttgtgc tactgctgcg tttcaagttg 180
aaggagcatg gaatgaaagt gctcactttt gcttattagg aaaggagaaa aatatctggg 240
atagactgat acattccaag ccagatttag taaccgatct taaaacgct gatgtcgctt 300
gtgattctta tcacaaattt aaagaagatg tggctgcact caaaactatt ggtgtcaatt 360
tttatcgttt ttccatatcg tggtcacgag tgcttccact ggtgacgcat ccgtaattaa 420
cgaggaagga atccaatatt attctgattt aatagacgaa ttactaagaa acggattgaa 480
cccgtggtga ctctattcac tgggatgtca cagccttaca gaattggagg ttataatcc 540
gtcatancc 549

```

```

<210> 234
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 234
attcttcacc tgattttttt aaaatctaaa gatttttcaa aaaaaattac gattttttct 60
cgtgatgttt ggcggggaag gggggtggta attctgaata ttaccagagg gggatagaag 120
gtccagaaat ccttaaaaag ttgatcacgt tattaatgga cccccctaa ttgatgatac 180
aaagatgaga atttacatat ttctaatttc tattaatcac gtgaggtttt taggggggga 240

```

FC-8-C2-PCT.ST25.txt

```

aggggggttta tagtaagata tcacgtgtat ttatTTTTTTta cctgattttt ttaaaaaact      300
caaattatttt taaaaaaaat gaagattttt acgatttttt cgtaactaaa aatacacctg      360
atgtttgctg gggc gatgag gggggaattt tgaatattac caagggagag ggggttccag      420
aatccttaa aaaatttatc atgtgaccaa tggcgcccc ttaggattaa tatgcagtaa      480
aagtttttta ttcttattta tttaaaaaaa tgccatgttg tgggtcccaat aaaaacgtac      540
gatctatttt                                     549

```

```

<210> 235
<211> 186
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 235
aatggacaaa caatttgtaa ccttcccgtc aatttgggta tgtagtctta acaacgagtg      60
gtggtattat ggatcatgaa gaagctaggc gtaaacattt gggaggcaaa atattaggat      120
tcttctttta agctgtatta tgtcctgaat aaatcagatt tctacaacaa aaaaaaaaaa      180
aaaaaa                                     186

```

```

<210> 236
<211> 343
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (33)..(33)
<223> n = unknown at position 33

```

```

<220>
<221> misc_feature
<222> (39)..(39)
<223> n = unknown at position 39

```

```

<220>
<221> misc_feature
<222> (323)..(323)
<223> n = unknown at position 323

```

```

<220>
<221> misc_feature
<222> (325)..(325)
<223> n = unknown at position 325

```

```

<220>
<221> misc_feature
<222> (330)..(330)
<223> n = unknown at position 330

```

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (334)..(334)
 <223> n = unknown at position 334

<220>
 <221> misc_feature
 <222> (340)..(340)
 <223> n = unknown at position 340

<400> 236
 aagaagttga aaagattgtc acaattatgt ctnccccang acagttcaag attccagatt 60
 ggtttttgaa tagacaaaag gatattgttg atggtagata cagtcaattg acctcatcca 120
 atttagactc aaaattgcgt gaagatttgg aacgtatgaa gaagatcaag gcacacagag 180
 gcatgcgtca ctattggggg ctgcgtgttc gtgggtcaaca caccaagacc actggccgca 240
 gaggtcgtac tgttgggtgtg tctaagaaga aataagatac atatgtattt ttttatttaa 300
 taaattctta ttctacacca tanantaaan aaanaaaan aaa 343

<210> 237
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (421)..(421)
 <223> n = unknown at position 421

<400> 237
 aaacatgtca cactaagtca tcgtatgaaa cgtgttccaa gaactgtttt tccccaaaat 60
 atgaccatgg tcgtaaaaga agttactgaa atacttgaag atggtgccaa gtttgaagat 120
 ggttcaatag agaaattcga cattatttta tattgcacgg gatatctata tagttttccg 180
 ttccttagtc ctgagtgtgg aattaccgta tctgaaaatt atgtccagcc attatataaa 240
 catttagtta atatcgaacg tccaacaatg gcactaatag gcattccttt ttacgtttgt 300
 gcagctcaaa tgtttgattt gcagattcgg tttgtagttg agtatattgtg tggcaaattt 360
 caattgccgt ctaaagaaga aatgagagcg gatactgaac gcgacatgca aaaacgatgg 420
 ncacgtgggg atagcaaaag gaaagcccat attatgggcc cagatcagga ggcctattac 480
 aatgatttag cactactgtg gatactcaat tcccagtatg ctaaatacaa tgtgtagcga 540
 agattcttg 549

<210> 238
 <211> 549
 <212> DNA

FC-8-C2-PCT.ST25.txt

<213> Ctenocephalides felis

<400> 238

```

ggaggtggta ctggatctgg tatgggtact ctacttatTT ctaaaatcag agaggaatac      60
ccagacagaa ttatgaatac ttattcagta gtaccttcac ctaaagtgtc agacactgta      120
gtagaacctt ataatgccac tttgtctgtt catcaattag ttgaaaacac agatgaaacc      180
tattgtatcg ataatgaagc tctctacgat atctgcttca gaactttgaa actcaccaca      240
cctacatatg gagatcttaa tcatttagtt tctttaacaa tgtctggagt cactacttgc      300
cttagatttc ctggacaatt gaatgcagat ttgaggaaat tggctgtgaa catggtacct      360
ttccctcggt tgcacttctt catgcctgga tttgcaccac tcacatctag gggaagccaa      420
caatacagag cactcaccgt ccagaattaa cacaacaaat gtttgatgcc aagaacatga      480
tggtgatgcg atccccgcat ggtcgtactt gctgtggcac tggttcagag gcgcatgcat      540
gaaagaagt                                         549

```

<210> 239

<211> 549

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (537)..(537)

<223> n = unknown at position 537

<400> 239

```

gtggcccagg acccatgcga ggtgggtggcc gtgacatgaa tcgtggagca ccctattctc      60
gtgatgggtgg tcgtggagga gatTTTgggtg gacgaggtgc tgggcccattg cgcaatggta      120
tgggcggcgg cgcatgggt ggtggttatg gtgaccgcgg cggttctatg atggacggcg      180
gcatggggaat gcgtggtaat ggcgttggag caggtggaat gatggaccgc agaggtggcg      240
gcatgggagg cggaatgggc ggcggtggcg gttacccgga tggcggattt tctggtgagg      300
acagacgcgg gttcgcgctg ccgcagcttg gcggcggcgg tgcgggaggc gcttacagag      360
acttagactt aggtcaaggT ggTtatgata acatgtacat ggatgaccga agaggtggag      420
caccaccgat gatggatgat aggcgaggcc tgcaggtcca atgcgtcacc aatgcccattc      480
ccccaatgtt tgacaggagg cgctgtgtcc aggagcatgg tgggtggacc gtgattntca      540
caaaatttct                                         549

```

<210> 240

<211> 549

<212> DNA

<213> Ctenocephalides felis

<400> 240

FC-8-C2-PCT.ST25.txt

```

tctcattgtc gatctcatta ctccacgata ctccgtacag gagacacttt acatagaaat      60
taagtgcgtg gtgaaatcat tcaatcgacc attaaattta agttaagttc agttttttat      120
caagttattt aagtgacagt taagtgccgt ttttcgatcc atgttctgtg caaaaacgac      180
aggatgacgt tgaacgacga aacagcaacg gatgccatcg ttaacggcga tggccttgac      240
cgagacacgg gagggctgga aaaggaccct aacacaagga agaaaatgga gttatcgctg      300
catgaacgcg atagagttgg ggtgcaagat tctgttcttt tagaagacta cacaaatgaa      360
tcagtttttcg tcgataatct taagaagaga tttggagaag accttatata tacatacatc      420
ggcaagtact ggtatccatc aacccttaca aagaactaaa tatatacaga gaaaagatgt      480
tttgaatatc aaagaagcgt tttccagcct acctacgtat tgcggtgaga tatgcattag      540
atcactgct                                     549

```

```

<210> 241
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (521)..(521)
<223> n = unknown at position 521

```

```

<220>
<221> misc_feature
<222> (547)..(547)
<223> n = unknown at position 547

```

```

<400> 241
cttaaggcca aggctgagaa ggagaaggcc caatacttcg gtgaattgaa tgaacttcgc      60
tccggagttg accaccttgc taacgagaag gccgcacaag aaaagattgc caagcaattg      120
caacacagcc tcaacgaagt acaaggcaaa ttggatgaaa ccaaccgcac cctcaatgac      180
ttcgactccg ccaagaagaa gttgtccatt gaaaactccg acctcttgcg ccaattggaa      240
gaagccgaat cacaagtttc acaattatct aagatcaagg tgtcattgac caccaattg      300
gaagacacca aacgcttggc tgatgaagaa agccgcgaac gtgctacact tttgggcaaa      360
ttccgtaact tggaacacga cctcgacacc gtccgcgaac aagttgaaga ggaagctgaa      420
ggcaaggccg tttgcaacgc caactcagca aggctacgcc gaagctaatt gtggcgctcc      480
aatccaatc tgaggagtcg ccgtctgaga ctcgaaaagc naagtaattg cagccgtctg      540
ttaactnaa                                     549

```

```

<210> 242
<211> 426
<212> DNA

```

FC-8-C2-PCT.ST25.txt

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (3)..(3)

<223> n = unknown at position 3

<400> 242

aantggtgca gcgttttagta taccgacgac gtttggtcgta caacacaaaa tctaacagga 60

ggaggggttgt ccgaactcca ggtggtaaac tagtgtatca ataattgaag aaaccaaga 120

agatccccag gtgtggacaa tgcaaagaca aactcagagg catccagcct gccaggccca 180

tggaagggtc cagaatgtgc agaagaaaga agacagtacg tagatcatat ggtggagtac 240

tctgccacaa gtgtgtaaaa gaacgtattg tcagggcttt tctaattgaa gaacagaaaa 300

tagtcgtaaa agttcttaaa gcacaacaag caagtgttaa agcggctaag aaggataaat 360

agacctaatt ctatgttaaa tataacataa taaaaacttt ctcaaataaa aaaaaaaaaa 420

aaaaaa 426

<210> 243

<211> 485

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (436)..(436)

<223> n = unknown at position 436

<400> 243

aatccaacgc tttgcaatcg aattttattta gcatatcagg agattcttgg caaaaattaa 60

gaaatgctct gtcaccggca ttacatcgg gaaaacttaa agctatgatg gagattatta 120

ttagatgcgg taaaaatttg caagaatttc ttgaagaaaa atccaacagt aaagaagaac 180

tcgaattcaa agacttggct gcaagataca caacagatgt aatttcttca gtagctttag 240

gcaatgaagt aaactcagtg aaaaatccaa atcacgaatt tcgcgaaatt ggcagaaaaa 300

tattttaattt acccacaaga tgggatgttg catgtcatta tgtttttcat gtcacctgaa 360

atcctgaata aatttaaatt ggcaaataa agtcgtgaag tttatgattt catgatgaat 420

gtgtagacaa acagtnctt tagagaagaa aataatatac agacctgttc atgcactttt 480

gatca 485

<210> 244

<211> 549

<212> DNA

<213> Ctenocephalides felis

<220>

FC-8-C2-PCT.ST25.txt

<221> misc_feature
 <222> (531)..(531)
 <223> n = unknown at position 531

<400> 244
 atattcttca caattattgc agcgattcat ttcacaggac acaggggtgcc gtatgatttt 60
 gtaaataaaa ttgtaccatt attaccaggg tctaccacag gctggcagct aacaggatgt 120
 gccataatgg cactttgtct atggttaact ataattttcg ttttaagata cacatttaaa 180
 ttgttactga tgtacaaagg atggatgtat gaggccagag ggaaaggagac ttctgtttcg 240
 ttaccgacaa agatttggct tgtgctagtc aaaatcatgt ccggttggaa caaaccagga 300
 ttgtacagtt atcaaggatc actgccaaga ctgcctttac catcggttga agacacaacc 360
 aaaagatatc ttagaagtgt ccgtccctta ttggatgatg ccagttacaa gcgcatggaa 420
 ggtctgactg aagaattcaa aaaaggcatt gcagtgaac tgcaaagata tctcttctga 480
 aatctgtggc gagcactatg tctcagatgg tgggaggatt gttattgaga nggagaggac 540
 .cttatgggtg 549

<210> 245
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (498)..(498)
 <223> n = unknown at position 498

<220>
 <221> misc_feature
 <222> (533)..(533)
 <223> n = unknown at position 533

<220>
 <221> misc_feature
 <222> (543)..(543)
 <223> n = unknown at position 543

<220>
 <221> misc_feature
 <222> (546)..(546)
 <223> n = unknown at position 546

<400> 245
 attttatcga tttgcttggt ttcgtgtgca tttttgacgt ttcatttttt tcgaaaacgc 60
 ccataagtat taaaacttaa aatggccagt tacagtgaag atcaattggc agagttccaa 120
 gaagcctttc aactatttga ttctcgggggt gatggtaaaa tagatgtag cttgggttga 180

FC-8-C2-PCT.ST25.txt

gatgctttga gagctcttgg tcaaaatcct actgaaactg aagtcaaaaa gttcacccat 240
 caacttaaac atgatgaccg catttctttt gaagtatttc taccatata tcaggctatc 300
 tcaaaagggc gctcagcaga tacggctgaa gattttattg aaggtttgag gcactttgat 360
 aaagatggga acggttttat aagttgtgcc gaattaagac atttgctttg tactttgggg 420
 gaaaaactta ctgtgaggag gtcgagcaat tgcttcaaaa ccaagaagat ctcaagcaac 480
 atcaattatg aagattgnaa gaatggcatg tccggtgaat cataaattga agntttaata 540
 acntcntca 549

<210> 246
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 246
 gctgatgatg ctgatgtaga tatggttgta agagcagcag tatttgcctg cgttggaact 60
 gctggtcaga ggtgcacaac aacccgacga ttaatcgtac acgataaagt ttacgatgaa 120
 gtgatctcac gattgaagaa agctttcgct caagttctta caagaattgg tgatccattg 180
 gacaaagata ctttatatgg acctctacat tctgaaaatt ctgttaatga atacaagaga 240
 acgattgaag aagctaagaa attgggcggt aaaattgaat ttggaggcaa ggtggtagac 300
 aggcccggat tcttcgtcga acccacaatt gtttctggat tggcccatga tgcccctgta 360
 gttcgcagcg agtgctttgc cccaattgta tacgccttga gagcctcttc tgtccaggag 420
 gccttcaa at ggaataatga agttgaccag ggattatcat ccagtctctt cacccaaagt 480
 attagcacgt ttctgattgg ataggccatg ggtcagactg cggattggaa cgtcaacatt 540
 ccacatcag 549

<210> 247
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 247
 ccaaaatgaa gttgaatgtg tcttaccgga caacgggatg ccagaaattg ttcgaaattg 60
 tggacgagca caagcttcgt gtcttctatg aaaaacgtat gggagcagaa gtcgaggccg 120
 acatcctcgg cgatgaatgg aaaggttatg tactccgaat tgcaggagga aatgacaaac 180
 aagggttccc catgaaacag ggtgtcttaa ctaatgttcg tgtacgtttg ctgttgtcaa 240
 aggggcactc ctgctaccgc ccccgtcgta ctggagaacg taaacgtaaa tctgtacgtg 300
 gttgcattgt tgacagcaac ttgtctgttt tagctcttgt cattgtacgc aaaggagtca 360
 atgaaattcc cggattgacc gacggcaatg taccaagaag gcttggaccc aagagggctt 420
 caaaatccgt aagctgttca acttgacaag gaagatgatg taccggtatg tcgtcagacg 480

FC-8-C2-PCT.ST25.txt

tccacttcca gtcaaagaag gtaagaaccc gtacaaaggc ccaagatcca aagctgtcac 540

tccacatct 549

<210> 248

<211> 549

<212> DNA

<213> Ctenocephalides felis

<400> 248

attaaaaaaaa aatctcaaat cgatcataaa agttttaata ttaatttcag taattaatac 60

aacttctgga tcagatgcta acaaatacga agccacctgg gagagtttgg atagcagacc 120

atctcccagt tggatatgat atgccaaagt tggaatattt ttacattggg gagtttatgc 180

agtaccaagt tttggcacag aatgggttttg gcaaaattgg caaggatcta atgtgtcctc 240

ctacgtggat tttatgaatc agaactatcg accgggattt acatatcaag attttgggtac 300

agaatttact acggaactgt ttgatccaaa ccaactgggt gagctattcc aagcttctgg 360

ggctaaatat gttgtgttaa caagcaaaca tcacgaagga tacaccctgt ggcatcaaag 420

tactctttca gttggaactc ccaggacgtt ggtgctcata aggatttaat aggtttacta 480

ccaacgcaat tcgcagcaaa accaactacg tttcgtctct atcactcttg tcgatgggtca 540

cagacttat 549

<210> 249

<211> 550

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (454)..(454)

<223> n = unknown at position 454

<220>

<221> misc_feature

<222> (519)..(519)

<223> n = unknown at position 519

<220>

<221> misc_feature

<222> (529)..(529)

<223> n = unknown at position 529

<220>

<221> misc_feature

<222> (535)..(535)

<223> n = unknown at position 535

<400> 249

FC-8-C2-PCT.ST25.txt

```

gttatcaaca ggatttttggga gatcgtgcaa ggtgttttcca acctagtcta acttcttcat      60
cttcaatatg tgatgaacga ttcacttgga accctgataa tgagcaaaga atgatttttac      120
aagaagctct gtccaaagca cacactcatt taggcactgg agcatcaata ggttccgggt      180
ccatttctgg tagctccatt ggttcttctt ctacgtcgtc ttcctcatct agttcttcct      240
caagttcttc ttcattggtct ggcagcggaa tgggagttag ttcaactcaa ggacaaaagg      300
aaattgttca aatcagccca caaaaagtag ggcttaaatt aagaattaat gaagttcata      360
aactaaatgt ttattatgca caagctgaga ttatccagta gattatatta tttgatggac      420
ttgctaagtc tatggaagat gataagagag atgncagcat tggagattac tctcagaacc      480
tgagaaatat actcaaattc cgggtgggttt ggactttgng gataagtng atgcntatgt      540
gcaacatgcc                                         550

```

```

<210> 250
<211> 472
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (440)..(440)
<223> n = unknown at position 440

```

```

<400> 250
gcaaataatt ctgtgttgat atatcttgtc atattaaaaa caagtgaact tgtgaaaatt      60
tgcaattaat ttgggtgaca ataatgagac ttattatatt tatatcgtgc ttggcatcaa      120
gtacggttta aatgtaccta tagtcaaagg cataataaaa acgctagtgg aatttgcacc      180
aagtgttatt gtataaaact gcaatatgat caatataaaa agtatatgtc cttatTTTTT      240
tgtttatatt ttactttcat cttatataaa cactatttta tgtatcccggtaccaatgag      300
gcgctgtgca aagttataca actcaataag tcctcaagcc tcggcagagt acgatgagaa      360
tggcgatata tcaaaagatc tggtcgaaaa tctcttacac aggtgtagaa caatgcacaa      420
gtaattttgt actcttgtgn cggaaaatga aacggtctct catgtatggg ca              472

```

```

<210> 251
<211> 339
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (13)..(13)
<223> n = unknown at position 13

```

```

<220>
<221> misc_feature

```

FC-8-C2-PCT.ST25.txt

<222> (54)..(54)
 <223> n = unknown at position 54

<220>
 <221> misc_feature
 <222> (108)..(108)
 <223> n = unknown at position 108

<220>
 <221> misc_feature
 <222> (139)..(139)
 <223> n = unknown at position 139

<220>
 <221> misc_feature
 <222> (274)..(274)
 <223> n = unknown at position 274

<220>
 <221> misc_feature
 <222> (305)..(305)
 <223> n = unknown at position 305

<220>
 <221> misc_feature
 <222> (311)..(311)
 <223> n = unknown at position 311

<400> 251
 ggtcctaatt tanttaccce attccaaaaa ttttaaattt ttgccaaaaa tgcnttttcta 60
 ccatgggttaa agctcaaata tccggacttt tttattgcct tattattnga tgaataattt 120
 cgattatttg atttcgatnc aaaatctaaa tgaaccagtt taaatccaaa tcaaataatt 180
 gaaattattt gtaacaaaaa aaaaatttat aatcccaaaa atataaaaaa tatttatttc 240
 tactcattga acacaaaatt cacatagaaa atgngcctgt ttgctataca atatagatta 300
 aaatntacgt ncgtatttta ataatttttg catatttat 339

<210> 252
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 252
 ccggcagacc gtttttggtt gctgcattac tcttggtggc gaaattagtg cacgatggct 60
 caaccactag ctacatctga tatcaagtat accaagctat tcatcaacaa tgaatttgct 120
 gattctgtaa gcggaaaaaa atttcctact attaatccaa ccaatgaaaa gaaaattata 180
 gatgtatcgg aaggtgataa ggccgatgta gatctggcag tcgctgctgc caaaaaagcg 240
 tttgcgctaa actcagcatg gcgccagatg gacgcatctg cacgcggaaa gctacttaac 300

FC-8-C2-PCT.ST25.txt

aagtttgctg atttgattga aagagatctt caatatttag caaatttaga aaccttagac 360
aatggaaaac cattttctaa tagtatcata gatatacagt gcgctatcaa taccatcaga 420
tattatgcgg ctggtgcgac aaaattcatg gtcatacaat tcagcagatt atggattgcc 480
agcttcacat tcgacaccag tgggtgtagta ggtcagattt accttggact tccaatgcta 540
tgggtgcctg 549

<210> 253
<211> 549
<212> DNA
<213> Ctenocephalides felis

<400> 253
aacagctggt tgtgccgtac ggtgggtccc gcgtgtgtag cattgtagca gtatcaaagc 60
gaagctcgat cgatccggtc gagacgtgaa gcccgcgca tcccccgct tcagagacaa 120
tttacagact ccggagttaa tatcacgaaa ccactttgtg ttcgacttct cagtacgaca 180
gtgtcgggtca tttcaaacgc gcgttgtgtg tgtccatcta tcatttaciaa cgggggttcct 240
gattttttcga aggttcagta ataattttcg tatttcgtta tggcgatgag atgtgtagga 300
ttgctcgtca agagcaccat ggtccagtc ccacagcgca ggctgatatc ccaatcagct 360
gttgctatga acaggatgct tcaggattca ccaaacgctc acctagataa atcaatcttg 420
caaaggtaca ctcgtcttct caagacgatc ggtcacgcag gtcacttacg tgtggatcga 480
tggacgggtga gtacttgccg ctaaggacgt gtcttgaatt aacctccaaa ccagaaactg 540
caaatggac 549

<210> 254
<211> 549
<212> DNA
<213> Ctenocephalides felis

<400> 254
gttgattata gtccttgacc tttaactgga gctttaggaa ctttaagttt aacattaggt 60
ataattatat gatttcatca atttaattat acattaatat tattaggaat aataattacc 120
ttattaacta tatttcaatg atgacgagat attagtcgag aaggatcatt ccaaggctctt 180
catagtttaa tagtttctaa aggattacga atcggaataa ttttatttat tatttcagaa 240
attttattct ttttttcttt cttctgagca tattttcata gaagattatc accttctatt 300
gaattaggaa taatttgcca cctttaaata ttaaaatatt taatcctttt caaatccctc 360
tattaaatac agcaatttta ttatcttcag gaatttcaat tcatgagctc atcattcatt 420
actagaaaaa aatcattcag aaacaataaa aagttattta ttcaattatt ttaggaatta 480
tttttctata cttcaatgga tgaatttttag aagctctttt caattgagat caattttgga 540

FC-8-C2-PCT.ST25.txt

caattttttc

549

<210> 255
 <211> 465
 <212> DNA
 <213> Ctenocephalides felis

<400> 255
 gtttgtaacg gcttccaaag atatgactgc taaacttttt gacactgatt cgctttttatg 60
 tttgaaatgt tacaaaacag aaaggcatgt aaatagtgcc gccatcagtc ctattaaaga 120
 acatgttgca ttgggaggtg gtcaagatgc tatggaagta acaaccacat cctcaagaca 180
 gggatatgttt gaaactagat tcttccactt ggtctatgaa gaagaattcg gtcgtgtgaa 240
 gggacatttc ggtccagtaa acagcttgaa gttccatcct gatggaaaga gttttgctac 300
 aggaggagaa gatgggttttg ttcgagttca aaattttgat tatacatatt tagattatgc 360
 ttttgaataa acttgagaat tttcatatth gtaatttgtc caatttatac aatgttcaag 420
 atgatgaaaa taaagtataa ttatactgta aaaaaaaaaa aaaaa 465

<210> 256
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (3)..(4)
 <223> n = unknown at positions 3 and 4

<400> 256
 ttnnaccgta gctctaaagt gacgttacaa tgtcgggagg cttggatgtt cttgccctac 60
 gggaagatga tgttaccaa atgttagccg catgcacca tcttggcagc gaaaatgtga 120
 acttccagat ggagcaatat gtgtacaaac gccgtgctga tggagtacat gtaatcaact 180
 tacgtcgcac atgggagaag cttttgttgg ctgctcgtgc tattgttgct attgagcatc 240
 cagctgatgt cttcgttatt tcctccagac ctcaaggaca acgtgcagta ttgaagttcg 300
 ccaactatac tgggtgctact ccaattgctg gacgtttcac tcctgggtgcc ttcactaatc 360
 agattcaagc tgcattccgt gaaccacgtt tgctgattgt tactgaccc cactccgatc 420
 accaaccat cactgaggct tcatatgtga acattcctgt attgcattca ccaacactga 480
 ttctccattg aaatttgtga tattgaattc atgcaacaca agtccaacca tccgtgggtt 540
 gatgtgtgg 549

<210> 257
 <211> 0
 <212> DNA
 <213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<400> 257
000

<210> 258
<211> 549
<212> DNA
<213> Ctenocephalides felis

<400> 258
gtggtgttag ccgcgactgt ttcaactatt ttagcggcaa gttgttcaaa tccagaagtt 60
acagccacat ctttcactac gcaagatgct acaattgtta caaatatagc atttattgct 120
gaatttacat taaaatgcag tccaagtgtt cctagtggca tacctttgta tgctgaaatt 180
gatggtaaag taatgccgac tgctagaatt ggagataata aataccaagt tagctggact 240
gaagaaatta acaaagctcg cagtgggtgat cataaagtga gattatatga tgaagaaggt 300
tatactgcag ttcgtaaagc tatgcgatct ggtgaagatg ccagtgctgt caggtcattg 360
gtgactatcg ttatttcaca tcctgggtgca ttactgggc catgggtcaa ttctgaattg 420
gtgctcatta gctgctgtgg tgtagcttac ttagcattac ttcaaataca aattattatt 480
atagatgatt taattatagt aatgtaaaat ttattattaa atacaatctg attttataaa 540
aaaaaaaaa 549

<210> 259
<211> 549
<212> DNA
<213> Ctenocephalides felis

<400> 259
agatgggtgt ggtgatctga atatttagta taaatttgtg ttttttagcgt tcatttatca 60
gttaagtgat caaaaatgtc tttcaatcaa gatattaaaa cagaaaacgg tgggtgaattc 120
gcccaagatg ttgaaatgaa aactcacaat acagacggca gtggtgacgc atcaacaaca 180
caaatggac acgcgggaaa gcctcgtttc gacgatagaa aattattcat cgggtggactg 240
agtgccgaaa ctaccgaaca acaattacgc gatcatttcg ttcaatacgg tgccatcgac 300
tccgtggatg tgaaaagcga cccaataacc ggcagatcaa aaggattcgc attttttagtg , 360
ttcgcgtccg tggactccat tgaaaaagcg cttgcgggtca gtgaacatgt cattaattct 420
aagaaaatag acgttaagaa agcaaaaagcg aaacacggaa agtttttcgtc ggcggttaaa 480
tacaacaata ccgcgatgat attaaaactc atttcggcaa tttggaaatt cgcgagtcga 540
ctcccttgt 549

<210> 260
<211> 549
<212> DNA
<213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (473)..(473)
 <223> n = unknown at position 473

<220>
 <221> misc_feature
 <222> (521)..(521)
 <223> n = unknown at position 521

<220>
 <221> misc_feature
 <222> (526)..(526)
 <223> n = unknown at position 526

<400> 260
 gaaacttggc gcttattgga gcacttcttc ttgtacttgc tgaatctcga gtggaaggaa 60
 gaagtctttt tgctggaatt cctactatgg gtgattcaag gccaaaaaat tatttacaac 120
 tggctggcag aattttacta gctttcatgt ttattacatt aattcgtttt gaattaagtt 180
 ttttacaggt tatacaagat ttaattggat ctgttttaaat ggtattggta accattggtt 240
 ataaaacaaa attatcagct ctgatttttag ttctacttct ttcattttta aatttatacc 300
 acaatgcttg gtggacagtg cctacctata agccattaag agattttctc aaatatgatt 360
 tctttcaaac attgtctgtg attggaggtc ttcttatgat tgtttccttg ggcccagggtg 420
 gagtttcgat ggatgaacat aaaaaagagt ggtagaaaaa tcaggaatat tnggccgtgt 480
 gctagtataa caattatata tatatatata tatatatatc ntatcntata tatatatata 540
 tatatatat 549

<210> 261
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 261
 cgtaaaatca agaaacttct aagaaaatta atgtcactgt taaaacacca aaagagaaac 60
 aaacagtgga agttgaggaa gatgccgaaa ttaaagactt caaaactttg gttgctcaga 120
 aattcaacgc agaacctgag caattatgtc ttattttttgc gggaaagata atgaaggata 180
 ctgatacttt gaaagggtcac aatattaagg atggtcttac tgtacattta gttatcaaaa 240
 ctctccaag gcctgagcca gaaagggcag ctgagagacc tccagctgat atcagtgcaa 300
 caccttttgg attaaattca ctaggagggt tagttggatt agagtcattg ggtttagggtc 360
 aagggttcatt catggattta caagcacgga tgcaaaatga actcatgact aaccccgata 420
 tgtaagaaa tgtttttagat aatccacttg ttcagcagtt gatgaatgat cctgaaaaca 480
 tgagacctta attacatcta atcctcaa at gcaagattaa tgcacgcaat ccagagattc 540

FC-8-C2-PCT.ST25.txt

tccatgctc 549

<210> 262
 <211> 502
 <212> DNA
 <213> Ctenocephalides felis

<400> 262
 gctgtacact cacgctctcg tgtacgtaaa aatactgaag ccagaaggaa aggtcgccac 60
 agcgggttttg gtaaaagaaa aggtacagct aatgcccgtg caccacaaaa ggatctatgg 120
 gtacaacgta tgagagtcct gaggcgtttg ttgaaaaaat accgtgaagc aaaaaagatt 180
 gatcgccatt tgtatcatgc actttacatg aaagcaaagg gtaatgtatt caagaacaag 240
 agagttctta tggaatacat ccataagaaa aaggctgaaa aggcacgtac taaaatgttg 300
 aatgaccaag ctgaagctag gagaacaaaa gtacgtgaag cacgtaaacg acgtgaagaa 360
 agaattgcta ctaaaaagca agagctctta caaacttacg ctaaggaaga tgaagcagca 420
 gccccaaaaa ataaatgtcc cttccttgta aataaaataa atttatataa atttaaaaaa 480
 aaaaaaaaaa aaaaaaaaaa aa 502

<210> 263
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (32)..(32)
 <223> n = unknown at position 32

<220>
 <221> misc_feature
 <222> (512)..(512)
 <223> n = unknown at position 512

<400> 263
 ggttactatg cctttctcgg ttcgagaagg tnttaacata tttttggacg gttatgtgcc 60
 aactgaaaac atgagattca ggactgaatc gcttgttttt aaagtagccg aatcggcaac 120
 cgaggaagag gtgaaacgta tgaaccatta cgtttaccgg gcaatgtcaa agacaatggg 180
 cgatttccat ctggaaatca aacagggcca gttttcggat tccgaaattt tagtattatt 240
 gggcgaaaac ggtaccggta aaacgacatt catcagaatg ttggccggaa acttggaacc 300
 tgatgcaggt tctgcgaagt tgccacaatt acacataagt taciaaccgc agaagatttc 360
 accgaaatct caagggcacg tgaggcattt gttgcacgag aaaattaggg acgcatatat 420
 acatccacag ttcataacag acgtaatgaa acccatgaaa atcgaagaaa tcatggccaa 480

FC-8-C2-PCT.ST25.txt

gaagtccaaa acctctcggc ggcgaactgc ancgcgtcgc ctcgctcttgc tcggaaaccg 540
gccgcgtct 549

<210> 264
<211> 534
<212> DNA
<213> Ctenocephalides felis

<400> 264
attcgtgaaa aatattaatt taaaaatgca gaaacaaaag agggaaaccta ttcattgctgt 60
ccaagttttt ggcagaaaaa agacagccac cgctgttgcc tattgtaagc gtggacgtgg 120
aaatttgcga gtaaattggac gtcctttgga actcgtggag ccaaaagtcc tccaatacaa 180
gttgcaggag cctattctac ttttaggcaa ggaaaaattt gccggtgttg atatccgcgt 240
tcgagtaaat ggaggaggtc acgtcgcaca aatttacgct atcaggcaag caatttcaaa 300
ggcttttagtt tcctattacc agaaatatgt cgatgaggcg tctaagaagg aaatcaaaga 360
catgctgatt caatacgaca ggaccctgtt cgtagcagat ccccgctcgtt gcgaaccaa 420
gaaatttggg ggtcaggtgc ccgtcacgtt accaaaagtc atccgtaatt tatattatct 480
tttttttaaat tctattataa taaattgggt gcagaaaaaa aaaaaaaaaa aaaa 534

<210> 265
<211> 549
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (43)..(543)
<223> n = unknown at position 543

<400> 265
gtgaaaaggc cattctcatc gatggtcgtg gccatctgtt aggccgactg gctgctatta 60
ttgcaaaagt ttgttagaa ggaacaaaag ttgtttagt aagatgtgaa caactgaata 120
tttcaggaaa cttcttcagg aacaagtga agttcatgtc cttcttgcgt aagagatgta 180
acatcaaccc tgcacgagga ccttaccatt tcagagcacc ctccagaatt ttgtggaaga 240
ctgttcgtgg tatggtgcca cacaagaccg aaaggggaaa gcaagctctt cgcagactta 300
aggcatatga aggttgccca gcaccattcg acagaaggaa acgtctagtt gttccaaaag 360
caatgagagt catgtgtctt aaacctgccg caagtactgc atgttggtcg cttatcaaat 420
gaggttggat ggaaatatca agatgttggt gtactcttga aaacaagagg agagttaaga 480
ctattcttaa catcaaaaag agaaataatc ttaagaactc ctaagaagga ggtgagcagt 540
cgncaaagg 549

FC-8-C2-PCT.ST25.txt

<210> 266
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 266
 gaaaaacaag cagtacttca agcgctacca agtaaaattc aaaaggcgctc gtgatggtaa 60
 gaccgattac tatgctcgta agcgtcttac agtacaggac aaaaacaaat ataacactcc 120
 taagtatcga ctgatcgtgc gccttttcgaa caaagatatc acctgtcaag ttgcttactc 180
 cagaattgaa ggagacaaga ttgtgtgctc tgcttattca catgaattac caaagtatgg 240
 tatcaaagta ggtttaacta actacgctgc agcatattgc acaggcttgc ttttggctcg 300
 aaggctctta caaaagttcg gcttggataa tttatatggg ggctgtactg aagtaacagg 360
 cgaagagtac aatggtgaag ctctggatga tggaccagct gctttccggt gctacttaga 420
 tgttggttta gcacgtacaa ccactgggtgc tcgtgtgttc ggagccatga aggggtgctgt 480
 gtgggtggctt aaatattcca cactccacta agcgtttcca ggtatgatgc tgaaagcaaa 540
 agctcatgc 549

<210> 267
 <211> 514
 <212> DNA
 <213> Ctenocephalides felis

<400> 267
 ctgttaaaac atcaattaca atatgtcaga cgtagaagtt gatgtacctt cttcggcccc 60
 agttcttggg ggagccatgg acgtaaacac tgcttttaca gaagtgttga agactgcact 120
 tattcatgat ggacttgtag atggttttaca cgaagccacc aaatctctgg acaaacgaca 180
 agcagttctt tgtgttttgg ctgaaagttg cgatgaacca atgtacaaaa aattagtaca 240
 agctctgtgc aatgagcatc agattcccct tgtttaaagtt gatagcaaca aaaaactagg 300
 agaatgggca ggtctttgca aaattgacaa agatggtaaa gccagaaaga ttgttggatg 360
 ctcatgcggt gtcacagag atttcgggga agagactcca gctttggatg ttttgaagga 420
 ctatttgaaa caatcgagtt aaactatctt gctattttta attatgaaat aaaaatacaa 480
 aaacctaanaa aaaaaaaaaa aaaaaaaaaa aaaa 514

<210> 268
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 268
 aattcggcac cagggtcggc tttagtcgta acaaattgaa tatcaaaaaa taatgataaa 60
 tttatcattc agtcttattc taaaatcgta gacgtgatgt tgttttgggt agttttaatt 120
 tttgtgttgt gtttttatgc ctatttttagg ctaaactcgag tgcgacgatt tgctgataag 180

FC-8-C2-PCT.ST25.txt

```

ataccaggag aacaaccatg gcctatagca ggaaacgcct tagatattgg gacggatcat      240
acgaaattat tacaaaaact tatgcaatat ttggataagt ataaattttc tcgatttggt      300
atttggcttg ggatggacta ttttgtgttt ttagtagaac ctgatgatgt tgagattatt      360
ctaagcaaca ccacaaatat aaccaaataa aaagaatatg attttctgca caaatggctt      420
ggagctgggtt attaacatcc acaggcgata aatggcgaca tagcccgaaa aatcattacc      480
ccacattcca ctttaaaatt ttagaggaat atgcagaggt gatgaccgtg agtgtacttg      540
gttaaaaat                                     549

```

```

<210> 269
<211> 477
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 269
cttcttcctc tgattggtaa caaaacaatt tcttattggg acagttttgc aatcacaaaa      60
ttagtgtttc agaaaaatga gagctaagtg gcgtaaaaag aggatgcgca ggcttaaacg      120
taaacgcagg aagatgcgtg ctcgttccaa gtaaataaac gattgcaatc atttaacact      180
tgtgtatatatt tttgcagttt attgtgaagc tcattatcat aatggccaaa atgaaatatt      240
ttcgatatcc aatcgacatt cattatatatt aagtaacaat agtatatgta tagcctgttt      300
ctaaattatt atgcaagcat aaactaaaaa ttatttatta aacaaatgtt atttaatata      360
ttattgaatt attatatata ttgaattgaa ttgttataaa cccgtattaa tgaattatta      420
taaaccgta ttatacagaa atatatatatt attaattgca aaaaaaaaaa aaaaaaa      477

```

```

<210> 270
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (456)..(456)
<223> n = unknown at position 456

```

```

<220>
<221> misc_feature
<222> (495)..(495)
<223> n = unknown at position 495

```

```

<400> 270
agagtattct gtatctatta ccatagtgtt ttgtttgttt aaatagtttt taaagataac      60
aaaatgaact taattatact tttcggcctg tgttttgtta cgttttgtac gggacatgag      120
gaaagccctt acacattcca atatacgaaa gagaactttc aagagggagt tggaaaaaat      180

```

FC-8-C2-PCT.ST25.txt

```

aaccattttca tcatgttttta tgcaccctgg tgcgggttact gccaaaaatt ggcgcccaca      240
tggaaccagt tagccgaaat gttaaattca gatgagcatt caagagtcac cattgccaaa      300
gttgattgta cgactgacaa tgaagtttgt tctcaacatg atgttacagg ctaccctact      360
ctgttatttt tcaaattgga caccgaagaa cctgtgaagt tcaaaggaac tcgagatttg      420
ccaactctca cagcttttat taatgaacaa attggngcaa tgaacctttg gatgttgaat      480
cgattccaca tattntgatg ctgcaatggc tagttgaacc gcagaagata ggttggagat      540
atgtcagag                                     549

```

```

<210> 271
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (443)..(443)
<223> n = unknown at position 443

```

```

<220>
<221> misc_feature
<222> (543)..(543)
<223> n = unknown at position 543

```

```

<400> 271
gttagcccaa ggtttaatag atcgtggcca ttttgataaa gagaatataa aaattagaca      60
agctgatatt gaaaaacaat ttgacaattt gaaaaacttg agtttacaaa gggaaaaacg      120
gcttgctgag agcaagaaat tcttccactt tattcaaattg gtagaagagg ttcaggagtg      180
gataaatgat cagatatcaa ttgcagattc tgaagattat ggaactgatg ttgaacatgt      240
ggaattgctc ataaagactt ttgatacttt tgtagcagga ttaatagcta gtgaaagcag      300
aattataaat tgtacagaca caggaaagaa attgattaaa gaaggaaatc catgcgctga      360
tactattcga gataaaattg atgaaacaaa acaattatgg gatgacttaa aagaattagc      420
tcatgttcgg caagagggcat tgntgggtgct aaacttgtca tgtgtttgcc gcaatgctga      480
tgaactattt cctgatagct gaaaagaatc gacataccac tgccatactt caagattaga      540
agnatccat                                     549

```

```

<210> 272
<211> 515
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (28)..(28)
<223> n = unknown at position 28

```

FC-8-C2-PCT.ST25.txt

<220>
 <221> misc_feature
 <222> (145)..(145)
 <223> n = unknown at position 145

<220>
 <221> misc_feature
 <222> (178)..(178)
 <223> n = unknown at position 178

<400> 272
 ttgcccttag tctaaaatgg ggcgtgtnat cagagctcaa agaaaagggtg cgggctccgt 60
 cttcgtggcc catacaaaga aaaggaaagg ggcacctaaa cttcgttcac tcgatttcgc 120
 tgagagacac ggttatatta aaggngttgt caaggatatt atccatgacc ctggtcgngg 180
 agctccctta gctatgggtc acttccgtga tccatacaag ttcaagacca gaaaagaatt 240
 gttcattgca cctgagggta tgtacacagg acagtttgtg tactgcggtg aaaaagctaa 300
 tctacaaata ggaaatgtaa tgccagttgg tgctatgcca gaaggaacca ttgtatgcaa 360
 cttagaggag aaaactggcg accgaggtcg gctacccgtg cttctggaaa ctacgctctg 420
 ttattgctac aaccggcac taaaaagact cgtgtcaagc tt cattggag ctaaaaaggt 480
 atgcctttac atcgtgctat ggtggattgg gctgg 515

<210> 273
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (488)..(488)
 <223> n = unknown at position 488

<400> 273
 aagcattctc atactttgca acagctcaac aatggaaaaa aaattcctcc aagcaattgg 60
 aaatgtgaga aatgtgatct cacctcgaat ttatggctta atttatcaga tggatccatt 120
 ttatgtggca gaaaattttt tgatggcaca ggaggaaatg atcatgctgt tgaacactac 180
 aaagcctatg gttatcctct ggctgttaaa ttgggtacaa taactaaaga aggtaaaggt 240
 gatgttttca gctacgatga agatgatatg gtagaggatg ttaacttaaa gcagcatcta 300
 gcacattttg gaatcaatat aactgattta gaaaagactg aaaaatctat ggtagaattg 360
 gagcttgatt taaaccagcg agtaggggag tggggtgctc ttactgaaag ctcaaatgcc 420
 ttgaaacctg ttatggcctg gttatactgg ctgagaaatt tgggaaattc atgttatttg 480
 aacagtgnat gcagtttgtc actatccaga cttattctta gattgcatga tcacctagat 540

FC-8-C2-PCT.ST25.txt

atcacacat

549

<210> 274
 <211> 406
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (55)..(55)
 <223> n = unknown at position 55

<220>
 <221> misc_feature
 <222> (349)..(350)
 <223> n = unknown at positions 349 and 350

<220>
 <221> misc_feature
 <222> (352)..(352)
 <223> n = unknown at position 352

<220>
 <221> misc_feature
 <222> (400)..(402)
 <223> n = unknown at positions 400, 401 and 402

<400> 274
 cgtttagctaa agattttattg catccgacga ttgcggagga gaagagacgt cacangctaa 60
 agcgtcttgt gcagcatcca aattcttatt ttatggatgt caaatgtccg ggttgttata 120
 aaattacaac agtttttagc catgcacaaa gtgtagttgt atgtgctgga tgttcaacaa 180
 tattatgcca accaacagga ggtcgtgctc gtctgactga aggatgttcg ttcaggagga 240
 aacaacatta atttaagtta tttcctactt tgttttataag atgtaaaagt taaattgcct 300
 tgtagatttt tttaaaactc taataaaggc aaatttgaaa aaaaaaaaaann gnaaaaaaaaa 360
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa nnaaaa 406

<210> 275
 <211> 399
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (353)..(353)
 <223> n = unknown at position 353

<220>
 <221> misc_feature
 <222> (365)..(365)

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FC-8-C2-PCT.ST25.txt

<223> n = unknown at position 365

<400> 275

```

attacgcaga accttctgca aaaaatgcaa gggttcacaag caacacaaag taacacaata      60
taaaaaaatca aaagaacgac atgcagccca gggacgtcgt cgttacgaca gaaaacaaca      120
agggttttggg ggtcagacca aacctatctt cagaaaaaag gctaaaacta ctaagaaaat      180
tgtattgaga atggaatgct ccgactgtaa attcaggaaa caaatccac ttaagcgttg      240
caagcacttc gagcttgggtg gtgacaagaa gaggaaggga cagatgattc agttctaaat      300
gtgtatTTTTT ttacatacg actgtattaa gtttaataaa gcagtttaat gtnaaaaaaaa      360
aaaantaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa      399

```

<210> 276

<211> 549

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (417)..(417)

<223> n = unknown at position 417

<220>

<221> misc_feature

<222> (516)..(516)

<223> n = unknown at position 516

<400> 276

```

gcttcagctc atttagtcgg aggagcaaag aaggatcatca tttcagctcc tagtgcagat      60
gcaccaatgt ttgtttgtgg tgttaactta gaagcttatg acccggtccat gaaagttgta      120
tctaattgctt cttgcactac caattgttta gtccttttgg ctaaagttat tcatgataac      180
tttgaaatcg ttgaagggtct tatgactaca gtccatgcta ccacagccac ccaaagact      240
gtggatgggc ctagcggttaa gttatggcga gatgggctgt gagctgcaca aaatattata      300
cctgccgcaa ctggcgctgc taaggctgta ggcaaagtca ttccggcttt gaatggtaag      360
cttactggta tggcgtttag agtccaatag caaacgtttc tgtggtgatc ttactgnaag      420
attgggtaaa aatgcactta tgaagatatc aagaacaaag taaggagcat ctgaaggctc      480
ttgcatggaa tttggattat acagaagatg atgtgngtct gtgattcatt ggtgatccct      540
ctcgatctt                                     549

```

<210> 277

<211> 549

<212> DNA

<213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<400> 277

```

agttgccgcc ctcgtagtcg ataatggatc tggatatgtgc aaagccggtt tcgctgggga      60
tgatgctcca cgagctgtat tcccatcaat tgttgggcgc ccccgtcac c aaggtgtgat      120
ggtcggcatg ggacaaaaag acagttatgt aggtgatgaa gcacaaagca aaagaggtat      180
cctcacattg aaatacccaa ttgaacacgg tattgtcaca aactgggatg atatggaaaa      240
aatctggcat cacaccttct acaatgaact ccgagttgcc ccagaagaac accctgttct      300
cctcacagaa gcccattga atcctaaagc aaacagggaa aagatgacct aaattatgtt      360
tgaaaccttc aacactcctg catgtacgtt gcatccaggc tgtctgtcat tgctgcttct      420
ggtcgtacca ctggtattgc ttggatttgg tgatggtgtt ctcacactga ccaatctatg      480
aaggatcgcc ctctacctt cttgcgtttg gacttgctgc cgtgacttac tgatattaat      540
gaaatctaa                                     549

```

<210> 278

<211> 549

<212> DNA

<213> Ctenocephalides felis

<400> 278

```

aatgagggtt gtacgataac tattgtggct ttagttcaa ttttacagta gtataaaaaa      60
tgtctagtgt gtatgagaat aaaaatgggt ttaaagatgg atgtatcgac ttcacggcag      120
gaccttggg aggtgtggca ttggtgctag tcggtcaacc tttggatacc gtaaaagtga      180
aaatgcaagc tttcccaagt ctttatagtgc gcatgacaaa ttgtataaaa aagacagtta      240
aaagagatgg atttattaaa ggattatatg caggaacaac tccagcttta atagctaattg      300
ttgctgaaaa ttctgtatta ttcgctgggt acggagcttg ccaaaaattc attgcctact      360
tgactggcga aaaagatgta tctaaattaa gtacttttag taatgcatct gtggtgctcg      420
ctgcattttt ttcatcattc acattatgtc caactgaatt ggtaaattgcc actccaagcc      480
ttggaggaag ctcaaattca gaaggttcgc tggcaaatga ttgaagaatg ggccgataaa      540
taaccaacg                                     549

```

<210> 279

<211> 549

<212> DNA

<213> Ctenocephalides felis

<400> 279

```

agcggcttcc accttctttc gctatttgtt ccgcaaagaa tatgaaaata atatattaca      60
catagtgcac gtagtttttc taatacatga tacacttata aaataaataa taacaaacat      120
ttgaagttga tacaaaagta catcagggtta aaatgccgga aggtgtagaa aatttagttc      180
taggagaatt atatacatcg gagaagaatg gtagtgatga aacaggagat ggaactgcag      240

```

WO 03/031577

PCT/US02/31878

FC-8-C2-PCT.ST25.txt

atcgcccttt caaaacaatt cttcaagcca tgaaacatgc tggtaaggag ccatttccaa 300
 cgatatatgt tgatgcaaag gaaccagaga gtggtgagaa atatgaactc gctgccaaat 360
 ctcaattgaa gaaaatacaa aaaatatggg tgagagatac atataaaaat gcagataaat 420
 taaagaaaga ggaagaggat gcaaagaaac gagaacagaa tctgtggaag ctaaaagatt 480
 caaatcaaga agacaaaatt accaccgtaa gtataaaatt aacaggtgat tcatcgaatt 540
 gccggttaa 549

<210> 280
 <211> 528
 <212> DNA
 <213> Ctenocephalides felis

<400> 280
 cacgtgtgat ttattttcttc tgatttagtt ttgtgttgca ataaacatta taatttaacc 60
 tcaaaacttc aaaatgtcta tccgacctgt gtatcgcccg aagattgtca agaagcgaac 120
 gaaaaagttc attcgccatc aatctgaccg atatgataaa cttaagagga actggcgtaa 180
 accaaaaggt attgacaaca gagtacgtcg tcgtttcaag ggccaatttt tgatgcccaa 240
 cattggttat ggatccaaca gcaagaccg tcatatgttg cctactggat tccacaaggt 300
 ttggtacat aataccaagg aacttgaaat cctaattgat cagaatagga catactgcgc 360
 tgaaattgca catggtgttt cttcgaagaa acgtaaagag atcacagaga gagccaaaca 420
 attgtcatca gagtcacaaa tggcaatgca gactccgctc acaagaaaat gaataaatga 480
 ttgataactt catataataa acgctaaaag taaaaaaaaa aaaaaaaaaa 528

<210> 281
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (489)..(489)
 <223> n = unknown at position 489

<220>
 <221> misc_feature
 <222> (547)..(547)
 <223> n = unknown at position 547

<400> 281
 atttagatca aattttcagt ggtattacag aaaatccata aaagcattta gataacaaac 60
 aattatccaa cgttacctga ttgcaaactt taaactgcat taagtataa aacacaaagc 120
 attctgaaat aaattttgtt ctgggggatac acatgcattc acataagttc aatggcttga 180
 agttacaata aagaaggctc caagggctgc caaaataatt acgtgtctcg atctagcctg 240

FC-8-C2-PCT.ST25.txt

```

aatcttcgtc cgctcgccta atcatgccca aggtcgtaaa agctgaaggg gaggatcccg      300
atccaacccc atacttggtc gtatctctcg aacaaaagcg tatcgatcaa accaaaccct      360
acgatgcgaa gaaggcctgc tgggtacccg acgagaagga aggcttcggt ctcggtgaaa      420
ttaaggccac caagggggat ctctgcaccg tcggcttgcc ggtggagaga ccaaagattt      480
caagaaggnc tcgtcgccaa gtgaccccc aattgaaaaa tgcgaggatt gtcaaatttg      540
ctacctnac                                         549

```

```

<210> 282
<211> 549
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (504)..(504)
<223> n = unknown at position 504

```

```

<400> 282
gaaagctcaa gcgaaagaag aaaaaattgc taagcagctt gaaagagaga agctacagct      60
agccttagct gctcgtgata gagctgagaa gaaacaacaa gagtatgaag acaagcttaa      120
atctatgcaa gaagaaatgg aacgatcaca ggctaattta atagaggcac aagatatgat      180
cagacgttta gaggagcaac tgaaacaatt gcaagcatct aaagaagaat tagagcaaag      240
gcagaatgaa ttgcaggcaa tgatgacccg ccttgaggaa acaaagaaca tggaagccgc      300
agagcgtgca aaattagaag aagaaattcg tgcaaaacaa gatgaagtgc aacgcattca      360
agaagaagtt gaagctaaag atacagagac taggagatta cagaatgaag ttgatgaagc      420
caggcgtaaa aaagatgaag tagccgctgc ttgttggctg cacatcaact cctcacatcc      480
catgtgatgg aagaaatgac accnagagtg tgagttccaa acggagtgga gatatagctg      540
cttaatctg                                         549

```

```

<210> 283
<211> 550
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (496)..(496)
<223> n = unknown at position 496

```

```

<400> 283
aagccgcatt tgttattgag aaatatatgc taaaatatat tgtctcagaa ttaatataat      60
gtgctgagtt tgcattaata ttgaaacggt ttattcattc tgaggcatct atataaaata      120

```

FC-8-C2-PCT.ST25.txt

```

aataaatatg aaagcaatth tgataacatt gatagtcgcc gcggctgtgt attccgtaag 180
gcctgagggtt ttcctggaag aaaacttcgt agacgatacg tggacaaata catgggttta 240
tagtgaacac cctggcaaag aattcggcaa attcgtgcac actgccggaa agttctataa 300
cgatgccgaa gcagacaaag gtttgcaaac aagtcaagat gctagggttct acgctctatc 360
tcataagttc aaacctttct caaataaaga caagacatta gttgtcaatt ttctgttaaa 420
catgaacaaa acattgactg tggaggtggt acttgaaggt gtcgattgaa gttgaatcaa 480
aaggacatgc atggtnaagt cctatgaaat atgtttggcc tgcatttggg ccaggaacta 540
aaaggtccgt 550

```

```

<210> 284
<211> 328
<212> DNA
<213> Ctenocephalides felis

```

```

<400> 284
catccgttca ccaattggtg taggatccgt agctaaagtg ttcggaggac gtaaaccgtaa 60
tggtgtatct ccttcacatt tccacaaatc atcaggaggt attgcacgca aagcattgca 120
agctttggaa tctttgaaat tggttgagaa acaccagat ggtggccgca agcttaccgt 180
tcagggaaga cgtgatttag atcgtatcgc tgcccaagtt agggctaaac aaagggcaag 240
aaaagatacc actggtccta ttgttttgta aaacatgttt atatataaat aaaaaataa 300
gatctaaaaa aaaaaaaaaa aaaaaaaaaa 328

```

```

<210> 285
<211> 550
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (535)..(535)
<223> n = unknown at position 535

```

```

<400> 285
cagcgatttc ctttttattc cggctaagtg agaaaacaca aacacaacca aaatggacgc 60
gatcaagaag aaaatgcaag cgatgaagct ggaaaaggag aacgcaatgg accgcgctct 120
caactgcgaa caggaagcta aggatgccaa cctgcgcgct gagaaggccg aggaagaggc 180
ccgttctctg caaaagaaga tccaatcaat tgagaacgat cttgaccaa ctcaagagtc 240
attgatgcaa gtcaatggaa aactcgaaga gaaagacaag gctctccaaa atgccgaatc 300
tgaagtcgct gccttgaacc gacgcattca actcttgga gaagatttgg aacgttcaga 360
agaacgtctt gccaccgcac tgctaaattg gctgaagcct cacaggctgc tgatgaatca 420
gaacgccccg taaggtgctt gagaaccgtt ccctcgcgag gaagagcgca tggaccactt 480

```

FC-8-C2-PCT.ST25.txt

gagaccaact taaagaagcg cgttctggct gaggaggccg ccaagaaata cgatngggtg 540
ccgttaaattg 550

<210> 286
<211> 457
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (446)..(446)
<223> n = unknown at position 446

<400> 286
gcaaacaaca aggtccgctg atgcaagatc cacacgattg tcacgcatat tacacatgtc 60
tagaaattgg atcattaccg aaacatttta attgtaataa aggtgcttat ttcaatacag 120
tcaaattaaa atgcgtgaaa ggaaattgcg aaaatagcac agaaattcct cttcctgagc 180
ttccagacat ttgcgatgaa gtaggacctt tggtgcaaga tccaaacgat tgccgcaagt 240
attattcatg cgtcacgatt ggaaaagaac ctgaacattt tacgtgcaat aaaggggcgt 300
attttgatcg agaaagatta cggtgtgtca gaggatcttg ttaacaaata ttgttatata 360
acaaagttca atctttaatt attatttaga agaatttgaa aatgtatatt taatgttttt 420
taataaaata gtttattggc aatttnaaaa aaaaaaa 457

<210> 287
<211> 256
<212> DNA
<213> Ctenocephalides felis

<400> 287
attgtaccac caacaataaa tttagaaaat ctaactgaag atatggactt aaattatgtg 60
cctaataaat cttgtgattg gaagagttgt gataagagaa tagctttgaa aaatgctttt 120
ggttttggag gtacaaatgc atcattatgt ataggcgaat atagagagat ataatcacat 180
aatgcttata tgctgatttt aaaaagagat aatataatag ttttctaata ctaataaata 240
aaatatattt taatat 256

<210> 288
<211> 550
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (530)..(530)
<223> n = unknown at position 530

FC-8-C2-PCT.ST25.txt

<400> 288
 cgacaacctg acgcccttga aagacaacga aggcattcta gtgccattgg tgcaatcgtg 60
 cgatgacgac catcctgcta ttttccattc gatggcacct tttccattgt tacgtaaagt 120
 tcttgtacgg ttattgcatt ctggtgactt gatactggag aaggctaacg aaatttacct 180
 taaccagtat cttcagaagg ccaaataatta ttggggtaac tttgaaatgt tgacgtcagt 240
 aatttcccca aaacgtttga cgattttgca cgtcgattac aacggcaaaa ttttgggatc 300
 gatgcattcg atgacaggag acgtcaaagg catttcgcat gccttacctc attccgatgg 360
 atatctgtat ttgggggtcac catttaataa ctatttggca cgagtaccta tgcccaaata 420
 ttcgaagatc agagtgtcta aggtcactta tgagggcgag ggattgatgt tgctggggaa 480
 aaggtaaagg agactcctaa ggaaagaagt acctaaggaa agaggtgccn aggaaaggaa 540
 gccctaggtg 550

<210> 289
 <211> 550
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (512)..(512)
 <223> n = unknown at position 512

<220>
 <221> misc_feature
 <222> (539)..(539)
 <223> n = unknown at position 539

<220>
 <221> misc_feature
 <222> (546)..(546)
 <223> n = unknown at position 546

<400> 289
 aatcgacca gttcttatat ttgttaaacc gtttgtaaata attcgcaaaa ataaaaattt 60
 gcaaaaaatg ccttttaaaaa tcaaaaaagt gttagttagc gacgctgtcg atgcagcatg 120
 tgtggaatta ctaaagcaac atggcgctga agtgaaatgt cgaacaggaa tgacgcctgc 180
 ggagcttctg caggagatcc ctgctcatga cggattgatt gttcgctccg atacgaaagt 240
 aacacgcgaa gtaatagctg cagctactaa tctcaagggt gtcggcagag ccggagccgg 300
 cgtggataac atcgatatac ctgcagcaag cgaacgaaat atcatcgtgc ttaatacacc 360
 aggggggtaat tcaatcagcg cctgcgaact aacgtgtacg ttgatgggggt gtctcgcacg 420
 tcatgtagtg cccgccggtg cgtctatggt agctggacgt gggatagaaa aatctattca 480
 ggaaatgaat tgatggtaaa cctgccgttt angtttggga ggatggattg aagttgcang 540

FC-8-C2-PCT.ST25.txt

cgtatnaagt

550

<210> 290
 <211> 550
 <212> DNA
 <213> Ctenocephalides felis

 <220>
 <221> misc_feature
 <222> (30)..(30)
 <223> n = unknown at position 30

<220>
 <221> misc_feature
 <222> (36)..(36)
 <223> n = unknown at position 36

<400> 290
 attaatgga gacgaccaa tttttaatgn aattgnaaca gctcatgcat ttattataat 60
 ttttttcata gttatgccaa ttttaattgg gggttttgga aattgattaa tcccattaat 120
 attaggagct ccagatatag cctttccacg aataaataat ataagatttt gacttttacc 180
 tccttcatta attttattac tttcaagagc tatggtagaa agaggagctg gaacaggatg 240
 aacagtttat cctccccttt cttcagtaat cgctcacagt ggatctagag tagatttaac 300
 tattttttaga cttcatatag caggtatttc ttcaatctta ggagccatta attttatttc 360
 tacttgttta aatatacgac ctaaaggaat atcttttagac cgaataccac tttttgtatg 420
 atcagttttt attactgctt tcttattact tttatcttta ccagtattag caggggctat 480
 tcaatattat taacagatcg aaatttaata catcattctt tgcccttctg gtggaggaga 540
 cccaatttat 550

<210> 291
 <211> 362
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (95)..(95)
 <223> n = unknown at position 95

<220>
 <221> misc_feature
 <222> (179)..(179)
 <223> n = unknown at position 179

<220>
 <221> misc_feature
 <222> (292)..(292)

FC-8-C2-PCT.ST25.txt

<223> n = unknown at position 292

<400> 291

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acaagctaaa gatgccaact tgagagcaga aaaggtaaac gaggaggttc gtgaactgat      60
caagaaactc ggacaagtcg aagccgattt ggccntgaac aagaacaact tggagcaagc     120
caataaggat ctcgaagaga aagaaaagac cttgaccgcc accgagtctg aagtggctnc     180
actcaacagg aaggtgcaac aaattgaaga agatttggaa aaatctgaag aacgtgccgg     240
aagcgctccc caaattgttg gagccacaca agctgccgat gaaaccaccg tntgtccaag     300
tattggagaa ccgctccaac aagatgaaga gcgatggccc attgaccacc aattgaagga     360
gc                                                                    362

```

<210> 292

<211> 549

<212> DNA

<213> Ctenocephalides felis

<400> 292

```

attaattcct atgatggccg gtacattaac taaactcagt ggaaatatta aatacgtgaa      60
aaaacagaat aataatattt ttagacaatt tttgacaaca aagaattatg ccacaagggt     120
ccaagcagct aagccagtgg tcgaaatgga tggtgacgag atgactagga tcatctgggc     180
taaaattaaa gagcaactca tttttccata tgttaaggta gaatgtttgt attatgattt     240
gggtttgcca catagagatg ccaccgatga taaagtaact gtggatgccg ctcaagcaat     300
tttaaaacac aatgtcggca taaaatgtgc gacaattacc cctgatgagg caagagtagc     360
tgaattttaa ttaaagaaga tgtggctcag tccaaatgga accattcgta atatactggg     420
cggaacagtg ttccgtgaac ccattctttg taaaatatac ctcgtcttga cctggatggc     480
taaacctatt ataatagccg cacgcgcgat gtgatcaata taaagctaag atttgagtaa     540
atgacctgg                                                                    549

```

<210> 293

<211> 549

<212> DNA

<213> Ctenocephalides felis

<400> 293

```

tataaattgt atatatgagc aatgaatcaa tttttttaa cattttgatt ttcctgggcc      60
ctgtagcaaa cttgatattt gacaactgaa ccatcaaagc tatatataaa tattaatcga     120
atcttctata atcttaaata catattttga attaaagata gtaaattaac aatggcagcg     180
ggggctgagc ctttgtcact agctaaagat gtcaaaagag cctgcgagct ccttgataaa     240
ttacaaatga ctggagaaat accagccaca aaaatagctg ccttacaaaa agttttacaa     300
tccgattttt ttactgccgt tcgcgaagtt tatgaacata tttatgaaac agtagatatt     360

```

FC-8-C2-PCT.ST25.txt

caagggttctg aagacataag agcatcagca acagcaaagg ctactgttgc agctttttgca 420
gccagtgagg ccatgccatc cacgagttgt tgaattccta agacagatga aggcttaggg 480
tttaatgtat ggggtggaaaa gaacaaaatt ctccatatca tatcaagaat atccagtggg 540
gagctgtcg 549

<210> 294
<211> 549
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (474)..(474)
<223> n = unknown at position 474

<220>
<221> misc_feature
<222> (485)..(485)
<223> n = unknown at position 485

<220>
<221> misc_feature
<222> (515)..(515)
<223> n = unknown at position 515

<220>
<221> misc_feature
<222> (517)..(517)
<223> n = unknown at position 517

<220>
<221> misc_feature
<222> (532)..(532)
<223> n = unknown at position 532

<400> 294
gcttatgttt gtttttatatt tgacgttgct aaaatttttag ctttaatgtt tgttttcttg 60
tgataaatta gtttttatatt aaaggctagc gcataataat aatgatgcat ctgagcgctg 120
acatatctag tgcacttcag caacttgaga gcatcaagac agcaatagat gactcccatg 180
atccaaaact tcagctcagt actaatgaag atttggatat gataataagc ctattgcaag 240
atccagtttt tcgaagcatt gttactactc aagattcact aggtgaattg aattcccaaa 300
taacacaaca tccatcaata ttaccaggag attttgatat aactacttca ggtgatctaa 360
ttctgcggtg ccccttctc ttgatttata tgataatgag tacactgatg aacaagagt 420
accctctgac aattaagtcc aggtagccct cagaggtttag gtatagcatc ggtnggggca 480
gtcangggaa cattacattc atgaagggat caatntngca atgaggcaac cntgatggat 540

FC-8-C2-PCT.ST25.txt

attcccaca

549

<210> 295
 <211> 512
 <212> DNA
 <213> Ctenocephalides felis

 <220>
 <221> misc_feature
 <222> (30)..(30)
 <223> n = unknown at position 30

<400> 295
 atcagactga acgagccttc cagaagcagn tgggtgtaaa cctcaaccgc aagatcgggtt 60
 taaaaaagaa atccttacgt cttcacagga atgtaggatt aggattcaaa acaccccgtg 120
 aggctattga aggttcttac atcgacaaaa aatgcccatt cacaggaaat gtatctatca 180
 gagggcgtat tttgacaggt gttgtacaaa aaatgaaaat gcagcgcact attgtcattc 240
 gacgggatta tctgcattat attaggaagt acaacagatt tgaaaagaga catcgcaata 300
 tgtctgtgca cctttcacca tgcttcaggg atgttgaaat tggatgatgtt gtgaccattg 360
 gtgaatgcag acccctttca aagaccgttc gtttcaatgt tctcaaagtg acaaaaaggaa 420
 caggttctaa aaagagcttc aagaaatfff agtaatcttt attacaataa acatttggtc 480
 ttgtaaaaaa aaaaaaaaaa aaaaaaaaaa aa 512

<210> 296
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

 <220>
 <221> misc_feature
 <222> (514)..(514)
 <223> n = unknown at position 514

<400> 296
 ggctcttggt cgaagaggct gttaacgatg ataacagtgt ggtggctttg tctcaagcta 60
 aaatggacga actgcagcta ttcagaggcg atacagtatt attaaaaggc aaacgcagga 120
 aggagacagt ttgcatcggt ctctctgatg atacttgccc cgatgaaaaa atccgtatga 180
 acagagttgt acgtaacaac ttgcgtgtcc gcttgtctga tgttgtttct gtgcagcctt 240
 gtccagacgt gaagtatgga aagcgaattc atgtgctgcc cattgatgat tctgttgaag 300
 gcctaacagg aaatctgttc gaggtctacc tcaagcccta cttcttagaa gcctatcggc 360
 caattcacia ggacgacaca tttattgtcc gtggcgggtat gagagcaata gaattcaaag 420
 tagtcgaaac agatctgctt cttattgatc gtggtcctgc acagtcattc attgcgaagg 480

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FC-8-C2-PCT.ST25.txt

ggatccaatc aagcgtgagg aagagaagag ctcnatgctg cggtatgatg atattgtggt 540
 gagaaacat 549

<210> 297
 <211> 296
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (102)..(102)
 <223> n = unknown at position 102

<220>
 <221> misc_feature
 <222> (121)..(121)
 <223> n = unknown at position 121

<400> 297
 cctaataaat taggaggagt tattgcctta ctattatcaa ttttaattat tattatttta 60
 cctattaata ataaaatatt ttttaagaaat tcatttttatt tnttaaataa aatttttattt 120
 ngattttttca ttttatatttt aatttttacta acatgaattg gagctcgcca gttgaagacc 180
 ttatattatt caggacaaat tcttacaatt ctatactttt cttattattt aattaatcca 240
 tatattttatt ataaatgaga taattttatta ttataaaaaa aaaaaaaaaa aaaaaa 296

<210> 298
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (505)..(505)
 <223> n = unknown at position 505

<220>
 <221> misc_feature
 <222> (535)..(535)
 <223> n = unknown at position 535

<400> 298
 ggaacattta ttcgtgaagc tagcactagt catgcattgt ttggtaaaca tattctcact 60
 gtagacatgt tcaacaaaga acaattaaat gatatttttca atttggctga aaatatcaaa 120
 gctcgcgttg tcaaagatcg accagtagat gaaattttgc gcggtaaggt aatggcttct 180
 atcttttatg aagtgagtac tcgtaccagc tgcagctttg ctgctgcaat gcagaggctc 240
 ggaggccgag tgatccatat agatgaaact agctcatctg ctaagaaagg cgaaactcta 300
 gaagattctg tttctgtcat ggctgggttac tcggatgtaa ttgtacttcg ccatccagaa 360

FC-8-C2-PCT.ST25.txt

ccaggagcag tagctaaagt ggctgcgcac tgtagaaagc cattaataaa tgctggcgat 420
 ggagttggcg aacatccaac tcagcgtgct tgatatattt actattcgtg aagaaatggg 480
 ccgttatggg tgactatact atggncggac ttgaaaatgc gtctgacctc attgntcgtt 540
 ggtgcgtat 549

<210> 299
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis
 <220>
 <221> misc_feature
 <222> (540)..(540)
 <223> n = unknown at position 540

<400> 299
 cttcaaacct ttaatgtttt gaaacacaaa ctgttcataa tcaattgtag ttttgtgata 60
 aaactcaata tgatcgtata aacctgtgta cctagaaaaa acagaggagc agggagggag 120
 tggacatttt attctggatt tccttgatgg tgtacctata aaattttcct tagtactgat 180
 tggggaactg ggaatgggag gcgtgtgaat ttgaacttta gtagaggaag tacaaggatg 240
 tggcgataaa cttacgtggg aatgtttgtg aagacgatct gatatggaag gagcagaggt 300
 aaaagatgag caagcagaaa gtggatatct tagtttctct tttgttgatg gtgtacctgt 360
 aaaattttcc ttagtactga ttggggaact gggaatggga ggcgtgtgaa tttgaacttt 420
 agtagaggaa gtcaaggatg tggcgataaa cttacgtggg aatgttgtga agacgatctg 480
 tatggaagga gcagagtaaa agatagcagc agaagtggat atctagttct ctttgtgtgn 540
 gtcctgtaa 549

<210> 300
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis
 <220>
 <221> misc_feature
 <222> (537)..(537)
 <223> n = unknown at position 537

<400> 300
 cttaagtgtt cagaatgcca caatcaatgc atgtaaattg ctatgccaac ggccacagcg 60
 gttccttcga tatggaggat ggatctgttt tcttgtttac ttcggaatct gttggcgaag 120
 gacatccaga taaaatgtgt gatcagatca gtgatgctgt attagatgct cacttgaagc 180
 aagatccaaa tgctaaagtt gcttgtgaaa ctgttactaa aactggaatg gttctcctct 240

FC-8-C2-PCT.ST25.txt

```

gtggagaaat aacttccaat gctgtagttg attatcaaaa agtgggttcgt gacacggtga      300
aacacattgg ttatgatgat tcatctaaag ggtttgactg gcgtaccctt aatcttcttg      360
ttgcattgga acagcagagt ccagacattg cgggtggtgt acacatgaat aggcaagaac      420
atgacatagg tgctggggat caggtttcga ctataggacc tgcaatgtct acttgcattg      480
atctcagcac ctatatagca gctggagtca tgacatcgaa ggatgaaaaa tgggcangaa      540
acagggtta                                     549

```

```

<210> 301
<211> 475
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (87)..(87)
<223> n = unknown at position 87

```

```

<220>
<221> misc_feature
<222> (95)..(95)
<223> n = unknown at position 95

```

```

<220>
<221> misc_feature
<222> (132)..(132)
<223> n = unknown at position 132

```

```

<220>
<221> misc_feature
<222> (181)..(181)
<223> n = unknown at position 181

```

```

<400> 301
gttttggcaa tgtcgcaccg taagttttcc gggccgagac atggctccat ggggttctac      60
cccaagaaga ggtcccagcg tcaccgnggt aaagnaaagg ctttccctaa agatgaccct      120
agcaaaccag tncatttaac tgcctttatt ggttacaaag ctggtatgac ccacgtgctt      180
ngtgaggcag acagacctgg atcaaagatc aacaagaaag aaattggtga agccgtaact      240
attttggaaa caccacccat ggtcgtgggt ggagctgtcg gttatattga aactccacat      300
ggtctacggg cattgggttac tgtttgggct gaacatttgt cagaggaatg ccgccgtaga      360
ttttacaaaa actggtataa gagcaagaag aaggctttct ctaagtcctc aagaaatggc      420
aagatgagct tggtcgcaaa tcaattgaaa gggattgaag aaaatggcaa atctg          475

```

```

<210> 302
<211> 549
<212> DNA

```

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FC-8-C2-PCT.ST25.txt

<213> Ctenocephalides felis

<400> 302

```

gtgtattcat attaaaaact gctgaatcca cgtgtgtata atgtcagacg cagtgggtggc      60
aggaagtggc ggacaaccta attctggaca aatcaagaaa gaattatcgg aaggcattat      120
ataccagacc gcagaaagtc caggatcaac atgctgcaca gcgctgtatt ccgatgtaga      180
agtgataaag atggaaatth cggatcattt tgaagttgtt gacccgaaat ctctacagat      240
agcaaatagt ccgggtagtc cagatagaca attctgcagc tcaaccacgg cgtcaattgg      300
ggaaattacg acaaacgatg atattaaaga agacagtcca aggcgtcttt gccttggtttg      360
tggtgatata gcctctggat tccattacgg cgttgcctca tgtgaggcat gcaaagcatt      420
ttttaagaga acaatacagg gtaacataga gtataattgt ccggcagttg gagattgtga      480
aatcaataaa cgaaggcaaa agcatgtcaa gcctgtcgat tcaaaaatgt tagcattgga      540
tgtaaaaga                                         549

```

<210> 303

<211> 549

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (541)..(541)

<223> n = unknown at position 541

<400> 303

```

gccgtcaaaa atggctggag tattatttcg tgtaatttg gctaaaacac aattgggcat      60
aatcagccca gtttttacia ttagacataa cagcgggtga ccaccaccac caggcactcc      120
acctccacaa acacgtacta aatttgggtcc tcttaaagat gaagacagaa tttttacaaa      180
tctttatgga cgtcacgatt ggagattgaa aggatctttg aaaagaggag attggtataa      240
aactaaagaa atcattctta agggagctga ttggatcata aatgaaatta aaacttctgg      300
actcagaggt cgtggagggtg ctgggttttcc ttcaggtttg aaatgggtctt tcatgaacaa      360
accaggagat ggaaggccaa aataccttgt ggttaatgct gatgaaggag agccaggaac      420
atgtaaagat cgtgaaataa tgcgacatga ccctcataaa ttggtggagg ctgttaattg      480
caggaagagc atggcgctcg actgctcatt acatagagga gaatttatat gaacatcaat      540
ntcagttgc                                         549

```

<210> 304

<211> 406

<212> DNA

<213> Ctenocephalides felis

<400> 304

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FC-8-C2-PCT.ST25.txt

```

gttaatttaa aataacaaaa tgaaaggaac attattaata ttatcatgtc ttgtgatcat      60
gataagtgcc gaatatgctg acgtagatgt gtgccaagat ttggacgatg gaacttttct      120
tgctgattca aacaattgcc aaaattttctt catttgtgat ggaggccgag cttggaaaat      180
gtattgtcca ggatcacttt tatggaatga tcacgaagga acatgtgatt acgcacaaaa      240
tgtagaatgt taccaaccag aataaaacat tttaatatct gacagcgatt ttctgaaact      300
atatttcata ctactgttat aataaattta tcttcattgc tctcctccta taaatttatt      360
ccgtttttaat aaaatcaata taaagacaaa aaaaaaaaaa aaaaaa                    406

```

```

<210> 305
<211> 549
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (524)..(524)
<223> n = unknown at position 524

```

```

<220>
<221> misc_feature
<222> (539)..(539)
<223> n = unknown at position 539

```

```

<400> 305
ctgataccat cgaagccagt gctgattcat gacttgggtc gtgtttatat acaaactggt      60
cctgatgtta agaggtgcat tcttagatta ttagaggac cagttagaca actcggcatg      120
gaaaatactg aattgatgaa attagttgag gcctgtgcaa agggatctga aaccttggtt      180
acaaggggtga tacatat tttt gaccgaaaga agtttgccta gcatggaact agtttctaga      240
gttcgagatc tttatcacac taaagtatct gatgtccgat tcttaatacc agtattaaat      300
ggtcttaata aagacgaggt tatagattct ttgccc aaat tcattaaact aaatccagta      360
gttttaaaagg aagttttttaa taagctgctg aataatcaag caggtcctac atcatatcct      420
agtccagtta cacctataga gttgtttag cgtacataca atagacacaa ctagtgcaga      480
tttaaaattc gagtgaaagc aacaagttgt gttagcagag aagnaattac acccagaang      540
atgcagagt                                         549

```

```

<210> 306
<211> 534
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (4)..(4)
<223> n = unknown at position 4

```

FC-8-C2-PCT.ST25.txt

<400> 306
 tgangatcgg cttgtgcgcg tacagtggat acaaaattta tcccggccat ggcaaaacca 60
 tgggtcaaaat tgatggaaag acattcactt tcctcaattc aaaatgtgag gctgctcatt 120
 taatgaagag gaacccacgt aaagtaacat ggactgtctt gtacagacgc aagcacaaga 180
 aagggtcaaga agaagagttg actaagaaac gtactcgtcg tacacagaaa ttccaacgtg 240
 ctatcgtagg agcttctctt aatgacatcc ttgccaagag gaacatgaaa cccgaagtac 300
 gaaaggcaca aagagaccaa gctatcaggg ctgcaaaaga gcagaagaaa tccacgaaag 360
 cagcaaagaa ggctgcagct ccacctaaag tgaaagcccc accaaaagct aaggccgcta 420
 aagtgagcca gaaagcaccc ccagggttgg cggtaaacga taagtgggtg tggagattat 480
 tctaattgtat tatatgaaaa ataatttgta aaatgctaaa aaaaaaaaaa aaaa 534

<210> 307
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 307
 tgaaaaacta cgatccccag aaggacaagc gtttcagcgg caccgtaaaa ttgaagcaca 60
 ttccacgacc aaaaatgcaa gtatgtattt tgggagatca acagcattgt gatgaagcta 120
 aggccaacaa tgtcccatgg atggatgccg aagctctgaa aaaacttaac aagaacaaaa 180
 agcttgtgaa gaaactagct aaaaaatatg atgctttctt agcttctgaa tctttaatca 240
 agcagatccc ccgtttgttg ggtccagggt tgaacaaggc aggtaaattc cctgggtctct 300
 tgtctcatca ggaatccatg gtgcagaaga ttgatgaagt taaaggaact atcaaattcc 360
 agatgaagaa ggtgttgtgt ttatctgtag ctgtgggtcat gttgatattgt ctctgacga 420
 gttggccaaa acgttcactt gtcaattaac ttcttgggtg cacttttgaa gaagcattgc 480
 agaatgtag gtctctcatg tcaaattcac tatgggcccc caaagatata taatacataa 540
 tgatatggtt 549

<210> 308
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (472)..(472)
 <223> n = unknown at position 472

<220>
 <221> misc_feature
 <222> (524)..(524)

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FC-8-C2-PCT.ST25.txt

<223> n = unknown at position 524

<400> 308

```

gcaagttagg gatcttgata ttaacactac agaaagactt aaaggtgtta tggatttagt      60
at ttgaaaag gctgttgatg aacctagttt ttctgtagct tatgcatata tgtgttaaaga    120
gttagctctt atccaagttc ctgctgacca acaaaacggt caatcttcaa ctgttgaata      180
cgtcaatttc cgtaaattgc tcttatcccg ttgtcaaaat gaatttgaga aaaatacagt      240
agatgaaacc gcaagagaag ttaaactgaa agaaattgaa gcgtgtacag accctgagaa      300
gaagaaggaa ctacagttta atttagaaga agaagagcga aagattcgtg ttaaattctgt      360
tggaatggtt agatttattg gagagttatt caaacaaggt atgttgccac aaaaattatg      420
atgcagtgcc ttaggatgct ctgcagtcaa ttgaagaaga aagcctcgag tncctggcaaa      480
ttgtgcgaca ttgccggatt tagaaattac aaaatcaaga tttnaacctc tttcttaaaa      540
tgcaagaat                                     549

```

<210> 309

<211> 549

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (503)..(503)

<223> n = unknown at position 503

<400> 309

```

atttgtat tt atgatttaga tttatagtgc attaagattt gtgcttcaaa aatgttatca      60
cgtgcctcat atacttcatc tgtattctta aattcgctgc agcaatttcg tttacaaagc     120
acattagtaa ttgctgaaca ttcaaattgca aaattaaacc cattgactca aaatgcttta      180
acagctgcat caaaaattgg aggtgaagta acagttttta ttgctggcaa aaattgcaaa      240
ccgcttgcta atgaagttgc caaagcagcg ggtttgaaac aagtcttatt agcggaaaat      300
gctgcatttg aaaactgttc tgctgaagcc ttgacaaaac ttgttggtgc agttcaagag      360
caatataaat ttacgcatat tattgggtgg gcaagttccc ttggcaaggc tgtattgcaa      420
gaatagcggc aagtttagatg tttccctatt tctgaaataa ttgatgttaa agatctgaac      480
attcgtcgac aatttatgcc ggnacgcttt cagacactga ggtgaaagat ccctaaagct      540
atcttcgtg                                     549

```

<210> 310

<211> 549

<212> DNA

<213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<400> 310
 gcccagtgca cgaggagcat gaggaaccag atccaagaag aactgagcgc ttcgatgcaa 60
 tacttggcca tggggggcgca tttctcaaga gacactgtca acaggccagg atttgctgag 120
 atgttcttca aatcggcaag cgaagagagg gaacatgcca tgaaactcat gtcttacttg 180
 atgatgagag gagaactgac cgagaggctg caggacttga tcagaacacc aactgttcca 240
 atcacgactt gggctgatgg tttgagtgtt ttgaaagatg ctctgaaatt ggaggcttcc 300
 gttaccaaga agattaaaca tgtgatcaaa gcttgcgaga acgataatgg agctaataat 360
 tatcatttgg ttgactacct gaccggtgaa ttcttagaag agcaatactc tgggtcaacgt 420
 gacctgccgg aaagatctcc accctgggca agatgatgaa ccaacaagggt gttctcggga 480
 gttcttgttg acaagaaact ctgggttaaa tgaaacatac atcccatcaa atatcacagt 540
 aataaaata 549

<210> 311
 <211> 548
 <212> DNA
 <213> Ctenocephalides felis

<400> 311
 aaaaacaaaa ttatttgata cattttaatc tagaatcatc tgtgtggcta aatattatatt 60
 gtgtttcaat ttcgactatt tgacgaaaat agataataga aatggcacct aaagcatttg 120
 gtgatgtgaa aatgcaagga caagcatata aagataaaaag taaaccgggt gatattcgta 180
 gcagcaatat atgtgctgcg aaagctgttt ctgatgcagt acgtacaagt ttgggaccca 240
 ggggtatgga taagatgatc caagcctcaa acggtgaagt gacaattacc aatgatggtg 300
 ccacaatttt gaaagaaatg aatgttactc atccagcagc taagatgttg gttgaattgt 360
 ctctggggcgca agatattgaa gctggcgatg gcacaacatc agttgtagta gttgcagggtg 420
 ctttgctgga ggctgctgaa aagttacttc acagaggact tcatccaact gcatttctga 480
 tgcatttcaa agatgtgctc caaagctgtg gaaattctta cacctgtcac accaattgac 540
 ttactgtc 548

<210> 312
 <211> 549
 <212> DNA
 <213> Ctenocephalides felis

<400> 312
 tgtgtattat tcgcacacgt gaaataaatc atatcggtaa acttgtaata tctattttat 60
 taactaataa gcgtagtttg tgtaataaca agtaatttct attagtagtc ataagtaatt 120
 gaagagaaaa ctattttcca tataagaatt gaaagcataa aatgattctc tccgtgctga 180
 aaaaatctcg catcgtgcac ttgtgttttg ccatttcatt cttcacatca ggctgatca 240

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FC-8-C2-PCT.ST25.txt

```

taaacattgc acaattcata ttatacacat gtctcaagcc tttcaacaag aggctttaca    300
gaaaacttgg ttattatattg tgctacacat tttacagtca gatagtgttt ttagctgact    360
ggtggtccaa atctaattctg accttacaca tatcaaagaa agattatgaa caatgtggga    420
aggaacatgg tctttttaatt atgaatcata cgtacgaaac agattgggtat taggatggat    480
gtttacggaa aaaattgggtg tcttggaatt gtaggatatg caaaaagact attcaataca    540
tccgcatta                                                                    549

```

```

<210> 313
<211> 549
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (529)..(529)
<223> n = unknown at position 529

```

```

<400> 313
aaaaaatatt attctaacat tatggcgcag atacctgcac gaccgaaaat tttgttaact    60
catccggata taccgaagga agctattgac atcatgtctc ccaattgcga aataattatg    120
tgcaccggac gtccgtctcc atcacgacaa ggaattttgg aaaaaattgt gggagttcat    180
ggtttaatgt ggtgtactaa agaacgtttg gacaaagaga tattagatgc tgcaggaccc    240
aacattatgg ccatatctac tatgtcggct gggctggaca atgtagatgtt acctgaaatc    300
cgcaaaagaa atattccaat tggttatact gcaggagttc tgaataatgc tgttgctgat    360
ttaactgttg ggcttatgat agctactgct agaagatttg gagaagctag gaaacacata    420
gagaatggaa catggggaag cggacctgcg tggtttttag gcagaaatgt atctgaaact    480
cagctgggtat tgtcggctag gagaaattgg caaactgtgc aagaagatng aaagcttcaa    540
tatgactat                                                                    549

```

```

<210> 314
<211> 549
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (532)..(532)
<223> n = unknown at position 532

```

```

<400> 314
gtggtgcagg atttgtagat ggtatgaatc ttggagataa caccaaggca gcagttattc    60
gtcttggttt aatggaaatg attcgttttg ttgatgtttt ctatccagga agtaaacttt    120
ctactttctt tgaatcttgc ggtgtggctg atttagttac tacatgttat ggtggtagaa    180

```

FC-8-C2-PCT.ST25.txt

```

atcgtagagt ttctgaagca tttgtgaaaa caggtaaatac attgaaacaa ttagaagacg      240
aatgttataa tgggtcaaaaa ttgcaaggac caataacagc agaagaagtt aattttatgc      300
tgagaaatcg tggcatgcaa gacaaatttc ctttgttcac tgctgttcat aaaatttgca      360
caggagatat ggatgttataa gaattttctta attgtataag gagccacccg gaacacatgt      420
aagtgcctgc tttataaaaat ataaatcaga tttaaaatgc ttctcagatg gtaatattag      480
taatgtcttt acatgaacat aagtgaagat tgctagttgt ttgatatttt gntcttcata      540
tagtatttg                                     549

```

```

<210> 315
<211> 550
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (365)..(365)
<223> n = unknown at position 365

```

```

<220>
<221> misc_feature
<222> (409)..(409)
<223> n = unknown at position 409

```

```

<220>
<221> misc_feature
<222> (427)..(427)
<223> n = unknown at position 427

```

```

<220>
<221> misc_feature
<222> (441)..(441)
<223> n = unknown at position 441

```

```

<220>
<221> misc_feature
<222> (447)..(447)
<223> n = unknown at position 447

```

```

<220>
<221> misc_feature
<222> (457)..(457)
<223> n = unknown at position 457

```

```

<220>
<221> misc_feature
<222> (543)..(543)
<223> n = unknown at position 543

```

FC-8-C2-PCT.ST25.txt

```

<400> 315
cttgtgccgg tccgagagca ccctaaattc aactttgttg gaaaactggt gggacctaag      60
ggtaattcca tgaaaagatt acaagaagat actatgtgta agatggccgt cttaggtaga      120
ggctcaatga aagacagaca aaaggaagaa gaacttcgta attccttaga tcccaaatat      180
gctcatttgg ctgatgatct acatgttgaa atatcggctt tgggtcctcc acagaagctc      240
acgctcgagt tgcttatgct ttggctgaag tccgtaatat ttgggtccctg ataataatga      300
tacaattcgc caagaacaat gcgtgaaatg atgactgacc caatgcccgc cagaagaaat      360
gagangagca cccacattag acgaggtggt tggctgtggt gcttctcgng aggaggatac      420
taatcgngca gcttcgacat ntggggnatg cttctgngtt ctaatgtgat ccggcctcac      480
ccctcctcac tcgtgtatcc tgtaactaaa tcttcattaa taacaaagtg ctgagaactt      540
gtntaaaccc                                     550

```

```

<210> 316
<211> 550
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (33)..(33)
<223> n = unknown at position 33

```

```

<220>
<221> misc_feature
<222> (406)..(406)
<223> n = unknown at position 406

```

```

<400> 316
tcttattcat attaattata agaacattta ttngtatctt ttcaaattct tgattaggag      60
catgaattgg attagaaata aatttattat catttatccc tatactaaat gataataaaa      120
atttactatc taatgaatct tcattaaaat attttctagt tcaagttttt gcttcaattt      180
tattattatt ttttatttct ttgaattttt tatttaaaaa cttttttaga ataatatatt      240
ttaatgaaat ttattttaatt ttattaaatt catccctatt tttaaaaata ggggctgccc      300
catttcactt ttgatttcct agaataatag aaggaataaa ttgaataaat aatttttattt      360
taataacatg acaaaaaaatt aaccctataa tttgttaagt tattgnatta atataaatta      420
ttttatttaa ttcattatta agaattataa ttggagctta ggtggattaa ataatcctct      480
tacaaaaatt atacttatct tcaatacact atggctgaat aatattgttt aataaataat      540
gaataatttt                                     550

```

```

<210> 317
<211> 474

```

FC-8-C2-PCT.ST25.txt

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (4)..(4)

<223> n = unknown at position 4

<220>

<221> misc_feature

<222> (456)..(456)

<223> n = unknown at position 456

<220>

<221> misc_feature

<222> (467)..(467)

<223> n = unknown at position 467

<400> 317

```

gtcncattgg tgccttccaa acccatgtgt gtcgaatcct tccaggagtt ccctccattg      60
ggtcgttttcg ctgtgcgtga catgagacag accggttgccg tcggtgtcat caagtctgtg    120
aacttcaagg atgcctccgg tggtaaggct accaaggctg ccgaaaaagc caccaaggga      180
aagaagtagc tagatctacc gatctgctta ctgcagatgt tcaacactgt aatgaaacac      240
tacttccatc gcaaagcggt tcgaagaaaa aaggcctcat tcattccttt actatatgtt      300
ttttgactca gcttttatatt ttatatgact attttataga ataataatta ttttatgttc      360
tgctctatat taaaatgaat ttatattaat gtatggatat tatgtgctaa gaaagaactt      420
gaagagattht gcagctgatg tgtattatag tatggnataa atggaancca aagt           474

```

<210> 318

<211> 356

<212> DNA

<213> Ctenocephalides felis

<400> 318

```

agtttgctac acacagcacg tgtaaatttt cataaaataa attaaaaatg gataaacctg      60
tagttcttgc tcgcgttatg aaagtcttgg gccgtacagg atcccaagga caatgtacac      120
aagttaaagt tgaatttatt ggtgaacaaa accgacaaat catccgaaat gtcaaaggac      180
cagtacgaga ggggtgatatt ttaacacttt tggaatctga acgtgaagct agaagactaa      240
gatagattaa ttctaaaatg tgagagggtga tctcctgaac tataatatct gggttcaatt      300
atttgtatgg aattataaat atacgactta tcactcccaa aaaaaaaaaa aaaaaa          356

```

<210> 319

<211> 550

<212> DNA

<213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<220>

<221> misc_feature

<222> (537)..(537)

<223> n = unknown at position 537

<400> 319

```

aaataatctc tgaaaatggt gaagggcggt gtaggtcttg ttactggagg tgcttctggt      60
ttgggaaagg ccactgtaga gcgaattgtg caacaagggt gccgagttgt tttatgtgat      120
ttacctaaat caagtggatc tcaagtagca aaagatattg gagataattg tttatatgca      180
ccagttgatg tcacatctga aaaagatggt gaggaagcaa tagcattaac taaagaaaaa      240
tttggtcgtc ttgatgttgc tgtaaactgt gctgggtatcg gtgtagcatt taaaacatat      300
aatttcaata agcagttgcc tcataaatta gaggatttca caaaagtttt aatggttaat      360
actgttggaa ccttcaatgt aattcgattg ctgtggattg atgggagtaa atgaacctaa      420
taaggatggt caaccaggag tgattgtaac acacaagtgt gctgcttatg atggcagatg      480
ggacaagctc ttattctgcg tccaaggggt ttgtggaatg cactgctttt gctaganatt      540
accaggcaag                                     550

```

<210> 320

<211> 550

<212> DNA

<213> Ctenocephalides felis

<400> 320

```

gattcagctt tgcatagaat tgtagatgca actgatgcaa ttgttagcac tgcatatgcc      60
cataaaagaa catttattat ggaagtaatg ggacgaaact gcggatattt agctgttggt      120
gcaggcttgt gtgttgaagc tgattttata tttgcgcccg aagatcctcc agatgccaac      180
tggccaagtg ttttatgcmc actattaagt caggaacgat tagctggaag aaggcaaaat      240
attatcatgg tatcagaagg ggcaattgat agaaatggag aacctataac agcagaaaaa      300
attaaagaag tcattattgc aggtttaaat caggatacaa gaattacagt gcttgccatg      360
tacagagagg tggaagtcct tctgcttttg atcgattact gggatgtcmc atgggggag      420
aagcagtatt agcccttatg gaagctcatg atgagtctga ccttgtgttg tgaccttgcc      480
cgaaccaaca gtcgtcttca atgatggaat gtgttctcac caaactgtac ttacgcttgg      540
aaaataaaat                                     550

```

<210> 321

<211> 550

<212> DNA

<213> Ctenocephalides felis

<400> 321

```

gtcaaacatc acaaaaatat atagctttat gtgtcacaaa tgattacact tttatcgtta      60

```

FC-8-C2-PCT.ST25.txt

```

tgatataata caaaataaat acaatttctt acatgctatt attataattc aatattaaaa 120
catttgtact ataataataac aatgaatttc ttatatattat taatatgctc tctttgtgcg 180
gtagtaaata cccgtgggga tacattagtt ttattagaca atcttgcaat taaagaaact 240
cattccatat tttttaaaag cttacaagat agaggttatg ttctaacatt caaattggct 300
gatgaagcca atttagtttt atctaagtat ggagaatatt tatacaagca ttttaattcta 360
ttttcacctg ctgtggaaga gtttggagga tcattaagtg tcgaggcaat tcagaattca 420
tagatgaagg tggcaatggt ttggtagcag gaagtgaatc ctggtgatgc aattcgtgaa 480
tagctctgaa tgcggtttga ggagatgagg aaggacactg tatggacatc ttaatatgat 540
ggtctgataa 550

```

```

<210> 322
<211> 546
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (28)..(28)
<223> n = unknown at position 28

```

```

<220>
<221> misc_feature
<222> (488)..(488)
<223> n = unknown at position 488

```

```

<400> 322
tttttttttt tttttttatt tgcattgnga tagccggccg attgcattca gttctaaaat 60
gccgatcaaa agtatcaaag ctctgcaaat ttctgactct aggggcaatc ctaccgtcga 120
agtcgattta gtgaccgaat taggattatt tagagcagcg gttccttcag gtgcttccac 180
aggagcttat gaggctcttg aattacgtga taatgataag actcaatata tgggtaaagg 240
agtatccaaa gcattgcaca atattaatca attgattgcc cccgagttaa ttaaacaatc 300
ttttgagggtt actcaacagg aagagatcga caaatttatg ttgaaactgg atggtactga 360
gaacaaatct aaatttggag ccaatgctat attaggagtt tcattagctg tgtgcaaagc 420
tggtgctgct aaaaaggggtg ttctctctgat caacatattg cagatttggc tggaaataaa 480
aaaaatgngc ttctgtcca ctttcaatgt atcaatggcg gagcatgctg gaataactgt 540
ttcaga 546

```

```

<210> 323
<211> 550
<212> DNA
<213> Ctenocephalides felis

```

FC-8-C2-PCT.ST25.txt

<220>

<221> misc_feature

<222> (545)..(545)

<223> n = unknown at position 545

<400> 323

```

cagaagctca agccagagcc gaagaagtcg aggaaatcag gaggaaatac agtgccagaa      60
tccaagaaca agaggagcac atcgagacct tgttgggtcaa gatcagcaat ctggagaaac      120
agaagagcag actgcaaagc gaagttgagg tcctcatcat cgatctggag aaagcaaaca      180
gcgctgccccg cgatttgcag aaacgttgcg agcaattgga acgtgtcaac atcgagatca      240
aatcacgtct tgaggagacc attcagttgt atgaaggagc ccagagagat ttgagaacca      300
agcaacagga gttgcagagg gtcaaccacg aattggacaa gaccagggaa cagaaagatc      360
agttggccag ggaaaacaag aaattgggag acgaattggg agatgctcgc aaccagttgg      420
ccgaatacaa cagacgtttg cacgaattgg aactcgaatt gagaagactc gagaatgagc      480
cgaagagttg ctgctgcatc aagaggccga actgtcgcaa ggccaagaca cgttccacgt      540
tggnacgat                                     550

```

<210> 324

<211> 550

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (5)..(5)

<223> n = unknown at position 5

<220>

<221> misc_feature

<222> (522)..(522)

<223> n = unknown at position 522

<220>

<221> misc_feature

<222> (527)..(527)

<223> n = unknown at position 527

<220>

<221> misc_feature

<222> (535)..(535)

<223> n = unknown at position 535

<400> 324

```

gcaantcgca aacgagtttc agagcacagc ggctgcgcat ctgttaagct caacggctat      60
agtttttcag tattataatt tgtattaagt cgaagtaaata acaaacaatg agggaaattg      120
tgcacattca aaccggacag tgcggaaacc aaattggagc taagttctgg gagatcattt      180

```

FC-8-C2-PCT.ST25.txt

ctgatgaaca tggaattgac ccaactggag cttatcttgg agatcatgaa cttcaattag 240
 aacgtatcaa tgtttattac aatgaggctt ctggtggaaa atatgttcca cgtgccattc 300
 ttgtggattt ggaacctgga accatggact ccgtgcgttc tggaccatac ggtcaaattt 360
 ttaggccaga caattttgtt ttcggacaaa gtggtgctgg taacaactgg gctaagggac 420
 attatactga aggtgctgaa ctagtcgact ctgtttggat gttgtgcgta aagaagctga 480
 atcttgtgat tgctgcaagg ttccactacc cattcttggg angtggncctg cttgnatggg 540
 acactattga 550

<210> 325
 <211> 550
 <212> DNA
 <213> Ctenocephalides felis

<400> 325
 cagcaactca tttaatat tttgtggtcctg atgcgaaaaa tgaaacatgg atattacaca 60
 cacatatgtc agcagtagaa cgattaccgt tgagtactac aggatgccca cttcaaattc 120
 gatgcaaaac attccaatca gtaatat tttataagaaa agaaaacgat agccatgacg 180
 tttataatac tttgttgcaa ttagcccaac ctgtttctat cgatgatctg tattgcttcc 240
 agtacaccat aaataaaaaat gatatgcata agagcgaagg ttggaattat tttaatttag 300
 aggatgaatt taaaagaatg aatgttccaa atgatgaatg gatttacaca gatttaaattg 360
 aaaattatga gctatgtgat acttatccta attgttgtat gtgcctgcta acagcacaat 420
 aaatatgtta caaggaagtg caaaat ttcg atccaaagga agataccggt ctcacatatt 480
 acacaagaac aagcttcaat atgcagatca gcaacctttc tggttcagtg cacgatgtct 540
 gagatgacaa 550

<210> 326
 <211> 550
 <212> DNA
 <213> Ctenocephalides felis

<400> 326
 aaaattttta tttaattat tatgtgttcc tttatcattg atgcgagaag taaaagtttc 60
 gaaataaagt taagacggtg gaaaagtcct cgacttcaat tgattgaaat ggatcgaaat 120
 atgcgtatag cggtttggaa agatattcaa gaaaacgaaa gctattattc ggatccatct 180
 aaacctaaac ctctccagg tcctaaggac aatgatacta tagcaattta taaattttta 240
 gatactgaat tttatgctga gggttgaata ggccatcctg taaagtattt caaacttgtg 300
 gttgacactg catgggcaga aacatgggtg gcctcgaaac aatgtgggtt aaagtgtgtt 360
 ggatgttggg atcttaataa atatgactct ttggcatcat caacatttca agaaaacggt 420

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FC-8-C2-PCT.ST25.txt

aaagaatttt cttttggctc agcaaagaac cataacaggg tcttctcaat agaaagtttt 480
 atattgccac ataaatgtta aaatcagact ttggggaagt acatgtttgc cttgcactct 540
 gtttcaaaca 550

<210> 327
 <211> 542
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (539)..(539)
 <223> n = unknown at position 539

<400> 327
 agctcacaga attcagggct agctttaacc acttcgacaa gaaccgcaca ggacgtttgg 60
 cgctgatga gttcaagtca tgcctggttt cctcggcta ctcgataggc aaggatcgctc 120
 aaggcgattt ggacttccaa aggattttgg cagtagtcga tcccaatgga actggatacg 180
 tccacttcga tgcattctta gatttcatga cccgcgaaag tacagacacc gacactgccg 240
 agcaagtcac cgacagcttc agaactcttg cctccgacaa gccatacatt ctgcccgatg 300
 agttacgcag agaattgcca ccagaccagg ccgaatactg cattcaacgt atgccacctt 360
 acaagggacc caatggtgta cccggtgctc tcgattacat gtccttcagc acagccttgt 420
 acggtgaaag cgatttgtaa ggtagaataa attttcataa acatttaagc aaacatttga 480
 caagtacaca taaaggtaaa taatgaagtt atgagagtta cgatcaaaat tagcattgng 540
 ct 542

<210> 328
 <211> 542
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (2)..(2)
 <223> n = unknown at position 2

<400> 328
 gntatggaaa aagccgaaaa gctgggcat cgcgttcaaa aatgtgtggt tgtcgctcat 60
 ctgaaacgtg tcaactcctgg aaccagcgag gagatcaatg gagtcgagac tcctatgaca 120
 gatggccgcg accattggtg gcatgaggaa atggacgaag ttgaaccagc atgttaccca 180
 gaatggatgg ctgctgagga tccattgttc atgctttata caagcggctc cactggtaaa 240
 ccgaaagggg ttctacatac tacaggtggt tatctattgt atgctgccac cacatttaaa 300
 atggtttttg actacaagcc cgatgacatc tactggtgca ctgctgatgt aggatggatt 360

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FC-8-C2-PCT.ST25.txt

```

actggacatt cgtatgttgt ctatggacca ttagctaattg gcgccacctc cgttatgttt      420
gaagggacgc cattttatcc ggataacgat agatattggg cggtattgaa aaatacaaag      480
tgacccagtt ttacacagca ccaaccgcat aagacttgat gaagttcggg aagaccagtc      540
aa                                                                    542

```

```

<210> 329
<211> 542
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (31)..(31)
<223> n = unknown at position 31

```

```

<400> 329
ttgagaaact tctcaaaatt gataaaaaag ntgctgtagt aatggccatg gatatgttgt      60
tagcaggagt tgatactaca tcaaatagta cagcattttt gctgtatttc ctggctacga      120
atcaaaaatg ccaagataaa ctacgtgaag aaatcagaac aattctgcca aataaggatt      180
cacatgtaaa taacgaatca tttcaccatt tgccgtattt gagagcttgt atgaaagagt      240
cgagtagaat attgccaata attggaggca ctgttaggaa agtaccagtc gatattgttt      300
tatcaggata tcaaattccg aaggggaccg aggtgggttct aagtcattct actacatcaa      360
tgaaaagcag tcaattccct gaacctgaaa aattcatgcc agaacgatgg ctgagcagcc      420
aggaatcaga aggatgtcct ttagcaaaaa atgctcatcc attttcgcac atgccttcgg      480
tttgggcctc gcactgcgtg ggaaaagatt gcagatttgg aaatggaact ttatatgaag      540
ta                                                                    542

```

```

<210> 330
<211> 539
<212> DNA
<213> Ctenocephalides felis

<220>
<221> misc_feature
<222> (14)..(14)
<223> n = unknown at position 14

```

```

<220>
<221> misc_feature
<222> (29)..(29)
<223> n = unknown at position 29

```

```

<400> 330
taaaaatttt aatngcttat tcttcaggng ttcataataag aatagtatta ggaggaattt      60

```

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FC-8-C2-PCT.ST25.txt

```

ttactataaa tatattaggt attgtaggta gggtttatttt aataatttct catggattat      120
gttcttctgg gatattttgt ctttctaata ttatttatga acgatcagga agacgaagaa      180
ttttaattaa taagggttta ataagattta taccttcaat aacattattt tgattttttat      240
tatgtagatc taatatagca gctcctcctt cattaaattt attaggtgaa attatatga      300
ttaattctat aataagttga tcaataatat taatagtatt aattataata atttcattta      360
taagagcaag gtatagacta tattttatttg cttatagtca acatggaata agaagaataa      420
gactatattc ttgtcttctg gaagggttcg agaatattta ttattatttt tacattgatt      480
ccattaaatt attaatTTta aaaagagatt attataatta tttataaaaa aaaaaaaaaa      539

```

```

<210> 331
<211> 542
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature
<222> (2)..(2)
<223> n = unknown at position 2

```

```

<220>
<221> misc_feature
<222> (32)..(32)
<223> n = unknown at position 32

```

```

<400> 331
gnctaatacga agtgatcgta aaatattaaa tngacagcta tttgttaaaa caattgtgca      60
ttatagaaaa acatttaagt gaaaattaat tacgtttcag cagaaataca tcttctttgt      120
aaatttggggg ttaataatct ttcaaaatgc agatctttgt gaaaactctc acagggaaaa      180
ccattacttt ggaggtagaa ccttcagata ccattgaaaa cgtaaagct aagattcaag      240
ataaagaagg aatcccacca gatcagcaac gtttgatttt tgctggtaag caattggaag      300
acggcagaac tttgtctgac tacaatatcc aaaaggaatc aacattgcat ttagtattac      360
gtcttcgtgg aggtatgcaa atctttgtaa aaacattgac tggaaaaact attacattag      420
aggttgagcc ctctgatcca ttgagaatgt aaaagctaaa atccaagata aagaaggaat      480
tccccagatc agcagcgttt gtctttgctg gcaaacaatt agaagatgga agacttgtct      540
ga                                                                           542

```

```

<210> 332
<211> 542
<212> DNA
<213> Ctenocephalides felis

```

```

<220>
<221> misc_feature

```

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FC-8-C2-PCT.ST25.txt

<222> (3)..(3)

<223> n = unknown at position 3

<220>

<221> misc_feature

<222> (32)..(32)

<223> n = unknown at position 32

<220>

<221> misc_feature

<222> (38)..(38)

<223> n = unknown at position 38

<400> 332

```

gtnacattga tcggatctgt tagcaaaggc tnccaaantg ccgaaatcga tgaatgttcg      60
tgtgaccacg atggacgcgg aactggagtt cgcgatccag cagaccacca ctggaaaaca      120
gcttttcgat caggtgggtca agacgatcgg tctgcgcgaa gtctggtttt ttggactcca      180
atatactgac agcaaggggtg atttgacgtg gattaagctt tacaaaaagg tcatgaatca      240
agatgtcaaa aaggaaaatc cacttcaatt caaattcaga gcgaaatttt atcctgaaga      300
tgtagctgaa gaacttatac aggacattac atctcgtctt ttttatcttc aggttaagaa      360
cgctatactg tctgatgaaa tatattgccc tcctgagaca tcggttcttc tagcatctta      420
tgctgtcaag cccgacatgg agattttcaa aaagaccaac actcttcttg attttggcga      480
acgatagact gtaccacaaa gggtaatgga tcaacacaaa atgtctaaag aagaatggga      540
ac                                                                                   542

```

<210> 333

<211> 542

<212> DNA

<213> Ctenocephalides felis

<400> 333

```

cagacactga caaaggcaaa aatgggtcgt cgaccggcca gatgttatcg ctattgcaaa      60
aacaagccct accccaaatc tcggttctgt cgtggtgtgc cagacgctaa aattcgtatc      120
ttcgatttgg gtaagaagaa ggcaggcgta gaagattttc cactatgtgt gcatcttgta      180
tctgatgaat atgaacaatt gagttctgag gcactggaag caggacgtat ttgctgtaac      240
aaatacctcg ttaagaattg tggtaaagat caattccaca tcagaatgag gctgcatcct      300
ttccatgtta tccgcatcaa taaaatgtta tcgtgtgctg gagctgatag gctccaaact      360
ggaatgcgtg gtgcttttgg aaaaccacaa ggtactgttg ccagagttca catcgggtcaa      420
ccaatcatgt ctgtcgttcc agtgacagat acaaggccgc tggtgtagag gctctgcgtc      480
gtgctaagtt caagttccct gcagacaaaa gatctatggt ccaagaaatg gggattcact      540
aa                                                                                   542

```

FC-8-C2-PCT.ST25.txt

<210> 334
 <211> 542
 <212> DNA
 <213> Ctenocephalides felis

<400> 334
 cacaagttct attcaaccag atagaatctt acttatggat acgtttttcc aaattttgat 60
 cttccatgga gagactatag ctcaatggag agcttttgca tatcaagata tgcctgagta 120
 tgaaaatttc aaacaacttt tgcaagctcc agtagatgat gctcaggaaa ttttattgac 180
 acgtttttcca atgcctcgtt atattgatac cgagcaaggt ggatcacagg ctcgattttt 240
 attatccaaa gtcaatccct cgcagacaca taacaatatg tatgcttatg gaggagacgg 300
 aggagcacca gtattgactg atgatgtgtc ttttcaagta tttatggagc atctaaagaa 360
 attagcagta tcttcaaatt cataaaatta tataaagaca gaaatagata tacaatctt 420
 attttatctg taatattgtg tgtcagtctt tatatttgca atatagataa gtaataaatt 480
 caattgatta tgaacctaaa tacattgata tattaaaaga acatttacac taaaaaaaaa 540
 aa 542

<210> 335
 <211> 542
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (538)..(538)
 <223> n = unknown at position 538

<400> 335
 caggagaaag cttcagttcg tgcacactaa atgtgttagt accaggcgag aagaaaaaga 60
 caccagcttt cagcactttc ccagagtccg ccagcgtgca agagggcgag agtgcacgt 120
 tcttagttcg cacagaagac gaagttcttg gacttcaatg gataaaagat ggtaaacct 180
 ttgacgagaa gagctctcgc tatcgattca caatggaggg caaaacgacc ttccgattag 240
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 caggagaaac attcgtgcg ttctcagtga atgtcgcagc cgagcattga gccgaacaac 360
 taaattaata accgattctg cacacggctt aggccaaaaa acgagacgac tcgcgttgaa 420
 tcgcgagata tcgtgtaaac ttaagtttat taaattatta tgtttatatg aataaattat 480
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<210> 336

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<211> 542

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<213> Ctenocephalides felis

<400> 336

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ttcgatttgg gtaagaagaa ggcaggcgta gaagattttc cactatgtgt gcatcttgta      180
tctgatgaat atgaacaatt gagttctgag gcactggaag caggacgtat ttgctgtaac      240
aaatacctcg ttaagaattg tggtaaagat caattccaca tcagaatgag gctgcatcct      300
ttccatgtta tccgcatcaa taaaatgtta tcgtgtgctg gagctgatag gctccaaact      360
ggaatgcgtg gtgcttttgg aaaaccacaa ggtactgttg ccagagttca catcgggtcaa      420
ccaatcatgt ctgtcgttcc agtgacagat acaaggccgc tgttgtagag gctctgcgtc      480
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<210> 337

<211> 542

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

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<223> n = unknown at position 33

<400> 337

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gagatctgtg taccatttga caatgttagc agtgcctcat ttgattgaga cgaagggaaa      180
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gcaagttcgt gttaattctg ttaatccggg ggtcattatt actgagatac ataaacgggg      360
gggaatggat gatgaaactt ataaaaaatt cttagaacat tgcaaaacta ctcacgcctt      420
aggacgtcca ggacaagtaa gtgaagtatc caatgccatt gcgtttcttg caagcgagca      480
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<210> 338

<211> 542

<212> DNA

<213> Ctenocephalides felis

FC-8-C2-PCT.ST25.txt

<220>
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 atcatgagtg actatttttct tttatgttaa cctcttttacg caaagaaaat gtttataaac 180
 ttcaaacaac gttaaggtga taaatgttta cctaataata ataataataa gtttatatttg 240
 attttgtgta taaaaacatg tcttggaggc tgctgttgaa gttttaattt gcaagtgtta 300
 gatacaactt aataaaaaat gtctcaatga tgacaataac aaaaaattct tttacccaag 360
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 aaagtctttt ccagttaaag tttgcacttt ggacgctgag ttagaattta atttggagtg 480
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 tg 542

<210> 339
 <211> 542
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (32)..(32)
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<400> 339
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 agatttcaca aattacataa aacgttttaa cagcgttcaa atacgttgct taaatttgca 180
 agaatatcaa agtaaaactc tacttcaaaa aagtggcggt gccgttcaag ccttttagatt 240
 attagataac accgaaaaca caagtgtctt aaatgatttc aaagtccccg aatatgttat 300
 caaggcccaa gtttttagcag gaggtagagg caaaggccat tttgataatg gctttaaagg 360
 tgggtgttcat ataacaagg accctaaaga aatattgcca attgctaaaa atatgatggg 420
 tcacagactt attacaaaac aaacaaaagc tgaaggtata cttgtcaaaa agttatgggtg 480
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<210> 340

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FC-8-C2-PCT.ST25.txt

<211> 542

<212> DNA

<213> Ctenocephalides felis

<400> 340

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ttggtaacag gatggaatga gcccatagtc atcggcagac acgctcatgc tgatcaatac      180
aaagccaccg acttcgtggt accaggaaag ggtaaattag aattgacatt taccctccgaa      240
tcgggaagtc caatgagctt caccgtccac acttaccaag gacctggagt cgccatggga      300
atgttcaaca ccgatagttc aattgtagat ttcgctaata cctcattcca atatgcctta      360
aaccgaaaat tgcctttgta cctatctacc aaaaatacca ttctcaagaa atacgatggt      420
agatttaagg atatattcca ggaaatttat gacaagcaat acaagaaaga atatgaagct      480
gtggaatctg gtacgaacat cgactgatcg atgacatggt cgctacgcaa tgaaatcatc      540
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<210> 341

<211> 542

<212> DNA

<213> Ctenocephalides felis

<220>

<221> misc_feature

<222> (533)..(533)

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<400> 341

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taaagttaaa atttaattaa agtcagtgtg gtggtaataa ataaattttg gcatcaaatt      180
aagtattgga tatcatggcg aataataatg tgataaattt tggggcagga cccgccaaac      240
tcccagaaga ggtgatgctt gaagtgcaag aacaattggt gcattatggt gaaacaaaaa      300
tcagtgtaat ggaaatgagc catcgatcaa aagactacat gaaaatcaac gatgatacac      360
aaaatgcagt taaagaatta ttcaaatacc ggacaattca aaatactatt tctgcaagga      420
gggtggcacag gatgtttgca gccataccac tgaatatctt gaagactgga gttgcagatt      480
atgttggttac aggttcttgg tctgcaaaaag ctgcaaagaa gcaccaaatt ggnaagtaac      540
at                                                                                   542

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<210> 342

<211> 542

<212> DNA

<213> Ctenocephalides felis

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<220>
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 <223> n = unknown at position 2

<220>
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 <222> (33)..(33)
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<220>
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 <222> (39)..(39)
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 gctcctggcc gtgacgacga taggaaactc tttgttggtg gacttagttg ggaaacaact 180
 gataaggaat tgcgtgaaca ctttggtgca tatggagata tcgatagcat taatgttaaa 240
 actgacccca gtactgggtcg atcacgagga tttgcattca tcgtgtattc atctcctgaa 300
 tccattgata aagttgttgc tgtatctgaa catataatta acaacaagaa agtagatcca 360
 aagaaagcca aggcccgcca tggaaaaatt tttgttggag gtttgacgac tgaagtcagc 420
 gatgatgata ttaaaaaacta tttcaatcag tttgggacga tcatagaagt tgagatgcca 480
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 tg 542

<210> 343
 <211> 542
 <212> DNA
 <213> Ctenocephalides felis

<400> 343
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 agttaagaat cgtcgatTTT acatagatta tgataaaaaat acattcatga tggatgacaa 180
 accatttcga tacatagcag gttcattaca ttatttttcgg gtacatccgc aacaatggaa 240
 agaccgTTTg gaaaagctaa aagcagcagg tttaaatgcc gttgatacat atgttgagtg 300
 gtcacttcac aattttgatg aaggaaaata ttggtggggc agcaacgccg atttggagca 360
 atttattaaa actgcacaag aagtaggatt gtatgtaatt ttgagaccag ggccatacat 420
 ttgcgctgaa cgtgattTTT gaggccaacc ttattggctc ttatccaccc agaaaaagat 480

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FC-8-C2-PCT.ST25.txt

attaaaccaa ggacactgtt tcgtatatgg aagcagcacg agatggatac aagaatatta 540
 aa 542

<210> 344
 <211> 550
 <212> DNA
 <213> Ctenocephalides felis

<220>
 <221> misc_feature
 <222> (538)..(538)
 <223> n = unknown at position 538

<400> 344
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 acaagctgcc gatgaaaaca accgtatgtg caaagtattg gagaacccgc tcacaacaag 180
 atgaagagcg aatggaccaa ttgaccaacc aattgaagga agcacgtctc ttggctgaag 240
 atgctgatgg taaatctgat gaagtatcac gcaagttggc cttcgttgaa gatgaacttg 300
 aagtagctga agaccgtgtt aagggaggtg acagcaagat catggagttg gaagaagaat 360
 tgaaggttgt aggaaactcc ttgaaatctt tagaagtatc cgaagaaaag gccaaacaaa 420
 gagtagaaga attcaaacgc caattgaaga ctttgccgtc aaacacaagg aaccgaactc 480
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 tggcataaca 550

<210> 345
 <211> 550
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 <213> Ctenocephalides felis

<220>
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 <222> (33)..(33)
 <223> n = unknown at position 33

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 <223> n = unknown at position 539

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 tgaaactttg tcgaaacacc atcaagttaa gaatcgtcga ttttacatag attatgataa 180
 aaatacattc atgatggatg acaaaccatt tcgatacata gcaggttcat tacattatct 240

FC-8-C2-PCT.ST25.txt

tcgggtacat ccgcaacaat ggaaagaccg tttggaaaag ctaaaagcag caggttttaa 300
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 gggcagcaac gccgatttgg agcaatttat taaaactgca caagaagtag gattgtatgt 420
 aattttgaga ccagggccat acatttgccg tgaacgtgat tttggaggcc aaccttattg 480
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<210> 346
 <211> 482
 <212> DNA
 <213> Ctenocephalides felis

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 caaattgtgc aagtcaggaa ccatgggtgga actgcccaatt accgctgtgc ttcacgtcct 180
 tcaaaagaaa ttaaacttct cgggtgaactt actggggctt taatgtggta ctgggtgcttg 240
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 aaatggacgg atgaagagct tggatccca gccgagtaat gatggatagt taattgatag 360
 aaataattaa atattgaaat ttaatgaagt atctggattg tatatggtag tgcaatttgt 420
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<210> 347
 <211> 550
 <212> DNA
 <213> Ctenocephalides felis

<400> 347
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 aatgttgcac cttaagtcaa tcacaaaag tgcactgaaa cataaccctt ccgaagtgtc 180
 cacattggtc aaagctctgc caacggccat ccaaacgcgc tcttactccg agcaccaaat 240
 tcccgatagg ctgaaggatg tcccaacaca tcctaacca agatttttcg acatgggtgga 300
 gtacttcttc caccgtgcct gccagatcgt cgaatctaaa ttgggtcgagg acatgaaagg 360
 aagcaaaatg acagttgaag ataaaactaa gaaagtcaaa ggtattctta tgttaatgca 420
 gccatgcgat cacatttttg aaattgcttt cccattgcgc agagattcag gaaactacga 480
 aatgattcag ggttaccgtg ctcaacacag cacacatcga caccacaaa ggaggttccg 540

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tttcaatggt

550

<210> 348
 <211> 550
 <212> DNA
 <213> Ctenocephalides felis

 <220>
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 <222> (523)..(523)
 <223> n = unknown at position 523

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 gccggtccga tagcagaaag aaatcaagat gccactatTT atgttggtgg tttggacgat 180
 aaagtctcag aaagtcttat gtgggagcta tttgttcaat ctgggcctgt tgtgaatgtc 240
 catatgccaa aagatcgagt aactcaaag catcaaggat atggatttgt tgaatttctg 300
 ggagaagaag atgcagacta tgcaatcaaa attatgaaca tgataaaact ttatggaaaa 360
 ccaattaggg tcaataaagc ttcagcacat cagaaaaatc ttgatgtcgg tgccaatgtg 420
 tttataggaa atctagacac agaagttgat gaaaaattat tgatgacaca tttctgtttt 480
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 cataaatttg 550

<210> 349
 <211> 550
 <212> DNA
 <213> Ctenocephalides felis

 <220>
 <221> misc_feature
 <222> (547)..(547)
 <223> n = unknown at position 547

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 gtaaaaaagt aaaatttagt tgcgtgaatt cgtgcagttc acccgaaatg cagtattgtc 180
 cggaaatagg agcagatccg gttaaggaat cctgtagccc agatcaagtg tgcgctgatc 240
 aaagtggata tctacagtgc accactaaag aaagtacagt ctgcaaagta caaggtttca 300
 aatgtccgtc accatcgaga ttttatccaa atataaatga ttgtcaaagc tattattatt 360
 gtgacgaaaa tagtatagga acccaatatt attgcccga aattttgcat atgatccgtt 420
 acgtcataat tgcggcctat ggctctgggc acaaaatgct atacagttac atgtctgcca 480

FC-8-C2-PCT.ST25.txt

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accgtangca 550

<210> 350
<211> 550
<212> DNA
<213> Ctenocephalides felis

<400> 350
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gatttgtatt aataatttct tcaatagtag ttaagtatag agaaagatat ataatagaag 180
attttaataa aaatcgattt ttattattag tattaatatt tgtattttct ataataataa 240
taattattag tccaaattta attagaattt tattagggtg agatggatta ggtttagttt 300
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tggtagttga aattatttat tttatataaa atatataata aataatttga aataatttaa 480
ttatatatttt gatttaattt ctgcaataac taaaagagca caaatccttt tcttcttggt 540
accagctgca 550

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What is claimed is:

1. An isolated nucleic acid molecule that hybridizes to a nucleic acid sequence selected from the group consisting of a nucleic acid sequence of Table I, a nucleic acid sequence of Table II, a nucleic acid sequence complementary to a nucleic acid sequence of Table I, and a nucleic acid sequence complementary to a nucleic acid sequence of Table II, under conditions comprising (a) hybridizing in a solution comprising 1X SSC in the absence of helix destabilizing agents, at a temperature of 37°C and (b) washing in a solution comprising 1X SSC in the absence of helix destabilizing agents, at a temperature of 47.5°C.
2. The nucleic acid of Claim 1, wherein said nucleic acid molecule comprises a nucleic acid sequence that is at least 70% identical to a nucleic acid sequence selected from the group consisting of a nucleic acid sequence of Table I and a nucleic acid sequence of Table II.
3. The nucleic acid of Claim 1, wherein said nucleic acid molecule comprises a nucleic acid sequence selected from the group consisting of a nucleic acid sequence of Table I and a nucleic acid sequence of Table II.
4. A recombinant molecule comprising a nucleic acid molecule as set forth in Claim 1 operatively linked to a transcription control sequence.
5. A recombinant virus comprising a nucleic acid molecule as set forth in Claim 1.
6. A recombinant cell comprising a nucleic acid molecule as set forth in Claim 1.
7. A method to produce a protein encoded by a nucleic acid molecule that hybridizes to a nucleic acid sequence selected from the group consisting of a nucleic acid sequence complementary to a nucleic acid sequence of Table I and a nucleic acid sequence complementary to a nucleic acid sequence of Table II, under conditions comprising (a) hybridizing in a solution comprising 1X SSC in the absence of helix destabilizing agents, at a temperature of 37°C and (b) washing in a solution comprising 1X SSC in the absence of helix destabilizing agents, at a temperature of 47.5°C.

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8. The method of Claim 7, wherein said nucleic acid molecule comprises a nucleic acid sequence that is at least 70% identical to a nucleic acid sequence selected from the group consisting of a nucleic acid sequence of Table I and a nucleic acid sequence of Table II.

5 9. The method of Claim 7, wherein said nucleic acid molecule comprises a nucleic acid sequence selected from the group consisting of a nucleic acid sequence of Table I and a nucleic acid sequence of Table II.

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10. An isolated protein selected from the group consisting of: an isolated protein encoded by a nucleic acid molecule that hybridizes to a nucleic acid sequence selected from the group consisting of a nucleic acid sequence complementary to a nucleic acid sequence of Table I and a nucleic acid sequence complementary to a
5 nucleic acid sequence of Table II, under conditions comprising (a) hybridizing in a solution comprising 1X SSC in the absence of helix destabilizing agents, at a temperature of 37°C and (b) washing in a solution comprising 1X SSC in the absence of helix destabilizing agents, at a temperature of 47.5°C.

11. The protein of Claim 10, wherein said nucleic acid molecule comprises
10 a nucleic acid sequence selected from the group consisting of a nucleic acid sequence of Table I and a nucleic acid sequence of Table II.

12. The protein of Claim 10, wherein said nucleic acid molecule comprises a nucleic acid sequence that is at least 70% identical to a nucleic acid sequence selected from the group consisting of a nucleic acid sequence of Table I and a nucleic
15 acid sequence of Table II.

13. An isolated antibody that selectively binds to a protein as set forth in Claim 10.

14. A method to identify a compound capable of inhibiting activity of an isolated protein of Claim 10, said method comprising contacting an isolated protein of
20 Claim 10 with a putative inhibitory compound under conditions in which, in the absence of said compound, said protein has activity; and determining if said putative inhibitory compound inhibits said activity.

15. A kit to identify a compound capable of inhibiting activity of an isolated protein of Claim 10, said test kit comprising an isolated protein of Claim 10
25 and a means for determining the extent of inhibition of said activity in the presence of a putative inhibitory compound.

16. A composition comprising an excipient and a compound selected from the group consisting of: (a) an isolated nucleic acid molecule of Claim 1, (b) an isolated protein of Claim 10, and (c) an isolated antibody of Claim 13.