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Modified cullin1 gene.

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The present invention relates to a modified *Cullin1* gene which leads to a plant type that enables efficient cultivation and/or is suitable for situations that require smaller portions, or reduces the labour, time and expenses involved with storing, handling and transporting of redundant plant leaves. The invention also relates to plants comprising the modified *Cullin1* gene.

The modified *Cullin1* gene provides plants with a compact growth phenotype, i.e. comprising shorter internode length and/or a smaller leaf area when compared to plants not comprising the modified *Cullin1* gene. The invention further relates to the use of the modified *Cullin1* gene for the identification and development of a plant showing a compact growth phenotype, i.e. comprising shorter internodes and/or a smaller leaf area.

MODIFIED *CULLIN1* GENE

The present invention relates to a plant type that enables efficient cultivation, and to methods for identifying and developing such a plant. The present invention also relates to a plant type suitable for situations that require smaller portions, or reduces the labour, time and expenses involved with storing, handling and transporting of redundant plant leaves, and to methods for identifying and developing such plant.

Plant breeders are continuously looking for more efficient ways to cultivate plants. One way to increase the efficiency is by high-wire cultivation. In the high-wire cultivation, higher planting densities are used to obtain higher yields per m². In addition, high-wire cultivation allows a longer cultivation period during which the plant produces fruits. Cucumber and tomato are crops that are suitable for high-wire cultivation. However, not all varieties are fit for this type of cultivation.

More efficient cultivation can also be achieved in other crops if the plants have a compact growth phenotype. Such a compact growth phenotype may be characterized by the plants showing shorter internodes and/or a smaller leaf area. Because of this compact growth phenotype, the plants can be planted in higher densities, thereby saving a lot of space.

It is one goal of the present invention to provide a plant type that enables efficient cultivation. This goal has been achieved by providing a plant type showing a compact growth phenotype.

In the research leading to the present invention, it was found that a mutation in the *Cullin1* gene leads to a modification in plant type that may be expressed as a compact growth phenotype. A plant that has the mutant gene is in particular suitable for efficient cultivation. Such a plant shows a shorter internode length and/or a smaller leaf area and may also display other characteristics that lead to a compact growth phenotype.

Cullin proteins are a family of proteins present in all eukaryotes, not only plants. The Cullin proteins combine with RING proteins to form so-called Cullin-RING ubiquitin ligases (CRLs). In general, Cullin proteins play an important role in protein ubiquitination and protein degradation.

Ubiquitination (also known as ubiquitylation) is an enzymatic, post-translational modification process in which an ubiquitin protein is ligated to substrate protein.

Ubiquitin is a highly conserved, small polypeptide, ubiquitously distributed among eukaryotes. An ATP-dependent reaction cascade (involving the sequential action of ubiquitin-activating (E1s), ubiquitin-conjugating (E2s) and ubiquitin-protein ligase (E3s) enzymes) performs the ligation of ubiquitin to other proteins. Proteins that are ligated with ubiquitin are subsequently degraded and broken down, or relocated.

The Cullin1 protein, which is a member of the Cullin protein family, is one out of the four subunits that make up the SCF complex. The abbreviation SCF stands for SKP1-CUL1-F-box protein E3 ubiquitin ligase complex, which mediates the ubiquitination of proteins involved in cell cycle progression, signal transduction and transcription. In the SCF complex, Cullin1 serves as a rigid scaffold that organizes the SKP1-F-box protein and RBX1 subunits. It may contribute to catalysis through positioning of the substrate and the ubiquitin-conjugating enzyme.

As mentioned before, Cullin proteins are present in all eukaryotes. Through its involvement in ubiquitination and subsequent processes it is engaged in a wide range of cellular processes. Surprisingly, the mutation of the invention causes shorter internode length and/or smaller leaf area without causing a deleterious effect on the plant, which would be expected based on the state of the art knowledge available on the conserved status of Cullin1 protein and its functionality.

The characterisation of the modified *Cullin1* gene in the present research was performed in cucumber (*Cucumis sativus*). This enabled the identification of further crops having a *Cullin1* gene, which when modified leads to plants with a compact growth phenotype, i.e. showing shorter internode length and/or a smaller leaf area, or a reduction in other plant parts when compared to plants not having the modified *Cullin1* gene. These crops include those belonging to the family of *Cucurbitacea*, such as for instance melon (*Cucumis melo*), watermelon (*Citrullus lanatus*), and squash (*Cucurbita pepo*); fruit crops, such as pepper (*Capsicum annuum*), tomato (*Solanum lycopersicum*), and eggplant (*Solanum melongena*); leafy vegetables, such as lettuce (*Lactuca sativa*), spinach (*Spinacia oleracea*), chicory (*Cichorium intybus*), and cabbage (*Brassica oleracea*); root vegetables, such as for instance carrot (*Daucus carota*), radish (*Raphanus sativus*), and beetroot (*Beta vulgaris*); and other crops, such as celery (*Apium graveolens*) and leek (*Allium ampeloprasum*).

It is another goal of the present invention to provide a plant type that is suitable for situations that require smaller portions, or reduces the labour, time and expenses involved with storing, handling and transporting of redundant plant leaves.

The invention thus relates to a modified *Cullin1* gene comprising a modification in the wild type *Cullin1* nucleotide sequence which leads to a modification in the wild type Cullin1 amino acid sequence.

The *Cullin1* gene can be modified by different means known in the art, including mutagenesis. Mutagenesis comprises the random introduction of at least one modification to DNA by means of one or more chemical compounds, such as ethyl methanesulphonate (EMS), nitrosomethylurea, hydroxylamine, proflavine, N-methyl-N-nitrosoguanidine, N-ethyl-N-nitrosourea, N-methyl-N-nitro-nitrosoguanidine, diethyl sulphate, ethylene imine, sodium azide, formaline, urethane, phenol and ethylene oxide, and/or by physical means, such as UV-irradiation,

fast-neutron exposure, X-rays, gamma irradiation, and/or by insertion of genetic elements, such as transposons, T-DNA, retroviral elements. Mutagenesis also comprises the more specific, targeted introduction of at least one modification by means of homologous recombination, oligonucleotide-based mutation induction, zinc-finger nucleases (ZFNs), transcription activator-like effector nucleases (TALENs) or Clustered Regularly Interspaced Short Palindromic Repeat (CRISPR) systems.

The modified *Cullin1* gene may be an exogenous *Cullin1* gene introduced into a plant by a transgenic method or a cisgenic method. Use of a modified *Cullin1* gene of the invention for developing a plant that shows a compact growth phenotype, i.e. comprises shorter internodes and/or smaller leaf area, comprises the introduction of a modified exogenous *Cullin1* gene by a transgenic or a cisgenic method.

The modified *Cullin1* gene may be part of a gene construct, which gene construct comprises a selectable marker, a promoter sequence, a *Cullin1* gene sequence, and a terminator sequence.

The present invention is widely applicable to all plant species that have a functional orthologue of the *Cullin1* gene in their genome, i.e. an orthologue that performs the same or a similar biological function. Identification of *Cullin1* orthologues, i.e. *Cullin1* genes in other species, can be performed in many crops, methods of which are known in the art. The present invention can for instance be applied to a plant belonging to a species selected from the group consisting of *Cucumis sativus*, *Cucumis melo*, *Cucurbita pepo*, *Citrullus lanatus*, *Solanum melongena*, *Solanum lycopersicum*, *Capsicum annuum*, *Brassica oleracea*, *Daucus carota*, *Apium graveolens*, *Cichorium intybus*, *Cichorium endivia*, *Allium ampeloprasum*, *Lactuca sativa*, *Raphanus sativus*, *Spinacia oleracea*, and *Beta vulgaris*.

Accordingly, the present invention relates to a modified *Cullin1* gene comprising a modification in the wild type *Cullin1* nucleotide sequence of SEQ ID No: 1, SEQ ID No: 2, SEQ ID No: 3, SEQ ID No: 4, SEQ ID No: 5, SEQ ID No: 6, SEQ ID No: 7, SEQ ID No: 8, SEQ ID No: 9, SEQ ID No: 10, SEQ ID No: 11, SEQ ID No: 12, SEQ ID NO: 13, SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17 which leads to a modification in the wild type *Cullin1* amino acid sequence of SEQ ID No: 18, SEQ ID No: 19, SEQ ID No: 20, SEQ ID No: 21, SEQ ID No: 22, SEQ ID No: 23, SEQ ID No: 24, SEQ ID No: 25, SEQ ID No: 26, SEQ ID No: 27, SEQ ID No: 28, SEQ ID NO: 29, SEQ ID NO: 30, SEQ ID NO: 31, SEQ ID NO: 32, SEQ ID NO. 33, SEQ ID NO: 34 respectively.

Figures 1-17 show the wild type *Cullin1* nucleotide sequences SEQ ID NO. 1-17 of *Cucumis sativus*, *Cucumis melo*, *Cucurbita pepo*, *Citrullus lanatus*, *Solanum melongena*, *Solanum lycopersicum*, *Capsicum annuum*, *Brassica oleracea*, *Daucus carota*, *Apium graveolens*, *Cichorium intybus*, *Cichorium endivia*, *Allium ampeloprasum*, *Lactuca sativa*, *Raphanus sativus*,

Spinacia oleracea, and *Beta vulgaris*, respectively. Figures 18-34 show the wild type Cullin1 amino acid sequences SEQ ID NO.18-34 of *Cucumis sativus*, *Cucumis melo*, *Cucurbita pepo*, *Citrullus lanatus*, *Solanum melongena*, *Solanum lycopersicum*, *Capsicum annuum*, *Brassica oleracea*, *Daucus carota*, *Apium graveolens*, *Cichorium intybus*, *Cichorium endivia*, *Allium ampeloprasum*, *Lactuca sativa*, *Raphanus sativus*, *Spinacia oleracea*, and *Beta vulgaris*, respectively.

The term “wild type” as used herein refers in general to the form of an organism, gene, protein, or trait as it would occur in nature, as opposed to a mutated or modified form. In this application wild type refers specifically to the naturally occurring form of the *Cullin1* gene, the naturally occurring form of the nucleotide sequence of Cullin1 and the naturally occurring form of the Cullin1 amino acid sequence. The naturally occurring forms of the *Cullin1* gene and Cullin1 protein of several crops are shown in Figures 1-17 and Figures 18 -34 respectively.

The terms “mutant”, “mutation”, “modification”, “modified”, “mutated *Cullin1* gene” and “modified *Cullin1* gene” as used herein refer to nucleotide changes and amino acid changes to the wild type *Cullin1* gene thereof that lead to a modified version of the wild type gene. The modification can be any modification, including but not limited to a SNP.

The modified *Cullin1* gene is also referred to herein as “the gene of the invention”, “the modified *Cullin1* gene”, or “the modified *Cullin1* gene of the invention”. These terms are used interchangeably herein. As used herein the phrase “the modified *Cullin1* gene” is intended to encompass the *Cullin1* gene with any modification that leads to the compact growth phenotype.

The terms “compact gene phenotype”, “compact phenotype” or “compact growth phenotype” are used interchangeably herein and refer to a phenotype of a shorter internode length and/or a smaller leaf area. Crops comprising the modified *Cullin1* gene and which have internodes, such as for instance cucumber, may show shorter internodes or a smaller leaf area. They may also show shorter internodes and a smaller leaf area. Crops comprising the modified *Cullin1* gene but which do not have internodes, such as for instance lettuce, may show a smaller leaf area.

The term “smaller leaf area” as used herein is the leaf area that displays a reduction in individual leaf area of, in order of increased preference, at least 10%, at least 20%, at least 30%, at least 40%, at least 50%, at least 60%, at least 70%, at least 80% as a result of the homozygous or heterozygous presence of the modified gene of the invention. To investigate the influence of the gene of the invention on the smaller leaf area, a skilled person would have to compare plants having the gene of the invention homozygously or heterozygously with plants that are isogenic to first mentioned plants but do not have the gene of the invention.

With the term “leaf” is meant the part of the plant consisting of the petiole and leaf blade.

With the term “leaf area” is meant the surface of the part of the plant consisting of the leaf blade.

The term “shorter internodes” or “shorter internode length” as used herein is internode length that has a reduction in individual length of, in order of increased preference, at least 10%, at least 20%, at least 30%, at least 40%, at least 50%, at least 60%, at least 70%, at least 80% as a result of the homozygous or heterozygous presence of the gene of the invention. To investigate the influence of the gene of the invention on the shorter internode length, a skilled person would have to compare plants having the gene of the invention homozygously or heterozygously with plants that are isogenic to first mentioned plants but without the gene of the invention.

The modification leading to the modified *Cullin1* gene may be selected from a modification that changes the mRNA level of the *Cullin1* gene, a modification that changes the Cullin1 protein structure and/or levels, and/or a modification that changes the Cullin1 protein activity.

One aspect of the invention relates to a modified *Cullin1* gene, comprising a mutation as compared to its wild type genomic sequence, which mutation leads to a change in the Cullin1 protein and/or protein activity, wherein the modified *Cullin1* gene is capable of causing a compact growth phenotype.

In one embodiment, the mutation is a Single Nucleotide Polymorphism (SNP).

In one embodiment of the present invention, the change in the amino acid sequence is a substitution.

In a preferred embodiment of the present invention, the change in the amino acid sequence is found in the part of the Cullin1 protein between the amino acids on position 30-60, preferably in the part between the amino acids on positions 40-55 of the cucumber amino acid sequence of SEQ ID No: 18, or on a part corresponding thereto.

In a further preferred embodiment of the present invention, the change in the amino acid sequence is found in the part of the Cullin1 protein that binds SKP1 and/or ETA2.

Preferably, the physical location of the amino acid substitution in the Cullin1 protein lies in the region of the protein where the Cullin1 protein binds to SKP1 and/or ETA2. The Cullin1 protein forms a so-called SCF complex, together with SKP1, RBX1 and a F-box protein, which has important functionalities such as a role in leaf development. ETA2 is according to some theories, required to sustain the SCF complex activity, most probably by facilitating cycles of assembly and disassembly of the SCF complex.

In a specific embodiment, the modified *Cullin1* gene includes, a *Cullin1* gene comprising a SNP on position 147 of SEQ ID NO.1 of cucumber, or on a position corresponding thereto in the *Cullin1* gene of other crops, wherein the modification comprises a change in the nucleotide on that position and wherein the modification leads to an amino acid substitution in the Cullin1 protein on position 49 of the wildtype protein sequence SEQ ID NO: 18. of cucumber, or on a position

corresponding thereto, in other crops. In cucumber the change is from A to G and from Isoleucine to Methionine. In other crops the change in nucleotide and amino acid may be different.

In a preferred embodiment of the present invention, the modification of the nucleotide sequence comprises a change from Adenine, Cytosine or Thymine to Guanine.

5 The definition “coding sequence” as used herein is the portion of the gene’s DNA composed of exons that code for the protein.

In a further embodiment of the present invention, the modification in the amino acid sequence is a substitution on position 49 of the cucumber amino acid sequence of SEQ ID No: 18, or, in case of a crop other than cucumber, on a position corresponding to position 49 of the
10 cucumber amino acid sequence of SEQ ID No: 18.

The amino acid substitution caused by the mutation of the current invention was found to be present on position 49 of the cucumber amino acid sequence of SEQ ID No: 18, or, in case of a crop other than cucumber, on a position corresponding to position 49 of the wild type amino acid sequence SEQ ID NO. 18 of cucumber. This nucleotide mutation is considered to be non-
15 conservative, and the amino acid change can be considered non-conservative.

Amino acid changes in a protein occur when the mutation of one or more base pairs in the coding DNA sequence result in an altered codon triplet that encodes a different amino acid. Not all point mutations in the coding DNA sequence lead to amino acid changes, due to the redundancy of the genetic code. Mutations in the coding sequence that do not lead to amino acid changes are
20 called “silent mutations”. Other mutations are called “conservative”, they lead to the replacement of one amino acid by another amino acid with comparable properties, such that the mutations are unlikely to change the folding of the mature protein, or influence its function. As used herein a “non-conservative amino acid change” refers to an amino acid that is replaced by another amino acid that has different chemical properties that may lead to decreased stability, changed
25 functionality and/or structural effects of the encoded protein.

In a further preferred embodiment of the present invention, the modification in the amino acid sequence is a substitution and consists of a change from Isoleucine to Methionine

The invention further relates to a plant comprising the modified *Cullin1* gene.

A *Cucumis sativus* plant comprising the modified *Cullin1* gene with the nucleotide
30 sequence of SEQ ID No: 35 is not part of this invention and is therefore disclaimed herewith.

A plant comprising the modified *Cullin1* gene shows a compact growth phenotype, i.e. comprises a shorter internode length and/or a smaller leaf area, compared to an isogenic plant of the same species not comprising the modified *Cullin1* gene. For example, a *Cucumis sativus* plant a *Cucumis melo* plant, a *Cucurbita pepo* plant, a *Citrullus lanatus* plant, a *Solanum melongena*
35 plant, a *Solanum lycopersicum* plant, and a *Capsicum annuum* plant comprising the modified *Cullin1* gene show a shorter internode length and/or a smaller leaf area. These plants are therefore

particularly suitable for efficient cultivation. A *Cichorium intybus* plant, a *Cichorium endivia* plant, a *Lactuca sativa* plant, a *Brassica oleracea* plant and a *Spinacia oleracea* plant comprising the modified *Cullin1* gene show for example a smaller leaf area. As such, the parts of these plants harvested for consumption are smaller in size. These plants are therefore particularly suitable for a situation in which smaller portions are required. A *Daucus carota* plant comprising the modified *Cullin1* gene shows a shorter internode length and/or a smaller leaf area. As such, the plant comprises less foliage that needs to be removed before the product is sold and/or consumed. An *Apium graveolens* plant comprising the modified *Cullin1* gene shows a shorter internode length and/or a smaller leaf area. As such, the plant is of a more compact size suitable for a situation in which smaller portions are required and/or comprises less foliage that needs to be removed before the product is sold and/or consumed. An *Allium ampeloprasum* plant comprising the modified *Cullin1* gene shows a smaller leaf area. As such, the leaves that are not consumed do not need to be removed before the product is sold and/or consumed. A *Raphanus sativus* plant and a *Beta vulgaris* plant comprising the modified *Cullin1* gene show a smaller leaf area. As such, less foliage needs to be removed before the product is sold and/or consumed.

The plant of the invention comprising the modified *Cullin1* gene either homozygously or heterozygously may be a plant of an inbred line, a hybrid, a doubled haploid, or a plant of a segregating population.

The plant of the invention may have the modified *Cullin1* gene in heterozygous state since such a plant shows the trait in an intermediate level. Furthermore such plant may be a potential source of the gene and when crossed with another plant that optionally also has the modified gene either homozygously or heterozygously can result in progeny plants that have the modified gene homozygously or heterozygously and show the trait of having a compact growth phenotype.

The invention also relates to a method for the production of a plant having the modified *Cullin1* gene that leads to a compact growth phenotype by using a seed that comprises the modified *Cullin1* gene for growing the said plant.

The invention further relates to a method for the production of a plant having the modified *Cullin1* gene by using tissue culture of plant material that carries the modified *Cullin1* gene in its genome.

The invention furthermore relates to a method for the production of a plant having the modified *Cullin1* gene which leads to a compact growth phenotype, by using vegetative reproduction of plant material that carries the modified *Cullin1* gene in its genome.

The invention further provides a method for the production of a plant having the modified *Cullin1* gene by using a doubled haploid generation technique to generate a doubled haploid line from a cucumber plant comprising the modified *Cullin1* gene.

The invention further relates to a plant seed comprising the modified *Cullin1* gene of the invention, wherein the plant that can be grown from the seed shows a compact growth phenotype.

The invention also relates to a method for seed production comprising growing plants from seeds of the invention, allowing the plants to produce seeds by allowing pollination to occur, and
5 harvesting those seeds. Production of the seeds is suitably done by crossing or selfing. Seeds produced in that manner result in a compact growth phenotype of the plants grown thereof.

The invention furthermore relates to hybrid seed and to a method for producing such hybrid seed comprising crossing a first parent plant with a second parent plant and harvesting the resultant hybrid seed, wherein said first parent plant and/or said second parent plant has the
10 modified *Cullin1* gene of the invention. A hybrid plant resulting from growing the resulting seed that comprises the modified *Cullin1* gene of the invention, showing the compact growth phenotype of the invention is also a plant of the invention.

Another aspect of the invention relates to propagation material capable of developing into and/or being derived from a plant comprising a modified *Cullin1* gene, wherein the plant shows a
15 compact growth phenotype, compared to an isogenic plant of the same species not comprising the modified *Cullin1* gene, wherein the propagation material comprises the modified *Cullin1* gene of the invention and wherein the propagation material is selected from the group consisting of microspores, pollen, ovaries, ovules, embryos, embryo sacs, egg cells, cuttings, roots, hypocotyls, cotyledons, stems, leaves, flowers, anthers, seeds, meristematic cells, protoplasts and cells, or
20 tissue culture thereof.

The invention thus further relates to parts of a claimed plant that are suitable for sexual reproduction. Such parts are for example selected from the group consisting of microspores, pollen, ovaries, ovules, embryo sacs, and egg cells. In addition, the invention relates to parts of a claimed plant that are suitable for vegetative reproduction, which are in particular cuttings, roots, stems,
25 cells, protoplasts. The parts of the plants as mentioned above are considered propagation material. The plant that is produced from the propagation material comprises the modified *Cullin1* gene that leads to a compact growth phenotype and thus enables efficient cultivation and/or is suitable for the production for market segments that require a smaller product.

According to a further aspect thereof, the invention provides a tissue culture of a plant
30 carrying the modified *Cullin1* gene of the invention, which is also propagation material. The tissue culture comprises regenerable cells. Such tissue culture can be selected or derived from any part of the plant, in particular from leaves, pollen, embryos, cotyledon, hypocotyls, meristematic cells, roots, root tips, anthers, flowers, seeds, and stems. The tissue culture can be regenerated into a plant carrying the modified *Cullin1* gene of the invention, which regenerated plant expresses the
35 trait of the invention and is also part of the invention.

The invention further relates to the use of the modified *Cullin1* gene for the development of a plant showing a compact growth phenotype. A skilled person is familiar with introducing a new trait into a plant already having other desired agricultural properties, for instance by introgression. Introgression can be done by means of standard breeding techniques, wherein selection can be done either phenotypically or with the use of markers or a combination thereof.

The invention further relates to the use of the modified *Cullin1* gene, or a part thereof comprising the modification, as a marker for identifying a plant showing a compact growth phenotype.

The ‘use for identifying’ or a ‘method for identifying’ as used in the current application comprises the use of the described (causal) SNP in the *Cullin1* gene as a marker. The invention also relates to other markers that can be developed based on a modification, including the causal SNP, in the *Cullin1* gene, as well as to other markers that can be developed based on the wildtype sequence of the *Cullin1* gene.

The invention further relates to the use of any of the sequences of SEQ ID NOs. 35-51, or a part thereof, as a marker for identifying a plant showing a compact growth phenotype, i.e. comprising a shorter internode length and/or a smaller leaf area. If a part of any of these sequences is used, the part must comprise the modification. For example, SEQ ID No. 35 or a part thereof may be used to identify a *Cucumis sativus* plant showing a shorter internode length and/or a smaller leaf area; SEQ ID No. 36 or a part thereof may be used to identify a *Cucumis melo* plant showing a shorter internode length and/or a smaller leaf area; SEQ ID No. 37 or a part thereof may be used to identify a *Cucurbita pepo* plant showing a shorter internode length and/or a smaller leaf area; SEQ ID No. 38 or a part thereof may be used to identify a *Citrullus lanatus* plant showing a shorter internode length and/or a smaller leaf area; SEQ ID No. 39 or a part thereof may be used to identify a *Solanum melongena* plant showing a shorter internode length and/or a smaller leaf area; SEQ ID No. 40 or a part thereof may be used to identify a *Solanum lycopersicum* plant showing a shorter internode length and/or a smaller leaf area; SEQ ID No. 41 or a part thereof may be used to identify a *Capsicum annuum* plant showing a shorter internode length and/or a smaller leaf area; SEQ ID No. 42 or a part thereof may be used to identify a *Brassica oleracea* plant showing a smaller leaf area; SEQ ID No. 43 or a part thereof may be used to identify a *Daucus carota* plant showing a shorter internode length and/or a smaller leaf area; SEQ ID No. 44 or a part thereof may be used to identify a *Apium graveolens* plant showing a shorter internode length and/or a smaller leaf area; SEQ ID No. 45 or a part thereof may be used to identify a *Cichorium intybus* plant showing a smaller leaf area; SEQ ID No. 46 or a part thereof may be used to identify a *Cichorium endivia* plant showing a smaller leaf area; SEQ ID No. 47 or a part thereof may be used to identify an *Allium ampeloprasum* plant showing a smaller leaf area; SEQ ID No. 48 or a part thereof may be used to identify a *Lactuca sativa* plant showing a smaller leaf area; SEQ ID No. 49 or a part

thereof may be used to identify a *Raphanus sativus* plant showing a shorter internode length and/or a smaller leaf area; SEQ ID No. 50 or a part thereof may be used to identify a *Spinacia oleracea* plant showing a smaller leaf area; SEQ ID No. 51 or a part thereof may be used to identify a *Beta vulgaris* plant showing a shorter internode length and/or a smaller leaf area. The invention also relates to the use of any markers that are derived from SEQ ID Nos. 1-17 or SEQ ID NOs. 36-51 for identifying a plant showing a compact growth phenotype. Any such derived marker must comprise the modification that leads to the phenotype of the invention.

In general, to identify a plant showing a compact growth phenotype, it is thus determined in the *Cullin1* gene whether there is an A, C, or T (SEQ ID Nos. 1-17) or a G (SEQ ID Nos. 35-51) on position 147, or a position corresponding thereto.

The invention further relates to a method for obtaining a plant which shows a compact growth phenotype comprising;

- a) crossing a plant comprising the modified *Cullin1* gene of the current invention with a plant not comprising the modified *Cullin1* gene, to obtain an F1 population;
- b) optionally performing one or more rounds of selfing and/or crossing a plant from the F1 to obtain a further generation population; and
- c) selecting a plant that has a compact growth phenotype and the modified *Cullin1* gene of the invention.

The invention also relates to a method for obtaining a plant which shows a compact growth phenotype comprising;

- a) crossing a plant comprising the modified *Cullin1* gene of the current invention with another plant comprising the modified *Cullin1* gene, to obtain an F1 population;
- b) optionally performing one or more rounds of selfing and/or crossing a plant from the F1 to obtain a further generation population; and
- c) selecting a plant that has a compact growth phenotype and the modified *Cullin1* gene of the invention.

The invention further relates to a marker for identifying a plant showing a compact growth phenotype, comprising the modified *Cullin1*, or a part thereof that comprises the modification. Preferably, the modification is a nucleotide substitution on or around position 147 of SEQ ID No:1 of cucumber, or, in case of a crop other than cucumber, on or around a position corresponding to position 147 of SEQ ID No:1 of cucumber, which modification leads to an amino acid substitution in the Cullin1 protein.

The invention also relates to a method for selecting a plant showing a compact growth phenotype from a population of plants, comprising detecting the presence or absence of a guanine on position 147 of the cucumber nucleotide sequence of SEQ ID NO:1, or, for a crop other than cucumber, on a position corresponding to position 147 of the cucumber nucleotide

sequence of SEQ ID No: 1, in the genome of a plant of a population of plants, and selecting a plant comprising a guanine on position 147 of SEQ ID NO:1, as shown in SEQ ID NO. 35, or, for a crop other than cucumber, on a position corresponding to position 147 of the cucumber nucleotide sequence of SEQ ID No: 1, as shown in any of SEQ ID Nos. 36- 51.

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FIGURES

Figure 1 Cucumber *Cullin1* coding sequence wildtype, SEQ ID NO. 1. The nucleotide between brackets and bold indicates the position of the SNP, 147 nucleotides from the start. The wildtype nucleotide is “A”, as shown here.

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Figure 2 Melon *Cullin1* coding sequence wildtype, SEQ ID NO. 2. The nucleotide between brackets and bold indicates the position of the SNP, 147 nucleotides from the start. The wildtype nucleotide is “A”, as shown here.

Figure 3 Squash *Cullin1* coding sequence wildtype, SEQ ID NO. 3. The nucleotide between brackets and bold indicates the position of the SNP, 147 nucleotides from the start. The wildtype nucleotide is “A”, as shown here.

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Figure 4 Watermelon *Cullin1* coding sequence wildtype, SEQ ID NO. 4. The nucleotide between brackets and bold indicates the position of the SNP, 147 nucleotides from the start. The wildtype nucleotide is “A”, as shown here.

Figure 5 Eggplant *Cullin1* coding sequence wildtype, SEQ ID NO. 5. The nucleotide between brackets and bold indicates the position of the SNP, 141 nucleotides from the start. The wildtype nucleotide is “T”, as shown here.

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Figure 6 Tomato *Cullin1* coding sequence wildtype, SEQ ID NO. 6. The nucleotide between brackets and bold indicates the position of the SNP, 141 nucleotides from the start. The wildtype nucleotide is “T”, as shown here.

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Figure 7 Pepper *Cullin1* coding sequence wildtype, SEQ ID NO. 7. The nucleotide between brackets and bold indicates the position of the SNP, 141 nucleotides from the start. The wildtype nucleotide is “T”, as shown here.

Figure 8 Cabbage *Cullin1* coding sequence wildtype, SEQ ID NO. 8. The nucleotide between brackets and bold indicates the position of the SNP, 138 nucleotides from the start. The wildtype nucleotide is “C”, as shown here.

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Figure 9 Carrot *Cullin1* coding sequence wildtype, SEQ ID NO. 9. The nucleotide between brackets and bold indicates the position of the SNP, 144 nucleotides from the start. The wildtype nucleotide is “C”, as shown here.

Figure 10 Celery *Cullin1* coding sequence wildtype, SEQ ID NO. 10. The nucleotide between brackets and bold indicates the position of the SNP, 141 nucleotides from the start. The wildtype nucleotide is “C”, as shown here.

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Figure 11 Chicory *Cullin1* coding sequence wildtype, SEQ ID NO. 11. The nucleotide between brackets and bold indicates the position of the SNP, 141 nucleotides from the start. The wildtype nucleotide is “C”, as shown here.

Figure 12 Endive *Cullin1* coding sequence wildtype, SEQ ID NO. 12. The nucleotide between brackets and bold indicates the position of the SNP, 141 nucleotides from the start. The wildtype nucleotide is “C”, as shown here.

Figure 13 Leek *Cullin1* coding sequence wildtype, SEQ ID NO. 13. The nucleotide between brackets and bold indicates the position of the SNP, 147 nucleotides from the start. The wildtype nucleotide is “C”, as shown here.

Figure 14 Lettuce *Cullin1* coding sequence wildtype, SEQ ID NO. 14. The nucleotide between brackets and bold indicates the position of the SNP, 141 nucleotides from the start. The wildtype nucleotide is “C”, as shown here.

Figure 15 Radish *Cullin1* coding sequence wildtype, SEQ ID NO. 15. The nucleotide between brackets and bold indicates the position of the SNP, 138 nucleotides from the start. The wildtype nucleotide is “C”, as shown here.

Figure 16 Spinach *Cullin1* coding sequence wildtype, SEQ ID NO. 16. The nucleotide between brackets and bold indicates the position of the SNP, 141 nucleotides from the start. The wildtype nucleotide is “A”, as shown here.

Figure 17 Beetroot *Cullin1* coding sequence wildtype, SEQ ID NO. 17. The nucleotide between brackets and bold indicates the position of the SNP, 141 nucleotides from the start. The wildtype nucleotide is “A”, as shown here.

Figure 18 Cucumber *Cullin1* protein sequence wildtype, SEQ ID NO.18. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The wildtype amino acid is ‘I’, as shown here.

Figure 19 Melon *Cullin1* protein sequence wildtype, SEQ ID NO.19. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The wildtype amino acid is ‘I’, as shown here.

Figure 20 Squash *Cullin1* protein sequence wildtype, SEQ ID NO.20. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The wildtype amino acid is ‘I’, as shown here.

Figure 21 Watermelon *Cullin1* protein sequence wildtype, SEQ ID NO.21. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The wildtype amino acid is ‘I’, as shown here.

Figure 22 Eggplant *Cullin1* protein sequence wildtype, SEQ ID NO.22. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The wildtype amino acid is ‘I’, as shown here.

Figure 23 Tomato Cullin1 protein sequence wildtype, SEQ ID NO.23. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 24 Pepper Cullin1 protein sequence wildtype, SEQ ID NO.24. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 25 Cabbage Cullin1 protein sequence wildtype, SEQ ID NO.25. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 46 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 26 Carrot Cullin1 protein sequence wildtype, SEQ ID NO.26. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 48 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 27 Celery Cullin1 protein sequence wildtype, SEQ ID NO.27. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 28 Chicory Cullin1 protein sequence wildtype, SEQ ID NO.28. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 29 Endive Cullin1 protein sequence wildtype, SEQ ID NO.29. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 30 Leek Cullin1 protein sequence wildtype, SEQ ID NO.30. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 31 Lettuce Cullin1 protein sequence wildtype, SEQ ID NO.31. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 32 Radish Cullin1 protein sequence wildtype, SEQ ID NO.32. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 46 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 33 Spinach Cullin1 protein sequence wildtype, SEQ ID NO.33. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 34 Beetroot Cullin1 protein sequence wildtype, SEQ ID NO.34. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The wildtype amino acid is 'I', as shown here.

Figure 35 Cucumber *Cullin1* coding sequence “modified” SEQ ID NO. 35. The nucleotide between brackets and bold indicates the position of the SNP 147 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 36 Melon *Cullin1* coding sequence “modified” SEQ ID NO. 36. The nucleotide between brackets and bold indicates the position of the SNP 147 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 37 Squash *Cullin1* coding sequence “modified” SEQ ID NO. 37. The nucleotide between brackets and bold indicates the position of the SNP 147 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 38 Watermelon *Cullin1* coding sequence “modified” SEQ ID NO. 38. The nucleotide between brackets and bold indicates the position of the SNP 147 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 39 Eggplant *Cullin1* coding sequence “modified” SEQ ID NO. 39. The nucleotide between brackets and bold indicates the position of the SNP 141 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 40 Tomato *Cullin1* coding sequence “modified” SEQ ID NO. 40. The nucleotide between brackets and bold indicates the position of the SNP 141 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 41 Pepper *Cullin1* coding sequence “modified” SEQ ID NO. 41. The nucleotide between brackets and bold indicates the position of the SNP 141 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 42 Cabbage *Cullin1* coding sequence “modified” SEQ ID NO. 42. The nucleotide between brackets and bold indicates the position of the SNP 138 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 43 Carrot *Cullin1* coding sequence “modified” SEQ ID NO. 43. The nucleotide between brackets and bold indicates the position of the SNP 144 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 44 Celery *Cullin1* coding sequence “modified” SEQ ID NO. 44. The nucleotide between brackets and bold indicates the position of the SNP 141 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 45 Chicory *Cullin1* coding sequence “modified” SEQ ID NO. 45. The nucleotide between brackets and bold indicates the position of the SNP 141 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 46 Endive *Cullin1* coding sequence “modified” SEQ ID NO. 46. The nucleotide between brackets and bold indicates the position of the SNP 141 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 47 Leek *Cullin1* coding sequence “modified” SEQ ID NO. 47. The nucleotide between brackets and bold indicates the position of the SNP 147 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 48 Lettuce *Cullin1* coding sequence “modified” SEQ ID NO. 48. The nucleotide between brackets and bold indicates the position of the SNP 141 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 49 Radish *Cullin1* coding sequence “modified” SEQ ID NO. 49. The nucleotide between brackets and bold indicates the position of the SNP 138 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 50 Spinach *Cullin1* coding sequence “modified” SEQ ID NO. 50. The nucleotide between brackets and bold indicates the position of the SNP 141 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 51 Beetroot *Cullin1* coding sequence “modified” SEQ ID NO. 51. The nucleotide between brackets and bold indicates the position of the SNP 141 bp from the start. The modified nucleotide is “G”, as shown here.

Figure 52 Cucumber Cullin1 protein sequence “modified” SEQ ID NO. 52. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 53 Melon Cullin1 protein sequence “modified” SEQ ID NO. 53. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 54 Squash Cullin1 protein sequence “modified” SEQ ID NO. 54. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 55 Watermelon Cullin1 protein sequence “modified” SEQ ID NO. 55. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 56 Eggplant Cullin1 protein sequence “modified” SEQ ID NO. 56. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 57 Tomato Cullin1 protein sequence “modified” SEQ ID NO. 57. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 58 Pepper Cullin1 protein sequence “modified” SEQ ID NO. 58. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 59 Cabbage Cullin1 protein sequence “modified” SEQ ID NO. 59. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 46 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 60 Carrot Cullin1 protein sequence “modified” SEQ ID NO. 60. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 48 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 61 Celery Cullin1 protein sequence “modified” SEQ ID NO. 61. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 62 Cichory Cullin1 protein sequence “modified” SEQ ID NO. 62. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 63 Endive Cullin1 protein sequence “modified” SEQ ID NO. 63. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 64 Leek Cullin1 protein sequence “modified” SEQ ID NO. 64. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 49 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 65 Lettuce Cullin1 protein sequence “modified” SEQ ID NO. 65. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 66 Radish Cullin1 protein sequence “modified” SEQ ID NO. 66. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 46 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 67 Spinach Cullin1 protein sequence “modified” SEQ ID NO. 67. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 68 Beetroot Cullin1 protein sequence “modified” SEQ ID NO. 68. The amino acid between brackets and bold indicates the position of the amino acid change caused by the SNP, 47 amino acids from the start. The modified amino acid is ‘M’, as shown here.

Figure 69 The multiple sequence alignment of the Cullin1 coding sequence orthologues (wild type) of various crops: brassica (SEQ ID NO. 8), radish (SEQ ID NO. 15), beet (SEQ ID NO. 17), spinach (SEQ ID NO. 16), leek (SEQ ID NO. 13), squash (SEQ ID NO. 3), watermelon (SEQ ID NO. 4), cucumber (SEQ ID NO. 1), melon (SEQ ID NO. 2), tomato (SEQ ID NO. 6), eggplant (SEQ ID NO. 5), pepper (SEQ ID NO. 7), lettuce (SEQ ID NO. 14), chicory (SEQ ID NO. 11), endive (SEQ ID NO. 12), carrot (SEQ ID NO. 9), celery (SEQ ID NO. 10). Between brackets and

bold is indicated the SNP on position 147 in the Cucumber coding sequence and for other crops on a position corresponding to this position.

Figure 70 The multiple sequence alignment of the Cullin1 amino acid orthologues (wild type) of various crops: beet (SEQ ID NO. 34), spinach (SEQ ID NO. 33), arabidopsis (SEQ ID NO. 69), brassica (SEQ ID NO. 25), radish (SEQ ID NO. 32), leek (SEQ ID NO. 30), eggplant (SEQ ID NO. 22), tomato (SEQ ID NO. 23), pepper (SEQ ID NO. 24), cucumber (SEQ ID NO. 18), melon (SEQ ID NO. 19), watermelon (SEQ ID NO. 21), squash (SEQ ID NO. 20), celery (SEQ ID NO. 27), lettuce (SEQ ID NO. 31), endive (SEQ ID NO. 29), chicory (SEQ ID NO. 28), carrot (SEQ ID NO. 26). Between brackets and bold is indicated the SNP on position 49 in the Cucumber amino acid sequence and for other crops on a position corresponding to this position.

EXAMPLES

EXAMPLE 1

Identification of the Cullin1 gene modification in Cucumis sativus

A F2 crossing population made from a commercially available “high wire” cucumber variety, “Hi Lisa”, was used to create a new genetic map. In total, 375 markers and 398 F2 lines are used. A QTL analysis performed on these crossing populations revealed a major QTL on chromosome 6 that causes a smaller internode length and a smaller leaf surface. Sequencing of the peak marker of the QTL revealed a SNP present in the marker sequence. The particular sequence was polymorphic in the crossing population. The nucleotide sequence of the major QTL on chromosome 6 was identified by means of BLAST. The best BLAST hits for the sequence all resembled the sequence of the *Cullin1* gene.

EXAMPLE 2

Validation of the effect of SNP in the Cullin1 gene on internode length and plant leaf area.

Different populations of *Cucumis sativus* plants, each made with different commercially available ‘high wire’ varieties, having the phenotype of shorter internodes, and smaller leaves, were phenotypically and genetically analysed. See **Table 1** for the phenotypic and genetic data. Plants were measured 3 weeks after sowing. For estimating the leaf area, from the second leaf on (not the cotyledons) all leafs present were measured, and the width and the length of a leaf were measured and multiplied with each other to obtain a (roughly estimation) score for leaf area. In the third column of **Table 1**, the different haplotypes for the *Cullin1* gene SNP are given. The score A means that the SNP marker scored homozygous wildtype *Cullin1* gene, B means homozygous modified *Cullin1* gene.

In the first population, plants that are homozygous for the modified Cullin1 gene (B), show an internode length that is on average 63% of the length of the plants that score homozygous for the wild type *Cullin1* gene (A). The B plants (homozygous for the modified *Cullin1* gene) show a leaf area that is on average 38% of the length of the A plants (homozygous for the wild type Cullin1 gene).

In the second population, B plants show on average an internode length that is 78% and a leaf area that is 39% of the A plants of the same population.

In the third population, the B plants show on average an internode length of 66% and a leaf area of 47%, compared to the average of the A plants.

Table 1

Results of phenotypic and genotypic analyses of 3 different cucumber lines derived from commercially available high wire varieties. The internode length is defined as the length of the main stem divided by the number of internodes. The leaf area is roughly estimated by measuring from all leafs present on a plant starting with the second leaf (not the cotyledons) the length and the width, multiplying length and width, and computing the average per plant. For the scores of the Cullin1 SNP, score A means that the marker scored A homozygous (wildtype), B means homozygous (modified).

	Plant material	Cullin1 haplotype	Internode length (H /I)	Leaf area (J x K)
5	BPQ -3	B	6	210
	BPQ -8	B	4,7	210
	BPQ -10	B	5,8	289
	BPQ -12	B	4,8	210
	BPQ -5	A	6,6	462
10	BPQ -6	A	9,3	550
	BPQ -4	A	7,6	575
	BPQ -7	A	8,4	650
	BPQ -1	A	8,3	725
	BPQ -11	A	8,5	676
15	BPQ -9	A	10,3	650
	13L.3402-2 pl-1	B	4,3	208
	13L.3402-2 pl-15	B	5,7	285
	13L.3402-2 pl-7	B	5,8	238
	13L.3402-2 pl-9	B	6,1	216
20	13L.3402-2 pl-17	B	6,6	238
	13L.3402-2 pl-6	A	6,7	550
	13L.3402-2 pl-3	A	6,8	616
	13L.3402-2 pl-10	A	6,8	567
	13L.3402-2 pl-13	A	7,2	675
25	13L.3402-2 pl-5	A	8	690
	13L.3402-2 pl-8	A	8,6	546
	12L. 1480-2 pl-4	B	3,9	156
	12L. 1480-2 pl-8	B	4,1	195
	12L. 1480-2 pl-6	B	4,3	238
30	12L. 1480-2 pl-2	B	4,4	195
	12L. 1480-2 pl-11	B	4,8	208
	12L. 1480-2 pl-5	B	4,9	224
	12L. 1480-2 pl-9	A	5,1	336
	12L. 1480-2 pl-10	A	7	480
35	12L. 1480-2 pl-14	A	7,3	437
	12L. 1480-2 pl-12	A	7,4	483

EXAMPLE 3

Creation of a melon plant with a Cullin1 gene mutation; Genetic modification of plants by ethyl methane sulfonate (ems) and identification of plants which have the mutated Cullin1 gene.

- Melon seeds were treated with EMS by submergence of approximately 5000 seeds
 5 into an aerated solution of 0.07% (w/v) EMS during 24 hours at room temperature. The treated seeds were germinated on paper in a small plastic container and the resulting plants were grown and self-pollinated in a greenhouse to produce seeds. After maturation, these seeds were harvested and bulked in one pool. The resulting pool of seeds was used as starting material to identify the individual plants that show smaller internode length and/or smaller leaf area.
- 10 The Cullin1 mutants which were obtained were grown in a greenhouse in order to produce lines by self-fertilisation. Melon plant lines were analysed to confirm the smaller internode length and smaller leaf area. When a line was segregating for smaller internode length and/or smaller leaf area, plants were selected and after an additional cycle of inbreeding Cullin1 lines were selected. Cullin1 mutants were identified by their shorter internodes and/or smaller leaf area
 15 in comparison with control lines.

EXAMPLE 4

Identification of crops comprising the Cullin1 gene

- A Basic Local Alignment Search Tool (BLAST) program was used to compare the *Cullin1*
 20 gene as identified in SEQ ID NO:1 and the protein sequence as identified in SEQ ID NO:18 against the nucleotide coding sequences and protein sequences of other crop plants. This resulted in the identification of candidate *Cullin1* orthologous genes in other plants. The multiple sequence alignment of the Cullin1 coding sequence confirmed that these were orthologous *Cullin1* genes, see Fig . 69. Multiple sequence alignment of the protein sequences confirmed that these were
 25 orthologous Cullin1 proteins, see **Fig. 70**.

CONCLUSIES

1. Gemodificeerd *Cullin1* gen omvattende een modificatie in de wild type *Cullin1* nucleotidesequentie van SEQ ID No.1: SEQ ID No. 2: SEQ ID No. 3: SEQ ID No. 4: SEQ ID No. 5: SEQ ID No. 6: SEQ ID No. 7: SEQ ID No. 8: SEQ ID No. 9: SEQ ID No. 10: SEQ ID No. 11: SEQ ID No. 12: SEQ ID No. 13: SEQ ID No. 14: SEQ ID No. 15: SEQ ID No. 16: SEQ ID No. 17 welke leidt tot een verandering in de wild type Cullin1 aminozuursequentie van : SEQ ID No. 18: SEQ ID No. 19: SEQ ID No. 20: SEQ ID No. 21: SEQ ID No. 22: SEQ ID No. 23: SEQ ID No. 24: SEQ ID No. 25: SEQ ID No. 26: SEQ ID No. 27: SEQ ID No. 28: SEQ ID No. 29: SEQ ID No. 30: SEQ ID No. 31: SEQ ID No. 32: SEQ ID No. 33: SEQ ID No. 34 respectievelijk.
2. Gemodificeerd *Cullin1* gen volgens conclusie 1, waarbij de modificatie van de nucleotidesequentie een SNP is op een positie dat leidt tot een verandering in de aminozuursequentie van het Cullin1 eiwit.
3. Gemodificeerd *Cullin1* gen volgens conclusie 1 of 2, waarbij de verandering in de aminozuursequentie een substitutie is.
4. Gemodificeerd *Cullin1* gen volgens een der conclusies 1-3, waarbij de verandering in de aminozuursequentie in het deel van het Cullin1 eiwit tussen de aminozuren op posities 30-60, bij voorkeur in het deel tussen de aminozuren op posities 40-55 van de komkommersequentie van SEQ ID No. 18, of, op een positie overeenkomend daarmee voor andere gewassen, ligt.
5. Gemodificeerd *Cullin1* gen volgens een der conclusies 1-4, waarbij de modificatie in de aminozuursequentie in het deel van het Cullin1 eiwit dat SKP1 en/of ETA-2 bindt ligt.
6. Gemodificeerd *Cullin1* gen volgens een der conclusies 1-5, waarbij de modificatie van de nucleotidesequentie een SNP is op positie 147 van de komkommer nucleotidesequentie van SEQ ID No. 1, of, voor een ander gewas dan komkommer, op een positie overeenkomend met positie 147 van de komkommer nucleotidesequentie van SEQ ID No. 1, wat leidt tot een aminozuurverandering op positie 49 van de komkommer aminozuursequentie van SEQ ID No. 18, of, voor een ander gewas dan komkommer, op een positie overeenkomend met positie 49 van de komkommer aminozuursequentie van SEQ ID No. 18.

7. Gemodificeerd *Cullin1* gen volgens conclusie 6, waarbij de SNP een verandering van Adenine, Cytosine of Thymine naar Guanine omvat.
- 5 8. Gemodificeerd *Cullin1* gen volgens een der conclusies 1-7, waarbij in komkommer de SNP een verandering van Adenine, Cytosine of Thymine naar Guanine omvat en de aminozuursubstitutie een verandering van Isoleucine naar Methionine omvat.
9. Plant, omvattende het gemodificeerde *Cullin1* gen volgens een der conclusies 1-8.
- 10 10. Plant volgens conclusie 9, waarbij de plant tot een soort behoort gekozen uit de groep bestaande uit *Cucumis sativus*, *Cucumis melo*, *Curcubita pepo*, *Citrullus lanatus*, *Solanum melongena*, *Solanum lycopersicum*, *Capsicum annuum*, *Brassica oleracea*, *Daucus carota*, *Apium graveolens*, *Cichorium intybus*, *Cichorium endivia*, *Allium ampeloprasum*, *Lactuca sativa*, *Raphanus sativus*, *Spinacia oleracea*, en *Beta vulgaris*.
- 15 11. Plant volgens conclusie 9 of 10, waarbij het gemodificeerde *Cullin1* gen ertoe leidt dat de plant een compact groeifenotype heeft ten opzichte van een isogene plant van dezelfde soort niet omvattende de modificatie van het *Cullin1* gen.
- 20 12. Plantzaad, omvattende het gemodificeerde *Cullin1* gen volgens een der conclusies 1-8.
13. Plantzaad volgens conclusie 11, waarbij de plantzaad tot een soort behoort gekozen uit de groep bestaande uit *Cucumis sativus*, *Cucumis melo*, *Curcubita pepo*, *Citrullus lanatus*, *Solanum melongena*, *Solanum lycopersicum*, *Capsicum annuum*, *Brassica oleracea*, *Daucus carota*, *Apium graveolens*, *Cichorium intybus*, *Cichorium endivia*, *Allium ampeloprasum*, *Lactuca sativa*, *Raphanus sativus*, *Spinacia oleracea*, en *Beta vulgaris*.
- 25 14. Propagatiemateriaal dat zich kan ontwikkelen in en/of dat afkomstig is van een plant volgens een der conclusies 9-10, waarbij het propagatiemateriaal het gemodificeerde *Cullin1* gen volgens een der conclusies 1-8 omvat en waarbij het propagatiemateriaal is gekozen uit de groep bestaande uit een microspore, pollen, vruchtbeginsel, zaadknop, embryo, embryozak, eicel, stek, wortel, hypocotyl, cotyledon, stengel, blad, bloem, helmknop, zaad, meristematische cel, protoplast, of cel, of weefselkweek daarvan.
- 30 15. Gebruik van het gemodificeerde *Cullin1* gen volgens een der conclusies 1-8 voor de ontwikkeling van een plant welke een compact groeifenotype heeft ten opzichte van een isogene plant niet omvattende het gemodificeerde *Cullin1* gen.
- 35

16. Gebruik van het gemodificeerde *Cullin1* gen volgens een der conclusies 1-8 of een deel daarvan voor het identificeren van een plant welke een compact groeifenotype heeft ten opzichte van een isogene plant niet omvattende het gemodificeerde *Cullin1* gen.
- 5 17. Gebruik van een van de sequenties van SEQ ID No: 1 – SEQ ID No: 17 en /of SEQ ID No: 35 – SEQ ID No: 51 of een deel daarvan, of een merker afgeleid daarvan, als een merker voor het identificeren van een plant welke een compact groeifenotype heeft ten opzichte van een isogene plant niet omvattende het gemodificeerde *Cullin1* gen.
- 10 18. Gebruik volgens een der conclusies 15-17, waarbij de plant tot een soort behoort gekozen uit de groep bestaande uit *Cucumis sativus*, *Cucumis melo*, *Cucurbita pepo*, *Citrullus lanatus*, *Solanum melongena*, *Solanum lycopersicum*, *Capsicum annuum*, *Brassica oleracea*, *Daucus carota*, *Apium graveolens*, *Cichorium intybus*, *Cichorium endivia*, *Allium ampeloprasum*, *Lactuca sativa*, *Raphanus sativus*, *Spinacia oleracea*, en *Beta vulgaris*.
- 15 19. Werkwijze voor het verkrijgen van een plant welke een compact groeifenotype heeft omvattende:
 - a) het kruisen van een plant omvattende het gemodificeerde *Cullin1* gen volgens een der
 - 20 conclusies 1-8 met een plant niet omvattende het gemodificeerde *Cullin1* gen, om een F1 populatie te verkrijgen;
 - b) het optioneel uitvoeren van een of meerdere rondes van zelfbestuiving en/of het kruisen van een plant uit de F1 om een verdere generatie populatie te verkrijgen;
 - c) het selecteren van een plant welke een compact groeifenotype en het gemodificeerde
 - 25 *Cullin1* gen volgens de uitvinding heeft.
- 20 20. Werkwijze voor het verkrijgen van een plant welke een compact groeifenotype heeft omvattende:
 - a) het kruisen van een plant omvattende het gemodificeerde *Cullin1* gen volgens de
 - 30 huidige uitvinding met een andere plant omvattende het gemodificeerde *Cullin1* gen, om een F1 populatie te verkrijgen;
 - b) het optioneel uitvoeren van een of meerdere rondes van zelfbestuiving en/of het kruisen van een plant uit de F1 om een verdere generatie populatie te verkrijgen; en
 - c) het selecteren van een plant welke een compact groeifenotype en het gemodificeerde
 - 35 *Cullin1* gen volgens de uitvinding heeft.

21. Werkwijze volgens conclusie 19 of 20, waarbij de plant tot een soort behoort gekozen uit de groep bestaande uit *Cucumis sativus*, *Cucumis melo*, *Curcubita pepo*, *Citrullus lanatus*, *Solanum melongena*, *Solanum lycopersicum*, *Capsicum annuum*, *Brassica oleracea*, *Daucus carota*, *Apium graveolens*, *Cichorium intybus*, *Cichorium endivia*,
 5 *Allium ampeloprasum*, *Lactuca sativa*, *Raphanus sativus*, *Spinacia oleracea*, en *Beta vulgaris*.
22. Merker voor het identificeren van een plant welke een compact groeifotype heeft, omvattende het gemodificeerde *Cullin1* gen volgens een der conclusies 1-8 of een deel
 10 daarvan dat de modificatie omvat.
23. Merker volgens conclusie 22, waarbij de modificatie een nucleotidesubstitutie is op of rondom positie 147 van SEQ ID No:1 van komkommer, of, in het geval van een ander gewas dan komkommer, op of rondom een positie overeenkomend met positie 147 van
 15 SEQ ID No:1 van komkommer, welke modificatie leidt tot een aminozuursubstitutie in het Cullin1 eiwit.
24. Werkwijze voor het selecteren van een plant welke een compact groeifotype heeft uit een populatie van planten, omvattende het detecteren van de aanwezigheid of afwezigheid
 20 van een guanine op positie 147 van de komkommer nucleotidesequentie van SEQ ID NO:1, of, voor een ander gewas dan komkommer, op een positie overeenkomend met positie 147 van de komkommer nucleotidesequentie van SEQ ID NO: 1, in het genoom van een plant van een populatie van planten, en het selecteren van een plant omvattende een guanine op positie 147 van SEQ ID NO:1, of, voor een ander gewas dan komkommer,
 25 op een positie overeenkomend met positie 147 van de komkommer nucleotidesequentie van SEQ ID No: 1.

Fig. 1

ATGACAATGGGCGAGCGGAAGACTATTGACTTGGAGCAGGGATGGGAGTTTATGCAGAAGGGTATC
ACAAAGTTGAAGAACATTCTCGAGGGCTTGCCTGAGCCTCAGTTCAGCTCCGAGGACTACATGATG
CTTTACACTACCAT **[A]** TATAACATGTGCACCCAAAAGCCGCCGCATGATTACTCCCAGCAGCTGT
ATGATAAATATCGTGAATCTTTTGAAGAGTACATCACTTCTATGGTCTTACCATCCTTGAGGGAGA
AGCACGATGAGTTCATGTTGAGAGAACTAGTAAAAAGGTGGACAAACCATAAAAGTCATGGTGAGGT
GGCTTTCTCGCTTCTTCCACTATCTTGATCGGTACTTCATCGCTCGAAGGTCACTTCCACCTCTAA
ATGAAGTTGGCCTCACATGCTTCCGCGAATTGGTGTACAAAGAGCTAAATAGTAAAGTGAGGGATG
CAGTAATTTTCATTGATTGATCAAGAACGTGAAGGAGAACAGATTGACAGAGCTCTACTGAAGAATG
TACTAGATATATTTGTGGAAATTGGTATGGGGCAAATGGATTACTATGAAAATGACTTTGAAGCTG
CCATGCTTAAAGATACTGCTGCTTATTACTCTAGGAAGGCTTCCAATTGGATCCTAGAAGATTCTT
GTCCCGATTATATGCTTAAAGCAGAGGAGTGCTTGAAACGAGAAAAGGATAGGGTTTCCCACTATT
TGCACTCTAGTAGCGAGCCAAAGTTGTTGGAGAAAGTTCAACATGAACTATTATCTGTTTATGCTA
CTCAACTGCTGGAAAAAGAGCATTACAGGATGCCATGCATTGCTTAGAGATGACAAGGTGGAAGATT
TGTCAAGGATGTTCCGTCTATTCTCCAAAATACCGAAGGGACTGGATCCAGTTTCCAACATATTTA
AGCAGCATGTAAGTCTGAAGGAACAGCACTGGTCAAACAGGCAGAAGATGCTGCAAGTAACAAGA
AGGCTGAGAAAAAGGACATAGTTGGTCTGCAGGAACAGGTTTTTGTAAAGAAAAGTGATTGAGCTTC
ACGACAAGTACTTGGCTTATGTGAATGATTGTTTTCCAAAACACACACTTTTCCATAAGGCTCTCA
AGGAAGCTTTTGAAGTATTTTGAATAAGGGTGTTGCTGGAAGTTCTAGTGCAGAATTGCTTGCTA
CCTTTTGTGATAACATCCTTAAGAAAGGTGGGAGTGAGAAGTTGAGTGATGAAGCAATCGAGGAGA
CACTTGAGAAGGTTGTGAAGTTGTTGGCATAACATTTGCGACAAAGATCTGTTTGCTGAATTCTATA
GAAAAAACTTGCCCGAAGGCTTCTCTTTGACAAGAGCGCGAACGATGACCACGAGAGAAGTATAT
TGACCAAATTGAAGCAACAATGTGGTGGTCAGTTCACCTTAAGATGGAGGGAATGGTTACTGATT
TGACTTTGGCAAGGGGAGAACCAAACCTAGTTTTTGAGGAGTATCTGAGCAATAATCCACAAGCGAGTC
CTGGCATCGACCTGACTGTTACTGTTTTAACTACTGGATTTTGGCCAAGCTACAAGTCTTTTGACC
TCAACCTGCCGCGCAGAGATGGTAAAGTGTTGAAGTTTTTCAAGAGAGTTTTATCAAACAAAAACCA
AGCATCGAAAACCTTACATGGATTTACTCATTGGGTACTTGTAACATCAGTGGAATAATTGAACCGA
AAACGATGGAGCTGATTGTGACAACTTATCAGGCTTCTGCCCTGTTGCTATTCAATTCTTCGGATA
GACTAAGTTACTCGGAAATCATGACACAATTAAATTTGAGTGACGATGATGTAGTTAGACTACTCC
ACTCGTTGTCATGTGCCAAGTATAAAATTCTTAATAAGGAACCAAATACGAAAACCATCTCTCCGA
ACGATCATTTTGAAGTTCAATGCAAAATTCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGC
CTGTGGATGAGAAAAAGAAAGTCATTGAAGATGTTGACAAGGATCGAAGGTATGCTATTGACGCCT
CAATCGTGCGTATCATGAAGAGTCGGAAGTTCTTGGTCATCAGCAACTAGTGATGGAGTGCGTCG
AGCAATTGGGCCGTATGTTCAAGCCCGATTTCAAGGCGATAAAGAAGAGAATTGAAGACCTGATCA
CTCGGGATTATCTAGAGAGAGACAAAGACAACCCCCACTTGTTTAGGTACTTGGCTTGA

Fig. 2

ATGACAATGGGCGAGCGGAAGACTATTGACTTGGAACAGGGATGGGAGTTTATGCAGAAGGGTATC
 ACAAAGTTGAAGAACATTCTTGAGGGCTTGCCTGAGCCCCAGTTCAGCTCCGAGGACTACATGATG
 CTTTACACTACCAT **[A]** TATAACATGTGCACCCAAAAGCCGCCGCATGATTACTCCCAGCAGCTGT
 ATGATAAATATCGTGAATCTTTTGAAGAGTACATCACTTCTATGGTCTTACCATCCTTGAGGGAGA
 AGCATGACGAGTTCATGTTGAGAGAACTAGTCAAAAGGTGGACAAACCATAAAAGTCATGGTGAGGT
 GGCTTTCTCGCTTCTTCCACTATCTTGATCGGTACTTCATCGCTCGAAGGTCACTTCCACCTCTAA
 ATGAAGTTGGCCTCACATGCTTCCGCGAATTGGTGTACAAAGAGCTAAACAGTAAAGTGAGGGATG
 CAGTAATCTCATTGATTGATCAAGAACGTGAAGGAGAACAGATTGACAGAGCTCTACTGAAGAATG
 TATTAGATATATTTGTGGAAATTGGTATGGGGCAAATGGATTACTATGAAAATGACTTTGAAGCTG
 CCATGCTTAAAGATACTGCTGCTTATTACTCTAGGAAGGCTTCCAATTGGATCCTAGAAGATTCTT
 GTCCCGATTATATGCTAAAAGCAGAGGAGTGCTTGAAGCGAGAAAAGGATAGGGTTTCCCACTATT
 TGCACTCTAGTAGCGAGCCAAAGTTGTTGGAGAAAGTTCAACACGAACTGTTATCTGTGTATGCTA
 CTCAACTGCTGGAAAAAGAGCATTACAGGATGCCATGCATTGCTTAGAGATGACAAGGTGGAAGATT
 TGTCAAGGATGTTCCGTCTCTTCTCCAAAATACCGAAGGGATTGGACCCAGTTTCCAACATATTTA
 AGCAGCATGTAAGTCTGAAGGAACAGCACTGGTCAAACAGGCAGAAGATGCTGCAAGTAACAAGA
 AGGCCGAGAAAAAGGACATAGTTGGTCTGCAGGAACAGGTTTTTTGTAAGAAAAGTGATTGAGCTTC
 ACGACAAGTACTTTGGCTTATGTGAATGATTGTTTTCCAAAACCACACACTTTTCCATAAGGCTCTCA
 AGGAAGCTTTTGAAGTCTTTTGAATAAGGGTGTGCTGGAAGTTCTAGTGCAGAATTGCTTGCTA
 CCTTCTGCGATAACATCCTTAAGAAAGGTGGGAGTGAGAAGTTGAGTGATGAAGCAATCGAAGAGA
 CACTTGAGAAGGTTGTGAAGTTGTTGGCATAACATCTGCGACAAAGATCTGTTTGCTGAATTCTATA
 GAAAAAAaCTTGCCCGAAGGCTTCTCTTTGATAAGAGCGCCAACGATGACCACGAGAGAAGTATAT
 TGACCAAATTGAAGCAACAATGTGGTGGTCAGTTCACCTTAAGATGGAGGGAATGGTTACTGATT
 TGACTTTGGCAAGGGAGAACCAAACCTAGTTTTCGAAGAGTATCTGAGCAATAATCCACAAGCTAGTC
 CTGGAATCGACCTAACTGTTACTGTTTTGACTACTGGATTTTGGCCAAGCTACAAGTCTTTTGACC
 TCAACCTGCCGGCGGAGATGGTAAAGTGTGTTGAAGTTTTTTCAGAGAGTTTTATCAAACAAAAACCA
 AGCATAGAAAACCTTACATGGATTTACTCATTGGGTACTTGTAACATCAGTGGAATAATTGAACCGA
 AGACGATGGAGCTGATTGTGACAACATATCAGGCTTCTGCCCTGTTGCTATTCAATTCTTCGGACA
 GACTAAGTTACTCCGAAATCATGACACAATTAAATTTGAGTGATGATGATGTTGTTAGACTGCTCC
 ACTCATTGTGCTGTGCCAAGTATAAAATTCTTAATAAGGAGCCAAATACGAAAACCATCTCACCGA
 ACGATCATTTTGAAGTTCAATGCAAAATTCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGC
 CTGTGGATGAGAAAAaGAAAGTCATTGAAGATGTTGACAAGGATCGAAGGTATGCTATTGACGCCT
 CAATCGTGCGTATCATGAAGAGTCGAAAAGTTCTTGGTCATCAGCAACTAGTGATGGAGTGCGTCG
 AGCAATTGGGTCGTATGTTCAAGCCCGATTTCAAGGCGATAAAGAAGAGAATTGAAGACCTGATCA
 CTCGGGACTATCTAGAGAGAGACAAAGACAACCCCCACTTGTTTAGGTACTTGGCTTGA

Fig. 3

ATGACAATGGGTGAGCGGAAGACTATTGACTTGGAGCAAGGATGGGAGTTTATGCAGAAGGGAATC
 AAAAAATTGAAGAACATTCTGGAAGGATTGCCTGAGCCACAGTTCAGCTCCGAGGACTACATGATG
 CTTTACACTACAAT **[A]** TATAACATGTGTACCCAGAAGCCACCGCATGATTACTCCCAGCAGCTGT
 ATGATAAATACCGCGAATCGTTTGAGGAGTACATCAGTTCTATGGTTTTACCATCCTTGAGGGAGA
 AGCATGACGAATTTATGTTGAGAGAACTGGTCAAAAGGTGGACCAACCATAAAAGTCATGGTGAGGT
 GGCTTTCTCGCTTCTTCCACTATCTTGATCGATACTTCATTGCTCGAAGGTCACTTCCACCTCTCA
 ATGAAGTTGGCCTCACTTGCTTCCGTGAATTGGTGTACAAAGAGCTAAACAGTAAAGTGAGGGATG
 CAGTAATTTTCATTGATCGATCAAGAACGTGAAGGAGAGCAGATTGACAGAGCTCTGTTGAAGAACG
 TGTGGATATATTTGTGGAGATTGGGATGGGGCAAATGGATTATTATGAAAATGACTTTGAAGCTG
 CCATGCTTAAAGATACTGCTGCTTACTACTCTAGGAAGGCATCAAATTGGATCTTAGAAGATTCTT
 GTCCTGATTATATGCTAAAAGCAGAGGAGTGCTTGAGACGAGAAAAGGACCGAGTTTCTCACTATC
 TGCACTCTAGTAGCGAGCCAAAGTTATTGGAGAAAGTTCAACATGAACTATTGTCTGTTTATGCTA
 CTCAACTGCTGGAGAAAAGAGCATTTCAGGATGCCATGCATTGCTTAGAGATGACAAGGTGGAAGATT
 TGTCAAGGATGTTCCGTCTCTTCTCCAAAATACCCAAGGGATTGGACCCAGTTTCCAACATATTTA
 AGCAGCATGTCCTGCTGAAGGAACAGCATTAGTCAAACAGGCAGAAGACGCTGCAAGTAACAAGA
 AGGCCGAGAAAAAGGACATCGTTGGTCTGCAAGAACAGGTTTTTGTTAGAAAAGTGATTGAGCTTC
 ACGACAAGTACTTGGCATATGTGAATGATTGTTTCCAAAACACACACTTTTTTACAAGGCTCTCA
 AGGAAGCTTTTGAAGTCTTTTGAATAAGGGTGTTGCTGGAAGTTCTAGTGCAGAATTACTTGCTA
 CCTTTTGTGATAACATCCTTAAGAAAGGTGGGAGTGAGAAGTTGAGTGATGAAGCAATTGAGGAAA
 CACTCGAGAAGGTGCTGAAATTGCTGGCGTATATCTGCGACAAAGATCTGTTTGCTGAATTCTATA
 GAAAAAACTCGCCCGAAGGCTTCTCTTCGACAAGAGTGCGAATGATGACCACGAGAGAAGTATAC
 TGACGAAATTGAAGCAACAATGTGGTGGTCAGTTTACCTCTAAGATGGAGGGAATGGTCACGGATT
 TGACACTGGCAAGGGAGAACCAAACCTAGTTTTGAGGAATATCTGAGCAATAATCCACAAGCTAGTC
 CTGGAATCGACTTGACCGTTACCGTTTTGACCACTGGTTTTTGGCCAAGCTACAAGTCTTTTGACC
 TCAACCTGCCGGCGGAGATGGTAAAGTGTTGAAGTTTTTCAGGGAATTTTATCAAACAAAAACCA
 AGCACAGAAAACCTTACGTGGATTTACTCGTTGGGTACCTGTAACATCAGCGGAAAATTCGAACCGA
 AAACGATGGAGCTGATCGTGACAACCTATCAGGCTTCTGCCCTGCTGCTTTTCAATTCCTCGGATA
 AACTAAGTTACTCCGAGATCATGACTCAATTAACTTGAGTGACGATGATGTTGTTAGACTGCTCC
 ACTCGTTGTCGTGTGCGAAGTATAAAATTCTTAACAAGGAGCCAAATACGAAAACCATCTCTCCGA
 ACGATCATTTTGAAGTTCAACGCAAAATTCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGC
 CTGTGGATGAGAAAAAGAAAGTAATAGAAGATGTTGACAAGGATCGAAGATATGCTATCGATGCCT
 CGATCGTGCGTATCATGAAGAGTAGGAAAGTTCTGGGTACCAGCAGTTAGTGATGGAGTGCGTCG
 AGCAACTGGGTGCTATGTTCAAGCCTGATTTCAAGGCGATAAAGAAGAGAATCGAAGATCTGATCA
 CTCGTGACTATTTAGAGAGAGACAAAGACAACCCCACTTGTTTAGGTACTTGGCTTGA

Fig. 4

ATGACAATGGGCGAGCGGAAGACTATTGACTTGGAACAAGGATGGGAGTTTATGCAGAAGGGAATC
 ACAAAGTTGAAGAACATTCTTGAGGGCTTGCCTGAGCCTCAGTTCAGCTCCGAGGACTACATGATG
 CTTTATACCACCAT **[A]** TACAACATGTGCACACAAAAGCCGCCACATGATTACTCCCAGCAGCTAT
 ACGATAAATACCGTGAATCTTTTGAGGAGTATATCACTTCTATGGTCTTACCATCCTTGAGGGAGA
 AGCATGACGAGTTCATGTTGAGAGAACTGGTCAAAAGGTGGACGAACCATAAAAGTCATGGTGAGGT
 GGCTTTCTCGCTTCTTCCACTATCTTGACCGATACTTCATTGCTCGAAGATCACTTCCACCTCTCA
 ACGAAGTTGGCCTCACATGCTTCCGTGAATTGGTGTACAAAGAGCTAAACAGTAAAGTGAGGGATG
 CAGTAATTTTATTGATTGATCAAGAACGTGAAGGAGAGCAGATTGACAGAGCTCTACTGAAGAATG
 TATTAGATATATTTGTGGAAATTGGGATGGGGCAAATGGATTACTATGAAAATGACTTTGAAGCTG
 CCATGCTTAAAGATACTGCTGCTTATTACTCTAGGAAGGCTTCCAATTGGATCCTAGAAGATTCTT
 GTCCCGATTATATGCTAAAAGCAGAGGAGTGCTTGAAACGAGAAAAGGATAGAGTTTCTCACTATT
 TGCACTCTAGTAGCGAGCCAAAGTTATTAGAGAAAGTTCAACATGAACTGTTATCTGTGTATGCTA
 CTCAACTGCTGGAAAAAGAGCATTTCAGGATGCCATGCATTGCTTAGAGATGACAAGGTGGAAGATT
 TGTCAAGGATGTTCCGCCTCTTCTCCAAAATACCCAAGGGATTGGACCCAGTTTCCAACATATTTA
 AGCAGCATGTCACCTGCTGAAGGAACAGCATTGGTCAAACAGGCAGAAGATGCTGCAAGTAACAAGA
 AGGCCGAGAAAAAGGACATAGTTGGTCTGCAGGAACAGGTTTTTGTAAAGAAAAGTGATTGAGCTTC
 ACGACAAGTACTTGGCTTACGTGAATGATTGTTTCCAAAACACACACTTTTTTACAAGGCTCTCA
 AGGAAGCTTTTGAAGTCTTTTGAATAAGGGTGTTGCTGGAAGTTCTAGTGCAAGATTACTTGCTA
 CCTTTTGTGATAACATCCTTAAGAAAGGTGGGAGCGAGAAGTTGAGTGATGAAGCAATTGAGGAGA
 CACTTGAGAAGGTTCGTGAAGTTGCTGGCATACTCTGCGACAAAGATCTGTTTGCTGAATTCTATA
 GAAAAAACTTGCCCGAAGGCTTCTCTTTGACAAGAGTGCCAACGATGACCATGAGAGAAGTATAT
 TGACCAAATTGAAGCAACAATGTGGTGGCCAGTTCACCTCTAAGATGGAGGGGATGGTCACTGATT
 TGACTTTGGCAAGGGAGAACCAACTAGTTTCGAGGAGTATCTGAGCAATAATCCACAAGCTAGTC
 CTGGAATCGACTTGACTGTCACTGTTTTGACTACTGGCTTTTGGCCAAGCTACAAGTCTTTTGACC
 TCAACCTGCCGGCAGAGATGGTAAAGTGTTGAAGTTTTTCAGAGAGTTCTATCAAACAAAAACAA
 AGCATAGAAAACCTTACATGGATTTACTCATTGGGTACCTGTAACATCAGCGGAAAATTTGAACCGA
 AAACGATGGAGCTGATTGTAACAACCTTATCAGGCTTCTGCCCTGCTGCTATTCAATTCCTCAGATA
 GATTAAGTTATTCCGAGATCATGACACAATTAAATTTGAGTGACGATGATGTTGTTAGACTGCTCC
 ACTCATTGTGATGTGCCAAGTATAAAATTTCTTAATAAGGAGCCGAACACGAAAACCATCTCTCCGA
 ATGATCATTTTTGAGTTCAATGCAAAATTTCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGC
 CTGTGGATGAGAAAAAGAAAGTCATTGAAGATGTTGACAAGGATCGAAGGTATGCTATTGATGCCT
 CAATCGTGCGTATCATGAAGAGTCGGAAAAGTTCTGGGTATCAGCAGCTAGTGATGGAGTGCGTCG
 AGCAATTGGGTTCGTATGTTCAAGCCCGACTTCAAAGCGATAAAGAAGAGAATCGAAGATCTGATCA
 CTCGGGACTATTTAGAGAGAGACAAAGACAACCCCACTTGTTTAGGTACTTGGCTTGA

Fig. 5

ATGAACCAACGCAGCACAATCGATCTGGAACATGGATGGGATTTTCATGCAAAAGGGCATCACAAAG
 CTGAAGAACATTCTAGAAGGGCTGCCTGAGCCTCAGTTCAGCTCAGAGGACTATATGATGCTGTAT
 ACGACAAT **[T]** TACAACATGTGTACTCAGAAGCCCCACATGATTATTCTCAACAGCTGTATGACA
 AATATCGTGAAGCTTTTGAAGAATATATCACAACGACGGTATTACCTTCTTTGAGAGAAAAACATG
 ACGAGTTCATGTTGCGAGAGTTGGTAAAAAGGTGGTCAAACCATAAGGTCATGGTTAGATGGTTAT
 CGCGATTCTTCCATTATCTTGACCGTTATTTTCATTGCTCGGAGATCACTGCCAGGGCTTAATGAAG
 TTGGACTAACTTGCTTCCGCGATCTGGTCTACCAAGAGTTGAATGGAAAAGTCAGGGATGCTGTTA
 TATCTCTGATTGATCAAGAGCGTGAGGGAGAGCAAATTGACAGAGCTCTACTGAAGAATGTGCTAG
 ATATATTTGTTGAAATTGGAATGGGGTCAATGGATTATTATGAGAATGATTTTGAAGCTGCAATGC
 TCAAGGACACTGCGGCTTATTATTCTCGCAAAGCTTCTAACTGGATCCTCGAAGATTCATGTCCAG
 ATTATATGCTGAAAGCTGAGGAGTGCTTGAAACGGGAGAAGGATAGGGTCTCCCATTATCTCCATT
 CTAGCAGTGAGACAAAAGTTGCTTGAGAAAAGTGCAACATGAGTTGTTATCTGTGTATGCCAATCAAC
 TTCTTGAGAAGGAGCACTCTGGATGCCATGCATTACTTAGAGATGATAAGGTCGATGATTTATCAA
 GGATGTATAGACTCTTTTCTAAGATTCCCTCGAGGCTTAGAGCCTGTGGCTAATATATTTAAGCAGC
 ATGTTACTGCTGAAGGTACAGCTTTGGTGAAACAGGCTGAAGATGCTGCTAGCAACAAAAGGCAG
 AGAAGAGAGATGTGGTTGGTTTGCAGGAACAGGTTTTTGTTCGAAAGTGATTGAGCTTCATGATA
 AATATTTGGCGTATGTGAATAACTGTTTCCAAAACCACACACTTTTTTACAAGGCACTTAAAGAAG
 CTTTCGAACTTTTCTGCAACAAGGGTGTTGCTGGTAGCTCAAATGCTGAACTTCTTGCCACATTCT
 GCGACAACATTCTCAAAAAAGGCGGGAGTGAAAAATTGAGTGATGAAGCCATTGAAGAGACGCTGG
 AGAAGGTGGTAAAGCTGCTGGCTTATATTAGTGATAAGGACTTGTTTGCAGAAATCTATAGGAAAA
 AGCTCGCCCGGCGGTTGTTATTTGATAAGAGTGCCAATGATGAACATGAGAGAAGTATCCTAACAA
 AGTTGAAGCAGCAGTGTGGAGGTCAGTTCACATCAAAGATGGAGGGAATGGTCACAGATTTGACAT
 TGGCAAGGGAAAATCAAGCCAGCTTTGAGGAGTATTTGAGCAATAATCCAACAGCAAATCCAGGAA
 TTGACTTGACGGTGACTGTCTTGACTACTGGCTTCTGGCCTAGCTACAAGTCTTTTGATCTCAACC
 TCCCAGCAGAAATGGTTAGGTGTGTTGAAGTATTCAAGGAGTTTTATCAAACAAAACGAAGCACA
 GGAAACTTACATGGATATACTCTTTGGGAACTTGCAACATAAATGGAAAATTTGAGGCAAAGACTA
 TTGAGCTCGTTGTCACTACTTATCAGGCTTCTGCTCTGCTTCTCTTTAATGCATCAGATAGATTGA
 GTTATCAGGAAATCATGACGCAATTAAACCTATCAGATGATGATGTTGTTTCGGCTTCTTCATTCCC
 TTTTCATGTGCGAAATACAAGATTCTCAACAAGGAGCCAAGCACCAAAACAATTTCTCCGACTGATG
 TCTTTGAGTTCAACTCAAAGTTCACTGACAAAATGAGGAGGATCAAGATACCTCTCCCACCAGTTG
 ATGAAAAGAAAAGGTAATTGAAGACGTTGACAAGGATAGGCGGTATGCTATAGATGCCTCAATTG
 TGCGTATTATGAAGAGTCGTAAAGTATTGGGCTACCAGCAACTGGTCATGGAGTGCGTTGAGCAGT
 TGGGACGCATGTTCAAGCCTGATGTCAAAGCTATCAAGAAGAGAATTGAAGATCTGATAACTAGAG
 ATTACCTAGAGAGGGACAAAGATAACCCAACTTGTTCAAGTACTTGGCATGA

Fig. 6

ATGAACCAACGAAGCACAATCGATCTGGAACATGGATGGGACTTCATGCAAAGGGGCATTACAAAG
CTGAAGAACATTCTAGAAGGGCTGCCTGAGCCTCAATTCAGCTCAGAGGACTATATGATGCTATAT
ACGACAAT **[T]** TACAACATGTGTACTCAAAAGCCCCACATGATTATTCTCAACAGCTGTATGACA
AATATCGTGAAGCTTTTGAAGAATATATCACAACAACGGTATTGCCTTCTTTGAGAGAAAAACATG
ACGAGTTTATGTTGCGAGAGTTGGTAAAAAGGTGGTCAAATCATAAAGTCATGGTCAGATGGTTGT
CAAGATTCTTCCATTACCTTGACCGGTATTTTCATTGCCCGGAGATCTCTGCCGGGGCTTAATGAAG
TTGGACTAACTTGCTTCCGCGATCAGGTCTACCAAGAGTTGAATGGAAAAGTCAGGGATGCTGTTA
TATCTCTGATTGATCAAGAGCGTGAGGGAGAGCAAATTGACAGAGCTCTACTTAAGAATGTGCTTG
ATATATTTGTGCGAAATTGGAATGGGGTTAATGGATTATTATGAGAATGATTTTGAAGCTGCAATGC
TCAAGGACACAGCGGCTTATTATTCTCGCAAAGCTTCTAATTGGATCCTCGAAGATTCATGTCCGG
ATTATATGCTGAAAGCCGAGGAGTGCTTGAAACGGGAGAAGGATAGGGTCTCTCATTATCTCCATT
CAAGCAGCGAGACGAAGTTGCTTGAGAAAGTGCAACATGAGTTGTTGTCTGTGTATGCCACTCAAC
TTCTTGAGAAGGAGCACTCTGGATGCCATGCGTTACTGAGAGATGATAAGGTTGAAGATTTATCAA
GGATGTATAGGCTCTTTTCTAAGATTTCTCGAGGCTTAGACCCTGTGGCCAATATTTTTAAGCAGC
ATGTTACTGCTGAAGGTACAGCTTTGGTAAAACAGGCTGAAGATGCTGCTAGCAATAAAAAGGCAG
AGAAGAGAGATGTGGTTGGTTTGCAGGAACAGGTTTTTGTTCGAAAGTGATTGAACTTCATGATA
AATATTTGGCTTATGTGAATAACTGTTTCCAAAACCACACACTTTTTTACAAGGCGCTTAAAGAAG
CTTTTGAGCTTTTCTGCAACAAGGGTGTTGCTGGTAGCTCAAGCGCTGAACTTCTTGCCACCTTCT
GTGACAACATTCTCAAAAAAGGCGGGAGTGAGAAATTGAGTGATGAAGCTATTGAAGAAACGTTGG
AAAAGGTGGTAAAGCTACTAGCTTATATTAGTGATAAGGACTTGTTTGCAGAAATCTATAGGAAAA
AGCTAGCCCCGGCGGTTGTTATTTGATAAGAGTGCCAATGATGAACATGAAAGAAGTATCCTAACAA
AGTTGAAGCAGCAGTGTGGGGGCGAGTTCACATCAAAGATGGAGGGAATGGTCACAGATTTGACAT
TGGCAAGGGAAAATCAAGCCAGCTTCGAGGAGTATTTGAGCAATAATCCAATAGCAAATCCAGGAA
TTGACTTGACGGTGACTGTCTTGACTACTGGCTTCTGGCCTAGCTACAAGTCTTTTGATCTCAACC
TCCCAGCAGAAATGGTTAGGTGCGTTGAAGTATTTAAGGAGTTCTATCAAACAAAAACAAAGCACA
GGAAACTTACGTGGATATACTCTTTGGGAACTTGCAACATAAATGGAAAATTTGAGCCAAAACTA
TTGAGCTCGTTGTCACTACTTATCAGGCTTCTGCTCTGCTGCTCTTTAATGCATCAGATAGATTGA
GTTATCAGGAAATCATGACGCAATTAAACCTATCAGATGATGATGTTGTTTCGGCTTCTTCATTCCC
TTTCATGTGCGAAGTACAAGATACTCAACAAGGAGCCAAGCACCAAAACAATTTCTCCGACTGATG
TCTTTGAGTTCAACTCAAAGTTCACTGACAAAATGAGGAGGATCAAGATACCTCTCCCTCCTGTTG
ATGAGAAGAAAAAGGTAATTGAAGACGTTGACAAGGATAGGCGGTATGCTATAGATGCTTCAATTG
TGCGTATTATGAAGAGCCGTAAAGTATTGGGCTACCAGCAACTAGTCATGGAGTGCGTTGAGCAGT
TGGGGCGCATGTTCAAGCCTGATGTCAAAGCTATCAAGAAGAGAATCGAAGATTTGATAACTAGAG
ATTACCTAGAGAGGGACAAAGATAATCCAAACCTGTTCAAGTACTTGGCATGA

Fig. 7

ATGAACCAGCGTTCCACAATCAATCTAGAACATGGATGGGACTTCATGCAAAGGGGCATTACAAAG
CTGAAGAACATTCTAGAAGGGCTGCCCCGAGCCTCAGTTCAGCTCAGAGGACTATATGATGCTGTAT
ACGACAAT **[T]** TACAACATGTGTACTCAGAAGCCCCCACATGATTATTCTCAACAGCTGTATGACA
AATATCGTGAAGCTTTTGAAGAATATATCACAACAACGGTATTGCCTTCTTTGAGAGAAAAACATG
ACGAGTTCATGTTGCGAGAGCTGGTAAAAAGGTGGTCAAACCATAAGGTCATGGTCAGATGGTTAT
CGCGATTCTTCCATTATCTTGATCGCTATTTTATTGCCCGGAGATCTCTACCGGGGCTTAATGAAG
TTGGACTAACTTGCTTCCGAGATCTGGTCTACCAAGAGTTGAATGGAAAAGTCAGGGATGCTGTTA
TATCTCTGATTGATCAAGAGCGTGAGGGAGAGCAAATTGACAGAGCTCTACTGAAGAATGTGCTAG
ATATATTTGTTGAAATTGGAATGGGGTCGATGGATTATTATGAGAATGATTTTGAAGCTGCAATGC
TCAAGGACACCGCAGCTTATTATTCTCGCAAAGCTTCTAACTGGATACTTGAAGATTCATGTCCAG
ATTATATGCTGAAAGCCGAGGAGTGCTTGAAACGGGAGAAAAGATAGGGTCTCTCACTATCTTCATT
TAAGCAGTGAGACAAAAGTTGCTTGAGAAAAGTGCAACATGAGTTGTTGTCTGTGTATGCCACTCAAC
TTCTTGAGAAGGAGCACTCTGGGTGCCATGCGTTACTAAGAGATGATAAGGTTGAAGATTTATCAA
GGATGTATAGGCTCTTTTCTAAGATTCCCTCGAGGCTTAGACCCTGTGGCTAATATATTTAAGCAGC
ATGTTACTGCTGAAGGTACAGCTTTGGTCAAACAGGCTGAAGATGCTGCTAGCAACAAAAGGCAG
AGAAAAGAGATGTGGTTGGTTTGCAGGAACAGATTTTTGTTTCGAAAGTGATTGAGCTTCATGATA
AGTATATGGCATATGTGAATAACTGTTTCCAAAACCACACACTTTTTTACAAGGCGCTTAAAGAAG
CTTTTGAACCTTTTCTGCAACAAGGGTGTTGCTGGTAGCTCAAGTGCTGAACTTCTTGCCACATTCT
GCGACAATATTCTCAAGAAAGGCGGGAGTGAGAAATTGAGTGATGAAGCCATTGAAGAGACGCTGG
AGAAGGTTGTAAAGCTGCTAGCATATATTAGTGACAAGGACTTGTTTGCAGAATTCTATAGGAAAA
AGCTAGCCCCGGCGGTTGTTATTTGATAAGAGTGCCAATGATGAACACGAGAGAAGTATCCTTACAA
AGTTGAAGCAGCAGTGTGGGGGCCAGTTCACATCAAAGATGGAGGGAATGGTGACAGATTTGACAT
TGGCAAGGGAAAATCAAGCCAGCTTTGAGGAGTATTTGAGCAACAATCCAGCAGCAAATCCAGGAA
TTGACTTGACGGTGACTGTCTTGACTACTGGCTTCTGGCCTAGCTACAAGTCTTTTGATCTCAACC
TCCCAGCAGAAATGGTTAGGTGCGTTGAAGTATTCAAGGAGTTTTATCAAACAAAACGAAGCACA
GGAAACTTACGTGGATATACTCTTTGGGAACTTGCAATATAAATGGAAAATTTGAGCCAAAGACTA
TTGAGCTCGTTGTCACTACTTATCAGGCTTCTGCTCTGCTGCTCTTTAATGCATCGGATAGATTGA
GTTATCAGGAAATCATGACGCAACTAAACCTATCAGATGATGATGTTGTTTCGGCTTCTTCATTCCC
TTTCATGTGCGAAGTACAAGATTCTCAACAAGGAGCCAAGCACCAAAACAATTTCTCCGACTGATG
TCTTTGAGTTCAATTTTAAGTTCACTGACAAAATGAGGAGGATCAAGATACCTCTCCCTCCTGTTG
ATGAGAAGAAAAAGGTAATTGAAGATGTTGACAAAGATAGGCGGTACGCTATAGATGCTTCAATTG
TGCGTATTATGAAGAGTCGTAAAGTATTGGGCTACCAGCAACTGGTCATGGAGTGTGTTGAGCAGT
TGGGACGTATGTTCAAGCCTGATGTCAAAGCTATCAAGAAGAGAATTGAAGATTTGATAACTAGAG
ATTACCTAGAGAGGGACAAAGATAATCCGAACCTTGTTCAAGTACTTGGCATGA

Fig. 8

ATGGAGCGCAAGACGATTGACTTGGACCAAGGATGGGACTATATGCAGACTGGTATCACTAAGCTG
 AAACGGATTCTTGAGGGGCTGCCTGAGCCGCAGTTTACTCTGAGCAATACATGATGCTCTATACG
 ACTAT [c] TACAACATGTGCACTCAGAAACCTCCTCATGATTACTCACAGCAGCTTTATGACAAGT
 ATCGTGAAGCATTTGAGGAGTATATTCACTCAACTGTTTTGCCTGCTCTAAGGGAGAAGCATGATG
 AGTACATGCTGAGGGAGCTGGTTAAGAGATGGTCTAACCATAAAGTTATGGTTCGATGGCTATCCC
 GCTTCTTCTACTATCTTGACCGTTACTTCATTGCTCGGAGGTCACCTCCACCCCTGAATGAAGTTG
 GCCTGACTTGCTTCCGTGACCTGGTTTATAACGAGTTGCATTCCAAGGTCAAAGATGCTGTAATAG
 CACTTGTGATAAAGAACGGGAGGGTGAGCAGATTGACAGGGCTCTATTGAAAAACGTATTAGACA
 TTTATGTAGAGATTGGAATGGGACAGATGGAAGATACGAGGAGGATTTTGAAAGCTTCATGCTTT
 TAGATTGAGCATCTTACTATTCTCGCAAGGCGTCAAGCTGGATCCAAGAAGATTCTTGCCCTGATT
 ACATGCTGAAGTCTGAAGAATGTCTTAAGAAGGAGAGGGAGAGAGTGGCTCACTACCTTCACTCAA
 GCAGCGAGCCAAAGCTGGTTGAGAAAGTACAACATGAGCTGTTGGTAGTGTATGCAAATCAGCTTC
 TAGAAAAAGAGCATTGAGGGTGCCGTGCATTGCTGAGAGATGACAAGGTTGATGACCTCTCCAGGA
 TGTACAGGCTTTATCATAAAATTGTGAAAGGTTTGGAACCTGTTGCAAACATATTTAAGCAGCATG
 TCACAGCAGAGGGTAACGCACCTTGTCCAACAGGCCGAAGACACGGCCACTAATCATGCTGCAAATA
 CTGCTAGCGTGCAGGAACAGGTTCTTATCAGAAAAGTGATTGAACTACATGATAAATACATGGTCT
 ATGTTGTTGAGTGTTCAGAACACACCCTCTTCCACAAGGCATTGAAAGAGGCATTTGAGATAT
 TCTGTAACAAAACAGTCGCTGGAAGTTCTAGTGCTGAATTGCTTGCAACATTTTGCGACAATATTC
 TCAAGAAGGGGGGAAGTGAAAAGCTGAGCGATGAAGCTATTGAAGATACCCCTGAGAAGGTGGTCA
 AATTGCTTGCTTATATAAGTGACAAGGATCTTTTCGCCGAGTTCTACAGGAAGAAGCTGGCCCGTA
 GGCTCTTATTTGATCGCAGTGCTAATGATGATCATGAGAGAAGTATCCTGACAAAGCTCAAGCAAC
 AATGTGGTGGGCAGTTTACTTCGAAGATGGAGGGCATGGTGACTGATTTGACATTGGCAAGGGAAA
 ACCAAAACAGCTTCGAGGAGTATCTTGGAATAACCCCGCTGCAAACCCAGGGATTGATTTGACCG
 TAACTGTTCTTACCACTGGTTTTTGGCCAAGTTACAAATCATTTGACATAAATCTACCCGCTGAAA
 TGGTCAAGTGTGTTGAAGTTTTCAAAGGGTTTTATGAAACAAAGACAAAACATAGGAACTTACCT
 GGATCTACTCACTAGGAACTTGCCACCTCAATGGGAAGTTTGATGTCAAGCCCATTGAGTTAGTTG
 TGTCTACATAACAGGCTGCTGTGCTTCTGCTGTTCAACACAACAGACAAATTGAGCTACACTGATA
 TCCTAACTCAGCTGAACCTGAGCCACGAAGATCTAGTGAGGTTGCTTCATTCCCTTGTCATGTGCTA
 GATACAAGATTCTTCTCAAGGAGCCAAGCACAAAGACTGTTTCCCAGTCTGATTCTTTTGAATTCA
 ACTCCAAATTCACCGACAGAATGCGGAGAATAAAGATCCCTCTCCACCTGTTGATGAGAGGAAGA
 AAGTTGTGGAAGACGTGGACAAAGACAGACGCTATGCGATTGATGCTGCCATTGTGAGGATCATGA
 AGAGCAGGAAAGTATTGGGACATCAACAACCTGTTTTCTGAGTGCGTTGAGCAACTTAGCCGAATGT
 TCAAGCCTGATATCAAGGCAATCAAGAAGCGCATGGAGGATTTGATAACGAGAGATTATCTGGAGA
 GGGACAAGGAGAACGCTAACATGTTTAGGTACTTGGCTTAG

Fig. 9

ATGATGATTGAGCGGAAACTATAGACCTGGAGCAGGGATGGGACTTTATGCAAAAGGGAATCACA
AAGCTAAAGAATATTTTAGAAGGCTTTCCGGAGCCGCAATTCAGCTCGGAGGATTATATGATGCTT
TATACAACCTAT [c] TATAACATGTGTACACAGAAACCTCCACATGATTACTCTCAGCAGCTGTATG
AAAAGTATCGTGAAGCTATTGAGGAGTACATTACTTCTACAGTATTGCCTTCATTGAGAGAGAAGC
ATGATGAATTCATGCTTAGAGAACTTGTGAAGAGATGGTCTAATCATAAGGTCATGGTCAGGTGGC
TTTCTCGATTCTTTCACTATCTTGATCGCTATTTTATTGCTCGGAGGTCACTTCCACCACTTCATG
AAGTTGGACTCACTTGCTTTCCGGACCTGGTTTACCAGGAGATAAATGGGAAAGTAAGGGATGCTG
TAATATCATTGATTAATCAAGAGCGCGAGGGAGAGCAAATTGACCGAGCTTTGTTGAAGAATGTTC
TAGATATATTTGTTGAAGTTGGAATGAGTCAAATGGATTATTATGAGAATGACTTTGAAGCAGACA
TGCTCAAAGATACAGCAGCATACTATTCTCGAAAGGCTTCCAACCTGGATCTTAGAAGATTCTTGTC
CAGATTATATGCTCAAAGCGGAAGAGTGTTTGAGACGGGAAAAGGACAGGGTCTCTAACTACCTTC
ATTCTAGTAGTGAACCCAAGTTGCTTGAGAAAGTTCAACATGAGTTACTATCACACTATGCAACTC
AGCTGCTTGAGAAAGAACACTCTGGGTGTCATGCATTGCTTAGGGATGACAAGGTGGCAGATTTAT
CAAGGATGTATAGGCTCTTCTCTAAATACCTCGAGGCCTAGATCCCGTGTCTAATATTTTCAAGC
AGCATGTTACTGCTGAAGGTACAGCTTTGGTCAAACAAGCAGAAGATGCAGCTAGCAACAAGAAGG
CAGAGAAGAGAGATGTAGTAGGTTTACAAGAACAGGTTTTTGTGAGGAAAATAATTGAATTGCATG
ACAAATACCTTACATACGTAAATGACTGTTTTACAACACACTCTCTTCCATAAGGCGCTTAAGG
AGGCTTTTGAATCTTCTGCAATAAGGGTGTCTCTGGAAGCTCTAGTGCAGAATTACTTGCCACAT
TCTGTGATAATATTCTCAAGAAAGGTGGAAGCGAGAAGTTAAGTGATGAAGCCATTGAGGAAACAC
TTGAGAAGGTTGTAAGGTTGCTTGCTTATATAAGTGACAAAGACTTATTTGCTGAATTTTATAGGA
AAAAGCTTGCACGGCGTCTCTTATTCGACAAGAGTGCCAATGATGAGCATGAGAGAAGTATATTGA
CTAAGCTGAAGCAACAATGTGGGGGTCAATTTACATCAAAGATGGAAGGAATGGTCACTGACTTGA
CGTTGGCAAAGGAAAAATCAGTCCAACCTTCGAGGAGTACCTCAATAATAATTCAAACGTAAATCCTG
GAATTGACTTGACAGTTACTGTTCTAACCCTGGGTTTTGGCCAAGTTACAAATCTTTCGATCTCA
ACCTCCCAGCAGAGATGGTCAAATGTGTTGAAGTTTTTAGAGAATTCTACCAAACAAAAACAAAGC
ACAGAAAACCTGACATGGATATACTCTTTGGGTACTTGTAACATCATTGGAAAAATTTGATCCAAAAA
CCATGGAGCTTATTGTGACAACATAACCAGGCCTCTGCTCTGCTGCTATTTAACTCTTCTGATAGAC
TTAGTTATAATGAAATAATGACTCAGTTGAACTTGTCGGATGATGATGTTGTCAGACTACTTCATT
CTCTTTCGTGTGCAAAGTACAAGATTCTATCTAAAGAGCCGAACACCAAAACTATATCTCCAACCTG
ATTGCTTTTCAGTTCAATTCCAAATTTACTGATAAAATGAGGAGGATTAAGATTCCACTTCCCCCAG
TGGATGAGAAGAAAAAGGTAATTGAAGATGTTGATAAAGACAGGCGATATGCTATAGATGCTTCAA
TTGTCCGTATCATGAAGAGCCGCAAAGTTTTGGGTATCAGCAGCTAGTAATGGAGTGC GTTGAAC
AATTGGGTGCGATGTTTAAGCCTGATGTCAAAGCAATCAAGAAGAGAATCGAAGATTTAATAACTC
GGGATTATCTGGAAAGAGACAAGGACAATGCCAACCTTGTTTCAGGTATCTGGCATGA

Fig. 10

ATGAACGAGCGGAAGACTATCGATTTGGATAATGGATGGGAATTTATGCAGAAAGGGATCACTAAG
 TTGAAGAAGATTCTCGAAGGTCAACCTGAGCCTCAGTTTAGCTCCGAGGACTATATGATGCTTTAC
 ACAACTAT **[c]** TATAATATGTGTACGCAGAAGCCTCCACATGATTATTCTCAACAGCTGTATGACA
 AGTACCGTGAGGCCTTTGAGGAGTACATAACTTCAACTGTCCTGCCTTCTTTACGAGAGAAGCATG
 ATGAGTTTATGTTGAGAGAGCTCGTGAATAGATGGACAAACCATAAAGTCATGGTCAGGTGGCTTT
 CTCGATTCTTTCACTATCTTGATCGGTACTTCATTGCGAGGAGGTCACCTTCTGCACCTTCATGAAG
 TTGGACTCACGTGCTTCCGGGATCTGGTCTATCAGGAGCTGAAAGTTAAAGTGAGGGATGCTGTAA
 TATCTCTGATCGATCAAGAGCGTGAGGGGGAACAGATTGACCGAGCTTTATTAAAGAACGTGTTAG
 ATATATTTGTTGAAATCGGAATGAGTCAAATGGATCAATATGAGAATGACTTTGAAGAAGCCATGC
 TCACTGATACTGCTGCTTACTATTCTCGAAAAGCTTCAAACCTGGATCCTTGAAGATTCTTGCTCTG
 ATTATATGTTAAAGGCAGAAGAATGTTTGCGACGAGAGAAGGACAGGGTTTCCCACTACCTACATT
 TTAGTAGCGAGCCAAAGTTGCTTGAGAAAGTGCAACATGAGCTGCTATCTGTGTATGCAACCCAAT
 TACTCGAGAAGGAACATTCTGGTTGTCATGCATTGCTTAGGGATGACAAGGTGGATGATTTGTCTA
 GGATGTACAGACTCTTCTCGAAAATACCTAAAGGCCTGGATCCAGTTTCTTATATTTTTAAGCAGC
 ATGTTACAAATGAAGGGATGGCATTGGTTAAACAAGCAGAAGATGCAGCAAGCAACAAGAAGGCAG
 AAAAGAGAGACGTGGTTAGTTTACAGGAGCAGGTTTTTGTAGAAAAATTATTGAATTACATGACA
 AATACCTCGCCTATGTGAATGACTGCTTTACAAACCATACTCTTTTCCATAAGGCTCTCAAGGAGG
 CTTTTGAAATCTTTTGCAACAAGGGTGTTGCTGGAAGCTCTAATGCTGAACTACTTGCTACTTTCT
 GTGATAACATCCTCAAAAAGGGTGGGAGTGAGAAATTAAGTGATGAGGCTATTGAAGAAACACTTG
 AGAAGGTAGTAAAATTGTTAGCTTACATTAGCGATAAAGACTTGTTTCGCTGAATTTTACAGAAAAA
 AGCTTGACGAGGAGACTTCTCTTTGATAAGAGTGCAAATGACGAGCATGAACGAAGTATTTTGACTA
 AACTAAAGCAACAGTGCGGTGGTCAGTTCACATCGAAAATGGAGGGGATGGTCACAGATTTGACTT
 TGGCTAAAGAAAATCAATCCAGCTTTGAGGAGTATCTGGGAAATAATGCCAATGTGAATCCTGGCA
 TTGACTTGACGGTTACTGTTCTGACCACTGGCTTCTGGCCTAGTTATAAATCCTTTGATCTCAACC
 TTCTGCTGAGATGGTCAAGTGCGTTGAAGTATTTAGAGAATTTTATCAAACAAAAACGAAGCATA
 GAAAGCTCACATGGATATATTCTCTGGGTACTTGTAATATCAATGGAAAATTTGAACCCAAAACCA
 TTGAGCTGATTGTGACAACCTACCAGGCCTCTGCTCTCCTGTTATTTAATACTTCTGATAGGTTGA
 GTTATCAAGAAATCATGACTCAGTTAAATTTGTTCGGATGATGATGTTGTTTCGCCTGCTTCATTCCC
 TTTTCATGTGCCAAGTATAAAATTCTTACTAAAGAGCCGAACAACAAAACAATTTCCCTACGGATT
 ACTTTGAGTTCAACTCCAAGTTCACTGACAAAATGAGGAGAATTAAGATTCCACTACCTCCAGTTG
 ATGAGAAGAAAAAGGTAATTGAAGATGTTGACAAGGACCGGCGATATGCCATTGATGCATCTATTG
 TCCGCATTATGAAGAGCCGTAAAGTTTTGGGCTACCAACAATTGGTTATGGAATGTGTTGAGCAAT
 TGGGACGCATGTTTAAGCCTGATGTCAAAGCAATTAAGAAGAGAATCGAAGATTTAATAACGCGTG
 ATTATCTGGAAGAGACAAGGATAATGCCAACCTTTTCAGATATTTGGCATGA

Fig. 11

ATGAATGAAAGAAAAACAATAGACTTAGAACAAGGATGGGACTTCATGCAGAAAGGCATAACAAAG
TTGAAGAACATTCTAGAAGGTCTTCCCGAGCCACAATTCAGCTCGGAAGATTACATGATGCTCTAC
ACAACCAT **[c]** TACAATATGTGCACACAAAAACCGCCACATGATTACTCTCAACAATTGTATGACA
AATACCGCGAGTCTTTTGAAGAGTACATTACTTCAACGGTGTTACCTTCTTTAAGAGAGAAGCATG
ATGAGTTTATGCTTAGAGAGCTTGTTAGAAGATGGTCAAATCATAAAGTGATGGTTAGGTGGCTTT
CTAGATTCTTCCATTATCTTGATCGATACTTCATTGCCCGAAGATCTCTTCCACCATTAAATGAAG
TTGGACTTGCGTGTTTTTCGTGATCTGGTATACCAAGAGGTGAATGGGAAAGTGAGAGATGCTGTAA
TATCTTTGATTGATCAAGAGCGTGAAGGCGAGCAAATTGACCGAGCATTACTCAAGAATGTTCTAG
ATATATTTGTTGAAATAGGAATGGGACAAATGGAATATTATGAGAATGATTTTGAAGCATCCATGC
TTAATGATACAGCAGCATATTATTCACGCAAAGCTTCCAATTGGATTCTAGAAGATTCTTGTCCAG
ATTATATGCTCAAAGCTGAGGAGTGCTTAAAAAGAGAAAAGGACAGAGTTTCTCATTATCTTCATT
CCAGCAGTGAACCAAAGCTTCTTGAGAAAAGTTCAAACAGAGTTATTATCTGTTTATGCAACTCAAT
TGCTTGAAAAGGAGCACTCCGGTTGTCATGCATTACTTAGGGATGACAAGGTTGATGATTTATCAA
GAATGTACAGACTCTTTTCAAAGATACAAAAAGGGCTGGATCCTGTTTCTAGTATGTTTAAGCAGC
ATGTCACTGCTGAAGGCACAACATTGGTTAAACAGGCAGAAGATGCAGCAAGTACTAAGAAGGCTG
AAAAGAGAGACGTGGTTGGCTTACAAGAACAGGTTTTTGTAGAAAAGTTATCGAGCTTCATGACA
AGTACCTTGCATATGTAAATGACTGTTTTATGAATCATACCCTGTTTCACAAGGCTCTTAAAGAGG
CATTTGAAATATTCTGCAACAAGGGCGTTGCTGGAAGTTCAAGTGCAGAATTACTTGCTACATTTT
GTGATAATATTCTTAAAAAAGGTGGAAGTGAAAAATTGAGTGATGAAGCCATTGAGGACACACTTG
AGAAGGTGGTAAAGTTGCTTGCTTACATCAGCGATAAAGATCTATTTGCAGAGTTTTATAGGAAAA
AACTGGCTAGACGGCTTTTATTTGACAAAAGTGCAAATGATGAGCACGAAAGAAGTATTTTGACAA
AATTGAAACAACAATGTGGCGGTCAATTTACATCAAAAATGGAAGGAATGGTTACAGATTTGACAT
TGGCAAAAGAAAATCAATCACATTTTGAGGAGTATTTGAATAATAATCCCAATGTTAGCCCTGGCA
TTGACTTGACCGTGACTGTGTTGACCACTGGTTTTTGGCCTAGTTACAAATCTTTTGACCTAAATC
TCCCTGCAGAAATGGTCAAATGCGTTGAAGTTTTTCAGAGAATTTTATCAAACAAAAACAAAACACA
GAAAACTCACATGGATATATTCATTGGGCACCTGCAATATAAACGGAAAATTCGAACCAAAAACCA
TGGAGCTAATCGTTACAACCTACCAGGCATCTGCTTTATTACTGTTCAACTCATCAGATCGATTGA
GTTATCAAGAAATCATGACTCAATTAACTTATCAGATGATGATGTTGTTAGACTACTCCATTCAT
TATCATGTGCAAAATATAAAATTTTATTAAAAGAACCAAATACAAAAACAATCTCTCCAAGTATT
TCTTTGAATTCAACTCAAAGTTTACAGATAAAATGAGAAGGATCAAGATTCCTCTACCTCCTGTTG
ATGAAAAGAAAAAGTAATTGAAGATGTTGACAAAGACCGACGTTATGCAATTGATGCTTCAATTG
TACGGATAATGAAAAGCAGAAAAGTTCTTGATACCAACAATTGGTCATGGAATGTGTTGAACAAT
TAGGCCGTATGTTTAAGCCTGATGTAAAAGCAATCAAGAAACGTATTGAAGATCTCATAACTCGTG
ATTATCTTGAAAGAGACAAAGAAAATCCAATTTGTTTCGGTACTTGGCATGA

Fig. 12

ATGAATGAAAGAAAAACAATAGACTTAGAACAAGGATGGGACTTCATGCAAAAAGGCATAACAAAG
TTGAAGAACATTCTAGAAGGTCTTCCCGAGCCACAATTCAGCTCAGAGGATTACATGATGCTCTAC
ACAACCAT [c] TACAATATGTGCACACAAAAACCGCCACATGATTACTCTCAACAATTATATGACA
AATACCGCGAGTCTTTTGAAGAGTACATAACTTCAACGGTGTTACCTTCTTTAAGAGAGAAGCATG
ATGAGTTTATGCTTAGAGAGCTTGTTAGAAGGTGGTCAAATCATAAAGTGATGGTTAGGTGGCTTT
CTAGATTCTTCCATTATCTTGATCGATACTTTATTGCAAGAAGATCTCTTCCACCATTAAATGAAG
TTGGACTTGCGTGTTTTTCGTGATCTGGTATACCAAGAGGTGAATGGAAAAGTGAGAGATGCTGTAA
TATCTTTGATTGATCAAGAGCGTGAAGGCGAGCAAATTGACCGAGCATTACTGAAGAATGTTCTAG
ATATATTTGTTGAAATAGGAATGGGACAAATGGAATATTATGAGAATGATTTTGAAGCATCTATGC
TTAATGATACAGCAGCATATTATTCACGCAAAGCTTCCAACCTGGATTCTAGAAGATTCTTGTCAG
ATTATATGCTCAAAGCTGAGGAGTGCTTAAAAAGAGAAAAGGACAGAGTTTCTCATTATCTTCATT
CAAGTAGTGAACCAAAGCTTCTTGAGAAAAGTTCAAACAGAGTTATTATCTGTTTATGCAACTCAAT
TGCTCGAAAAGGAACACTCAGGTTGTCATGCATTACTTAGAGATGACAAGGTTGATGATTTATCAA
GAATGTACAGACTCTTTTCAAAGATACAAAAAGGACTGGATCCTGTTTCCAGTATGTTTAAGCAGC
ATGTCACCTGCTGAAGGCACAACATTAGTAAAACAAGCAGAAGATGCAGCAAGTACTAAGAAGGCTG
AAAAGAGAGACGTGGTTGGCTTACAGGAACAGGTTTTTGTAGAAAAGTAATCGAGCTTCATGACA
AGTACCTCGCATATGTAAACGACTGTTTTATGAATCACACATTGTTCCACAAGGCTCTTAAAGAGG
CATTTGAAATATTCTGCAACAAGGGCGTTGCTGGAAGTTCAAGTGCAGAATTACTTGCCACATTTT
GTGATAATATTCTTAAAAAAGGTGGAAGTGAAAAATTGAGTGATGAAGCCATTGAAGACACACTTG
AGAAGGTAGTAAAGTTGCTTGCTTACATCAGCGATAAAGATCTATTTGCAGAGTTTTATAGGAAAA
AACTGGCTAGAAGGCTTTTATTTGACAAAAGTGCAAATGATGAGCATGAAAGAAGTATTTTAACAA
AGTTGAAGCAACAATGTGGTGGTCAGTTTACATCAAAGATGGAAGGAATGGTTACAGATTTAACAC
TGGCAAAAGAAAATCAATCACATTTTGAGGAGTATTTGAATAATAATCCCAATGTTAGCCCTGGCA
TTGACTTGACCGTGACTGTGTTGACCACGGGATTTTGGCCTAGTTACAAATCTTTTGACCTAAATC
TTCTGTCAGAAATGGTCAAATGCGTTGAAGTTTTTCAGAGAATTTTATCAAACAAAAACAAAACACA
GAAAACTCACATGGATTTATTCATTGGGCACCTGCAATATTAACGGAAAATTCGAACCAAAAACCA
TGGAGCTAATCGTTACAACCTACCAGGCATCTGCTTTATTGTTATTCAACTCATCAGATCGATTAA
GTTATCAAGAAATCATGACTCAATTAAATTTATCAGATGATGATGTTGTTAGACTACTACATTCAT
TATCATGTGCAAAATATAAAATTTTATTAAAAGAACCAAATACCAAAACAATATCTCCAACCGATT
TCTTTGAATTCAACTCAAAGTTTACAGATAAAATGAGAAGGATCAAGATTCCTCTACCTCCTGTTG
ATGAAAAGAAAAAGTAATTGAAGATGTTGACAAAGATAGAAGGTATGCAATTGATGCTTCAATTG
TACGAATAATGAAAAGCAGAAAAGTTCTTGATACCAACAATTGGTTATGGAGTGTGTTGAACAAT
TAGGCCGTATGTTTAAGCCTGATGTAAAAGCAATCAAGAAGCGTATTGAAGATTTGATAACGCGTG
ATTATCTTGAAAGAGACAAAGAAAATCCAAATTTGTTTCGGTACTTGGCATGA

Fig. 13

ATGTCGTTGCACGAAAGGAAAACCATTTGATTTGGAGCAGGGATGGGCTTTTATGCAGAAAGGGATC
 ACCAAACTGAAGAATATTCTTGATGAGTTGAATGAACCTCAGTTCAGCTCAGAGGATTACATGATG
 CTCTATACGACTAT **[c]** TATAATATGTGTACTCAGAAGCCGCCACATGATTATTCTCAGGAGTTGT
 ATGATAAGTACCGAGAGTCCTTTGAAGAGTATATCACTACCACTGTGCTTCCTTCATTGAGAGAAA
 AGCATGATGAATACATGTTAAGGGAGCTCGTGAGAAGGTGGTCAAATCATAAAATAATGGTTAGAT
 GGCTTTCACGCTTTTTTCCATTATCTTGATCGCTACTTTATAGCACGAAGATCATTGCCTGCTCTTA
 ATGAAGTCGGTCTCACTTGTTCCTGTGATCTGGTGTACAACGAAGTCCATGGGAAAGTTAAAGATG
 CCGTGATCTCATTGATTGACCAAGAGAGGGAAGGGGAGCAAATTGACAGAGCTTTATTAAAGAATG
 TTTTGGGTATTTTTGTAGAGATTGGTTTGGGAAGCATGGAATGTTATGAGAATGATTTTGAAACAT
 CAATGCTTAATGCTACAGCAGCCTATTATTCACGAAAAGCTTCAAATTGGATTCTAGAAGATTCAT
 GTCCAGATTATATGCTAAAAGCCGAGGAGTGCTTAAACATGAGAAAGATAGAGTTGCTCATTATT
 TGCATTCAAGCAGTGAACAGAAGCTGTTAGAGAAAGTGCAACATGAGTTACTTTTCGTATATGCAA
 GTCAACTTCTCGAGAAAGAACATTCCGGATGTCATGCATTGCTTCGCGATGACAAGGTGGGAGATC
 TTTACGCATGTATCGGCTGTTCTGTAGAATTACACGTGGTTTGGACCCTGTGTCTCAAATATTTA
 AGCAGCATGTGACTGCAGAAGGTACTGCTTTGGTCAAACATGCCGAAGATGCTGCAAGTAACAAGA
 AGGCCGAGAAAAAAGACATTGTTGGTTTGCAAGAGCAGGTCTTCGTTAGGAAAGTAATTGAGCTGC
 ATGATAAATACTTGGCCTATGTGACTGACTGCTTTCAAATCACTCTCTATTTTACAAGGCACTTA
 AAGAGGCATTCGAGGTATTCTGCAATAAAGGTGTTGCAGGTAGCTCAAGCGCTGAACCTTCTGGCTG
 CTTTTTGTGACAATATATTGAAGAAGGGTGGAAGCGAGAACTAAGCGATGAGGCCATAGAGGATA
 CTCTTGAGAAGGTTGTAAACTATTGGCATATATTAGCGATAAAGATCTGTTTGCTGAATTTTACA
 GGAAGAAGCTTGACGAAGATTACTCTTTGACAAAAGTGCTAATGATGACCATGAGAGGAGCATCC
 TTACAAAGCTGAAACAGCAATGTGGAGGGCAGTTCACCTCTAAATGGAAGGCATGGTAACCGATC
 TGACACTTGACAGAGAAAATCAATCAAGTTTTTGACGATTACCTTAGCAGCAATCCTAAAGCAAATT
 CTGGAATTGACTTGACTGTTACAGTCTTAACAACTGGCTTCTGGCCCAGTTACAAGTCTTTTGATC
 TCAATCTTCCTGATGAGATGGTAAAATGCGTTGAAATTTTTAAAGAGTTTTTACGAGACAAAACCA
 AACACAGAAAACCTTACATGGATTTATTCGTTGGGCACTTGCAACATCAATGGCAAGTTCGAAACCA
 AGACAATAGAGTTGGTTGTTACAACCTATCAGGCTGCAGTGTTGCTTCTATTCAACTCTGCAGATA
 AATTAAGTTATTCTGAGATTGTGCAGCAGCTAACTTATCTGATGATGATGTAATCAGATTACTTC
 ACTCTCTTTCATGCGCTAAATACAAAATTCTCAATAAAGAACCCGCTACCAAGACTATTACCCCGA
 ATGATCATTTTGAGTTCAATTCTAAATTCAGTATAGAATGAGAAGGATCAAGATTCCCCTGCCTC
 CTGTGGATGAGAAGAAAAAGTAATTGAAGATGTTGACAAAGACAGAAGATATGCAATTGACGCAT
 CCATAGTTCGAATAATGAAAAGTAGAAAAGTTCTTGGTCATCAGCAGCTTGTTTTGGAATGTGTTG
 AGCAATTAGGCCGCATGTTTAAGCCTGACTTTAAGGCCATCAAGAAAAGGATTGAAGATCTGATCG
 CTAGAGATTATTTGGAGAGGGACAAGGACAATCCAAACCTCTTTAAATATTTGGCCTAA

Fig. 14

ATGAACGAAAGAAAAACAATAGACTTAGAGCAAGGATGGGACTTCATGCAGAAAGGAATAACAAAG
 TTGAAGAATATTCTAGAAGGTCTTCCCGAGCCACAATTCAGCTCGGAGGATTACATGATGCTCTAC
 ACAACCAT **[C]** TACAACATGTGTACACAGAAACCACCACATGATTACTCCCAACAGTTGTATGACA
 AATATCGTGAGTCTTTTGAAGAGTATATTACTTCAACTGTGTTACCTTCTTTAAGAGAGAAGCATG
 ATGAGTTCATGCTGAGAGAGCTTGTTAGAAGGTGGTCAAATCATAAAGTCATGGTGCGGTGGCTTT
 CTAGATTCTTCCATTATCTTGACCGATATTTTATTGCCCGAAGATCTCTTCCGCCACTAAATGAAG
 TTGGACTTGCCTGTTTTCTGTGATCTGGTATACCAAGAGGTGAATGGTAAAGTGAGAGATGCTGTAA
 TATCTTTGATTGATCAAGAGCGTGAAGGGGAGCAGATTGATCGAGCTTTACTGAAGAATGTTCTAG
 ATATATTTGTTGAGATAGGAATGGGACAAATGGAGTATTATGAGAATGATTTTGAAGCATCCATGC
 TTAATGATACAGCAGCATATTATTCACGCAAGGCTTCCAAGTGGATTCTAGAAGATTCTTGTCCAG
 ATTATATGCTCAAAGCAGAGGAGTGCTTAAAAAGAGAAAAGGACAGAGTGTCTCATTATCTTCATT
 CCAGCAGTGAGCCAAAGCTTCTTGAGAAAAGTTCAAATGAGTTATTGTCTGTTTATGCAACTCAAT
 TGCTTGAGAAAGAGCACTCAGGTTGTTCATGCATTGCTCAGGGATGACAAGGTTGATGATTTATCAA
 GAATGTACAGACTCTTTTCAAAGATACCAAAGGATTGGATCCTGTTTCTAGTATGTTTAAGCAGC
 ATGTCACCTGCTGAAGGCACAACATTGGTTAAACAAGCAGAAGATGCAGCAAGTACCAAGAAGGCTG
 AAAAGAGAGATGTGGTTGGGTTGCAGGAACAGGTTTTTGTAGAAAAGTTATTGAGCTCCATGACA
 AGTACCTGGCATATGTAAATGACTGTTTCATGAACCATACTCTTTTCCACAAGGCTCTTAAAGAGG
 CATTTGAAATATTCTGCAACAAGGGTGTTGCTGGAAGTTCAAGTGCAGAGTTACTTGCCACATTTT
 GTGATAATATTCTTAAAAAAGGTGGAAGTGAGAACTGAGCGATGAAGCCATTGAGGACACCCTTG
 AGAAGGTAGTAAAGTTGCTTGCTTACATCAGTGATAAAGATCTATTTGCTGAATTTTACAGGAAAA
 AACTTGCTAGGAGGCTTTTGTGTTGACAAGAGTGCAAACGATGAGCATGAGAGAAGTATTCTCACAA
 AGCTGAAGCAACAGTGTGGTGGTCAGTTCACATCAAAGATGGAAGGGATGGTTACAGATTTGACAT
 TGGCAAAGGAAAACCAATCCCATTTTGAAGAGTATTTGAACAATAATCCAATGTCAGCCCTGGAA
 TTGACTTGACTGTCACTGTGTTGACTACCGGCTTCTGGCCCAGCTACAAATCTTTTGACCTAAATC
 TCCCTGCCGAAATGGTTAAATGCGTTGAAGTTTTTCAGAGAATTTTATCAAACAAAAACAAAGCACA
 GGAAGCTTACATGGATATATTCATTGGGTACCTGCAATATAAACGGGAAATTTGAACCCAAAACAA
 TGGAGCTCATAGTCACAACCTACCAGGCATCTGCTTTATTACTGTTCAACTTATCGGATCGATTGA
 GTTATCAAGAAATCATGACTCAGTTGAACTTGTGAGATGATGATGTTGTTAGGCTGCTCCATTCTT
 TGTCATGTGCAAAATACAAAATTCTTTTAAAGGAGCCTAATACCAAACAATCTCTCCAACCGATT
 ACTTCGAATTCAACTCCAAGTTTACAGATAAAATGAGGAGGATCAAGATTCCTCTACCTCCTGTGG
 ATGAGAAGAAAAAGGTGATTGAGGATGTTGACAAAGACAGACGTTATGCCATTGATGCTTCCATTG
 TAAGGATAATGAAGAGCAGAAAGGTGCTTGGATACCAGCAGTTGGTTATGGAGTGTGTTGAACAGT
 TGGGACGCATGTTTAAGCCTGATGTAAAAGCAATCAAGAAGCGGATTGAAGATCTGATAACTCGTG
 ATTATCTTGAAAGAGACAAAGAGAACCCCAACTTGTTCCGATACTTGGCATGA

Fig. 15

ATGGAGCGGAAGACGATTGATCTGGAACAAGGATGGGACTATATGCAGACTGGGATCACTAAGCTG
 AAACGGATTCTTGAAGGATTGCCTGAGCCGCAATTCGACTCTGAGCAGTACATGATGCTTTATACG
 ACTAT [C] TACAACATGTGCACCCAGAAACCTCCTCATGATTACTCTCAGCAGCTTTATGACAAGT
 ATCGCGAAGCTTTTGAGGAGTACATTGACTCTACTGTTTTGCCTGCTTTGAAGGAGAAGCATGATG
 AATACATGCTACGGGAGCTGGTTAAGAGATGGTCTAACCATAAAGTTATGGTTAGATGGCTATCCC
 GATTCTTCTACTATCTTGACCGTTACTTCATTGCTCGGAGATCGCTGCCACCGCTTAATGAAGTTG
 GGCTCACATGCTTCCGTGACCGGGTGTATAAGGAGTTGCATTCCAAGGTCAAAGATGCTGTAATAG
 CACTTGTTGATAAAGAACGGGAAGGCGAGCAGATTGACAGGGCTCTTCTGAAAAACGTATTAGATA
 TCTATGTAGAGATTGGAATGGGACAGATGGAAAGATACGAAGTGGATTTTGAAAGCTTCATGCTTT
 TGGATTCAGCATCTTACTATTCTCGCAAAGCATCAAACCTGGATCCAGGAAGATTCTTGCCCTGATT
 ACATGCTGAAGTCTGAAGAATGCCTTAAGAAGGAGAGGGAGAGGGTTGCTCACTACCTTCATTCAA
 GCAGCGAGCCAAAGCTGGTTGAGAAAGTACAACATGAGCTGTTGGTTGTCTATGCAAATCAGCTTC
 TTGAAAAGGAGCACTCAGGGTGCCGTGCATTGCTGAGAGACGACAAGGTTGACGATCTCTCCAGGA
 TGTACAGGCTCTATCATAAAATTGCTAAAGGTTTAGAACCCTGTTGCAAACATATTTAAGCAGCATG
 TCACAGCCGAGGGTAACGCACTTGTCCAACAGGCCGAAGACACAGCCACTAATCAGGCTGCAAATA
 CTGCTAGCGTGCAGGAACAGGTTCTCATCAGAAAAGTGATTGAGCTACATGATAAGTACATGGTCT
 ATGTCGTGGAGTGCTTCCAGAACCACACCCTCTTCCACAAGGCTCTGAAAGAGGCATTTGAGATAT
 TCTGTAACAAAACAGTCGCTGGAAGTTCAAGTGCAGAACTGCTTGCAACATTCTGCGACAACATCC
 TCAAGAAGGGGGGTAGTGAGAAGCTGAGTGACGAAGCTATTGAAGATACGCTTGAGAAGGTTGTCA
 AATTGCTTGCTTATATAAGCGACAAGGATCTTTTCGCCGAGTTCTACAGGAAGAAGCTGGCACGTA
 GGCTCTTATTTGATCGCAGTGCGAATGATGATCATGAGAGAAGCATCCTTACAAAGCTCAAGCAAC
 AATGTGGTGGGCAGTTCACCTTAAGATGGAGGGCATGGTAACGGACTTGACATTGGCAAGAGAGA
 ACCAAACCAGTTTCGAGGAGTATCTAGGCAATAACCCCGCTGCAAACCCAGGGATTGATTTGACCG
 TCACTGTTCTTACCACTGGTTTCTGGCCAAGTTACAAATCATTCGACATAAATCTACCAAGTGAAA
 TGGTCAAGTGTGTTGAAGTTTTCAAAGGGTTTTATGAGACGAAAACATAAGGAACTTACAT
 GGATCTACTCACTAGGAACTTGTCACCTCAACGGAAAGTTTGATCACAAGCCCATTGAGTTAGTTG
 TGTCTACTTACCAGGCTGCTGTGCTTCTGCTGTTCAACACAACAGACAAATTGAGCTACAACGATA
 TCCTAACTCAACTGAACCTAAGCCACGAAGATTTAGTGAGGTTGCTTCATTCCCTGTCATGTGCTA
 GGTACAAGATCCTTCTCAAGGAGCCAAGCACGAAGACTGTTACACAGACTGATTCATTTGAATTCA
 ATGCCAAATTCACGGACAGAATGCGCAGAATCAAGATCCCTCTCCCTCCTGTTGATGAAAGGAAGA
 AGGTTGTGGAAGATGTGGACAAAGACAGACGCTATGCGATTGATGCTGCCATTGTTAGGATCATGA
 AGAGCAGGAAAGTGTTGGGACATCAACAACCTCGTCTCTGAGTGCGTTGAGCAACTTAGCCGAATGT
 TCAAGCCTGATATCAAAGCGATCAAGAAGCGTATGGAGGATCTAATTACGAGGGATTATTTGGAGA
 GGGACAAGGAGAACCCTAACATGTTTAGGTACTTGGCTTAG

Fig. 16

ATGAACGATCGTAAAGTTATCGAACTAGAGCAAGGATGGGAGTTCATGGGGAAGGGGATTACGAAG
TTGAAAAGGATTTTGAAGGATTACCAGAGCCGCCTTTTAATTCGGAAGACTACATGATGCTGTAC
ACGACAAT **[A]** TACAACATGTGTACACAGAAACCCCTCATGATTACTCTCAACAACTCTATGACA
ATTACAAAGAGGCATTTGTGGATTACATACATTCAACGGTTTTACCTTCTTTGGGGGACAAACATG
ATGAGTTTATGCTGAGAGAGCTTGTGAAGAGATGGTCAAATCATAAAGTAATGGTGAGGTGGTTGT
CTCGCTTCTTCCATTATCTGGATCGGTACTTCATCGCTCGGAGATCGCTTCCTTCTTTGAATGATG
TTGGATTGACGTGCTTCCGTGATCTGGTTTATCAAGAAATATCTGGCAAAGCCAAGGATGCTGTTA
TTGCTCTGATTGATGAAGAAAGAGAGGGTGGGCAAATTGACAGAGCCTTATTGAAGAATGTACTTG
ATATATACGTTGAAATTGGAATGACACAAATGGATTACTACGAAAAGGACTTTGAAGCTCATATGC
TGGATGATACTGCTGCTTATTACTCACGCAAGGCCTCAAGCTGGATTCTGGAGGACTCATGTCCGG
AATACATGTTGAAGTCGGAGGAGTGTTTGAAGAAAGAGAAAAGATAGAGTGGCTCATTATCTACATT
CCAGCAGTGAGCCAAAGCTTCTGGAGAAAAGTACAAAATGAGTTGCTACTGGTTTACGAAAATCAGT
TGCTTGAGAAGGAGAATTCTGGATGTCGTGCATTGTTGAAAGATGACAAGGTGGAAGATCTTTCCA
GGATGTACAGGCTTTATAGCAAGGTTACCAAAGGGTTGGAACCCATTGGCAGTATCTTCAAACAGC
ATATAACCGATGAAGGAACAGCCCTGGTGCAGCAGGCCGAAGACGCTGCAATTAGCAAGGCTGAAA
ATGCTGGCGGTGGTTCACATGAGCAGGTCTTCGTCAGGAAAGTGATTGAGTTGCATGACAAATTTA
TGACCTATGTTACAGATTGCTTCAACAGCCATAACCATCTTTCACAAGGCTCTCAAGGAAGCTTTTG
AGGTATTCTTAAACAAGGGTGTTGCTGGTAGTTCAAGTGCTGAACCTCTAGCTTCATTTTGTGATA
ATATTCTCAAGAAAGGTGGTAGTGAAAAATTAAGTGATGAGGCTATTGAGGATTCAGTGGAGAAGG
TGGTGAAGCTTCTCGCATATGTCAGTGATAAAGACCTGTTTGCTGAATTTTACAGAAAGAAGCTCT
CTCGCCGGCTACTCTTTGACAAAAGTGCTAATGATGATCATGAGAGGAGTATTTTAAACAAATTGA
AGCAGCAGTGTTGGGGGACAGTTCACATCAAAGATGGAGGGGATGGTGACAGACTTGACATTGGCGA
GGGAGAATCAAATAATTTTGAGGAATATCTTGGACAAAATACAGATGCCAGTCCTGGTCTTGATT
TGAAGTGACAGTTTTGACCACTGGGTCTGGCCAAGTTACAAATCTTCTGATCTTAACCTTCCTG
CTGAGATGGTGAGGTGTGTTGAAGTTTTTAAGCAATTTTATCAAACAAAGACAAAACACAGGAAGC
TCACCTGGGTATATTCGTTGGGAAGTTGTAACATTAATGGCAAGTTTGGTCCGAAAACAATTGAAT
TGGTTGTTGGAACCTTATCAGGCTGCTGCGCTGATGCTCTTTAACACATCAGATCGACTGAGTTATT
CAGAAATAACGACCCAACTAAATCTAGCTGACGAAGACTTGGTTAGAGTGCTTCAATCTCTATCTT
GCGCAAAGTATAAGATTCTTCTAAAAGAGCCAAGCACAAAGAACGTGATCTCAACTGATTGTTTTT
CATTCAACTCTAATTTTACTGACAGAATGAGGAGGATTAGGATTCCTCTTCCTCCAATGGATGAGA
GGAAAAAGGTTGTTGAAGATGTTGACAAAGATAGAAGATATGCTATTGATGCCTCAATTGTACGCA
TAATGAAAAGTAGGAAGGCTTTGGGATATCAACAATTAATCACGGAGTGTGTGGAGCAGCTAAGCC
GCATGTTCAAGCCTGATTTCAAAGCAATTAAGAAGAGGATCGAGGACTTGATAACCAGAGATTATA
TTGAAAGAGACAAGGAAAACCCCTCAGCTATTCCGGTACTTGGCTTGA

Fig. 17

ATGAATGATCGTAAAGTTATTGAACTAGAGCAAGGATGGGAGTTCATGGGGAAGGGGATTACAAAG
TTGAAGAGGATTCTGGAAGGATTGCCAGAGCCACCATTTAATTCTGAAGACTACATGATGTTGTAC
ACGACGAT **[A]** TACAATATGTGTACTCAGAAACCCCCACATGATTACTCTCAACAGCTCTATGACA
ATTACAAACAGGCTTTTGTGGATTACATCAACTCGACGGTTTTACCTTCTTTGCGGGAGAAGCATG
ATGAGTTTATGTTAAGAGAACTTGTGAAAAGATGGGCAAATCATAAAGTAATGGTCAGGTGGTTGT
CTCGTTTCTTCCATTATCTGGACCGGTATTTTCATTGCTCGGAGGTCGCTTCCTTCTTTGAATGAAG
TTGGACTGACTTGTTTCCGTGATCTGGTTTATCAAGAAATATCTGGCAAAGCCAAGGATGCTGTTA
TAGCCCTGATTGATATAGAAAGAGAAGGTGGGCAGATTGACAGATCATTATTGAAAAATGTACTTG
ATATATATGTTGAAATTGGAATGGGACAAATGGATCACTATGAAAAAGACTTTGAAGCTCATATGC
TGGATGATACTGCTGCTTACTACTCGCGCAAAGCGTCTAGCTGGATTCTTGAGGACTCTTGTCCGG
AATACATGTTAAAGTCTGAGGAGTGTTTGAAGAAGGAGAAAAGAGAGAGTGGCTAATTATTTACATT
CCAGCAGTGAGCCAAAGCTTCTGGAGAAAAGTGCAAACGAGTTGCTATTGGTTTATGAAAGCCAAT
TGCTTGAGAAGGAGAATTCGGGATGTCTGTCATTACTGAAAGATGACAAGGTGGATGATCTTTCCA
GGATGTACAGGCTTTACAGTAAGGTTACCAAAGGATTGGAACCCATTGGCAGTATCTTCAAACAGC
ATATAACTGATGAAGGAACAGCCTTAGTGACGAGGCCGAAGATGCTGCTATCAGCAAGGCTGAAA
ATACTGGTGGTTACATGAGCAGGTCTTCGTCAGGAAAGTAATAGAGTTGCATGACAAATTCATGA
CTTATGTCACCGATTGCTTCAACAGCCATACCATATTTTACAAGGCTCTTAAGGAGGCTTTTGAGG
TATTTTTGAACAAGGGTGTTGCTGGTAGCTCAAGTGCTGAGTTGCTAGCTACATTCTGTGATAACA
TTCTCAAGAAAGGTGGGAGCGAAAACTAAGCGATGAGGCTATTGAGGATTCATTGAGAAGGTGG
TGAAGCTTCTGGCCTATGTCAGTGATAAAGACCTGTTTGCTGAATTTTACAGAAAGAAGCTCTCTC
GCCGGCTACTCTTTGACAAGAGTGCTAATGATGATCATGAAAGAAGTATTTTAACCAAATTGAAGC
AGCAGTGTGGCGGACAATTCACATCAAAGATGGAGGGGATGGTGACAGACTTGACCTTGGCGAGGG
AGAATCAAATAATTTTGAAGGAATATCTTAGTCAGAATCCAGATGCCAGTCCTGGTCTTGATTTGA
CTGTGACTGTTCTGACAACTGGGTTCTGGCCAAGTTACAAATCTTCCGATCTTAACCTTCCCGCTG
AGATGGTGAGGTGTGTTGAAGTTTTTAAGCAGTTCTATTCAACTAAAACAAAGCACAGGAAGCTGA
CCTGGGTTTACTCATTGGGAAGCTGTAATATTAATGGCAAAGTTTGGTCCAAAACTATTGAATTGG
TTGTGCGAACTTATCAGGCTGCTGCTTTGATGCTCTTTAACACATCAGACCGACTGAGTTATTCAG
AGATAGCAACTCAACTAAATTTAGCTGATGAAGATCTGGTTAGAGTGCTTCAATCTTTATCCTGCG
CAAAGTATAAGATTCTTTTAAAGGAGCCAAACACGAAAACCGTGTCCCCGACTGATTGTTTTTCAT
TTAACTCTAGTTTCACTGACAGGATGAGGAGGATAAGAATTCCTCTTCTCCGATGGATGAGAGGA
AAAAGGTTGTTGAGGATGTTGACAAAGATAGAAGATATGCTATTGATGCCTCAATTGTACGCATAA
TGAAAAGTAGGAAGGTTTTGGGGTACCAGCAATTAATCACAGAGTGTGTGGAGCAGCTAAGCCGCA
TGTTCAAGCCTGATTTCAAGGCAATTAAGAAGAGGATCGAGGACTTAATAACCCGAGATTATATTG
AAAGAGACAAGGAGAACCCGCAGCTATTCCGATACTTGGCTTGA

Fig. 18

MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT [1] YNMCTQKPPHDYSQQ
 LYDKYRESFEEYITSMVLPSLREKHDEFMLRELVKRWTHHKVMVRWLSRFFHYLDRIYFIARRSLPP
 LNEVGLTCFRELVIKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMDYYENDFE
 AAMLKDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLSHSSEPKLLEKVQHELLSVY
 ATQLEKEHSGCHALLRDDKVEDLSRMFRLFSKIPKGLDPVSNIFKHVTAEGTALVKQAEDAASN
 KKAEEKDIVGLQEQQVFVRKVIELHDKYLAYVNDCFQNHTLFHKALKEAFEVFCNKGVAGSSSAELL
 ATFCDNILKKGSEKLSDEAIEETLEKVVKLLAYICDKDLFAEFYRKKLARRLLFDKSANDDHRS
 ILTKLKQQCGGQFTSKMEGMVTDLTARENQTSFEEYLSNNPQASPGIDLTVTVLTTGFWPSYKSF
 DLNLPAEMVKCVEVFRIFYQTKTKHRKLTWIIYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSS
 DRLSYSEIMTQLNLSDDDVRLLHSLSCAKYKILNKEPNTKTISPNDHFEFNAKFSKMRRIKIPL
 PPVDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQLVMECVEQLGRMFKPDFKAIAKKRIEDL
 ITRDYLERDKDNPHLFRYLA

Fig. 19

MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT [1] YNMCTQKPPHDYSQQ
 LYDKYRESFEEYITSMVLPSLREKHDEFMLRELVKRWTHHKVMVRWLSRFFHYLDRIYFIARRSLPP
 LNEVGLTCFRELVIKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMDYYENDFE
 AAMLKDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLSHSSEPKLLEKVQHELLSVY
 ATQLEKEHSGCHALLRDDKVEDLSRMFRLFSKIPKGLDPVSNIFKHVTAEGTALVKQAEDAASN
 KKAEEKDIVGLQEQQVFVRKVIELHDKYLAYVNDCFQNHTLFHKALKEAFEVFCNKGVAGSSSAELL
 ATFCDNILKKGSEKLSDEAIEETLEKVVKLLAYICDKDLFAEFYRKKLARRLLFDKSANDDHRS
 ILTKLKQQCGGQFTSKMEGMVTDLTARENQTSFEEYLSNNPQASPGIDLTVTVLTTGFWPSYKSF
 DLNLPAEMVKCVEVFRIFYQTKTKHRKLTWIIYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSS
 DRLSYSEIMTQLNLSDDDVRLLHSLSCAKYKILNKEPNTKTISPNDHFEFNAKFSKMRRIKIPL
 PPVDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQLVMECVEQLGRMFKPDFKAIAKKRIEDL
 ITRDYLERDKDNPHLFRYLA

Fig. 20

MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT [1] YNMCTQKPPHDYSQQ
 LYDKYRESFEEYIISSMVLPSLREKHDEFMLRELVKRWTHHKVMVRWLSRFFHYLDRIYFIARRSLPP
 LNEVGLTCFRELVIKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMDYYENDFE
 AAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELRREKDRVSHYLSHSSEP KLEKVQHELLSVY
 ATQLEKEHSGCHALLRDDKVEDLSRMFRLFSKIPKGLDPVSNIFKHVTAEGTALVKQAEDAASN
 KKAEEKDIVGLQEQQVFVRKVIELHDKYLAYVNDCFQNH TL FHKALKEAFEVFCNKG VAGSSSAELL
 ATFCDNILKKGSEKLSDEAIEETLEKVVKLLAYICDKDLFAEFYRKKLARRLLFDKSANDDHRS
 ILTKLKQQCGGQFTSKMEGMVTDLT LARENQTSFEEYLSNNPQASPGIDLT VTVLTTGFWPSYKSF
 DLNLPAEMVKCVEVFRIFYQTKTKHRKLTWIIYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSS
 DKLSYSEIMTQLNLSDDD VVRL LHSLS CAKYKILNKEPNTKTISPNDHFEFNAKFSDKMRRIKIPL
 PPVDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQ LVM ECV EQLGRMF KPDFKA IKKRIEDL
 ITRDYLERDKDNPHLFRYLA

Fig.21

MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT [1] YNMCTQKPPHDYSQQ
 LYDKYRESFEEYITSMVLPSLREKHDEFMLRELVKRWTHHKVMVRWLSRFFHYLDRIYFIARRSLPP
 LNEVGLTCFRELVIKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMDYYENDFE
 AAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELKREKDRVSHYLSHSSEP KLEKVQHELLSVY
 ATQLEKEHSGCHALLRDDKVEDLSRMFRLFSKIPKGLDPVSNIFKHVTAEGTALVKQAEDAASN
 KKAEEKDIVGLQEQQVFVRKVIELHDKYLAYVNDCFQNH TL FHKALKEAFEVFCNKG VAGSSSAELL
 ATFCDNILKKGSEKLSDEAIEETLEKVVKLLAYICDKDLFAEFYRKKLARRLLFDKSANDDHRS
 ILTKLKQQCGGQFTSKMEGMVTDLT LARENQTSFEEYLSNNPQASPGIDLT VTVLTTGFWPSYKSF
 DLNLPAEMVKCVEVFRIFYQTKTKHRKLTWIIYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSS
 DRLSYSEIMTQLNLSDDD VVRL LHSLS CAKYKILNKEPNTKTISPNDHFEFNAKFSDKMRRIKIPL
 PPVDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQ LVM ECV EQLGRMF KPDFKA IKKRIEDL
 ITRDYLERDKDNPHLFRYLA

Fig. 22

MNQRSTIDLEHGWDFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT [I] YNMCTQKPPHDYSQQLY
 DKYREAFEEYITTTVLPSLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDRYFIARRSLPGLN
 EVGLTCFRDLVYQELNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGSMDDYYENDFEAA
 MLKDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHSSSETKLEKVQHELLSVYAN
 QLLEKEHSGCHALLRDDKVDDL SRMYRLFSKIPRGLEPVANIFKQHVTAEGTALVKQAEDAASNKK
 AEKRDVVGLQEQQVFVRKVIELHDKYLAYVNNCFQNHTLFHKALKEAFELFCNKG VAGSSNAELLAT
 FCDNILKKGSEKLSDEAIEETLEKVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLT LARENQASFEYLSNNPTANPGIDLTVTVLTTGFWPSYKSFDL
 NLPAEMVRCVEVFKEFYQTKTKHRKLTWIYSLGTCNINGKFEAKTIELVVTTYQASALLLFNASDR
 LSYQEIMTQLNLSDDDVRLLHSLSCAKYKILNKEPSTKTISPTDVF EFNSKFTDKMRRIKIPLPP
 VDEKKKVI EDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECVEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKDNP NLFKYLA

Fig. 23

MNQRSTIDLEHGWDFMQRGITKLKNILEGLPEPQFSSSEDYMMLYTT [I] YNMCTQKPPHDYSQQLY
 DKYREAFEEYITTTVLPSLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDRYFIARRSLPGLN
 EVGLTCFRDQVYQELNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGLMDYYENDFEAA
 MLKDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHSSSETKLEKVQHELLSVYAT
 QLLEKEHSGCHALLRDDKVEDLSRMYRLFSKISRGLDPVANIFKQHVTAEGTALVKQAEDAASNKK
 AEKRDVVGLQEQQVFVRKVIELHDKYLAYVNNCFQNHTLFHKALKEAFELFCNKG VAGSSSAELLAT
 FCDNILKKGSEKLSDEAIEETLEKVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLT LARENQASFEYLSNNPIANPGIDLTVTVLTTGFWPSYKSFDL
 NLPAEMVRCVEVFKEFYQTKTKHRKLTWIYSLGTCNINGKFEPKTIELVVTTYQASALLLFNASDR
 LSYQEIMTQLNLSDDDVRLLHSLSCAKYKILNKEPSTKTISPTDVF EFNSKFTDKMRRIKIPLPP
 VDEKKKVI EDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECVEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKDNP NLFKYLA

Fig. 24

MNQIRSTINLEHGWDQMQRGITKLKNILEGLPEPQFSSSEDYMMLYTT [1] YNMCTQKPPHDYSQQLY
 DKYREAFEEYITTTVLPSLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDRYFIARRSLPGLN
 EVGLTCFRDLVYQELNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGSMDDYYENDFEAA
 MLKDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHLSSETKLEKVQHELLSVYAT
 QLLEKEHSGCHALLRDDKVEDLSRMYRLFSKIPRGLDPVANIFKQHVTAEGTALVKQAEDAASNKK
 AEKRDVVGLQEQIFVRKVIELHDKYMAVNNCFQNHTLFHKALKEAFELFCNKGVAGSSSAELLAT
 FCDNILKKGSEKLSDEAIEETLEKVVKLLAYISDKDLFAEFYRKKLARRLLFDKSANDHERSIL
 TKLKQQCGGQFTSKMEGMVTDLTTLARENQASFEYLSNNPAANPGIDLTVTVLTTGFWPSYKSF DL
 NLPAEMVRCVEVFKEFYQTKTKHRKLTWIYSLGTCNINGKFEPKTIELVVTTYQASALLLFNASDR
 LSYQEIMTQLNLSDDDDVRLHLSLSCAKYKILNKEPSTKTISPTDVFEFNFKFTDKMRRIKIPLPP
 VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECVEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKDNPNFLFKYLA

Fig. 25

MERKTIDLDQGWDYMQTGITKLKRILEGLPEPQFDSEQYMMLYTT [1] YNMCTQKPPHDYSQQLYD
 KYREAFEEYIHSTVLPALREKHDEYMLRELVKRWSNHKVMVRWLSRFFYYLDRYFIARRSLPPLNE
 VGLTCFRDLVYNELHSHKVKDAVIALVDKEREGEQIDRALLKNVLDIYVEIGMQMERYEEDFESFM
 LLDSASYYSRKASSWIQEDSCPDYMLKSEECLKKERERVAHYLHSSSEPKLVEKVQHELLVVYANQ
 LLEKEHSGCRALLRDDKVDDLSRMYRLYHKIVKGLEPVANIFKQHVTAEGNALVQQAEDTATNHAA
 NTASVQEQLIRKVIELHDKYMVYVVECFQNHTLFHKALKEAFEIFCNKTVAGSSSAELLATFCDN
 ILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARRLLFDRSANDDHERSILTKLK
 QQCGGQFTSKMEGMVTDLTTLARENQNSFEYLGNNPAANPGIDLTVTVLTTGFWPSYKSF DINLPA
 EMVKCVEVFKEGYETKTKHRKLTWIYSLGTCHLNGKFDVKPIELVVSTYQAAVLLLFNTTDKLSYT
 DILTQLNLSHEDLVRLHLSLSCARYKILLKEPSTKTVSQSDSFENSKFTDRMRRIKIPLPPVDER
 KKVVEDVDKDRRYAIDAAIVRIMKSRKVLGHQQLVSECVEQLSRMFKPDIAIAKKRMEDLITRDYL
 ERDKENANMFRYLA

Fig. 26

MMIERKTIDLEQGWFDMQKGITKLKNILEGFPEPQFSSSEDYMMLYTT [1] YNMCTQKPPHDYSQQL
 YEKYREAIEEYITSTVLP SLREKHDEFMLREL VKRWSNHKVMVRWLSRFFHYLD RYFIARRSLPPL
 HEVGLTCFRDLVYQEINGKVRDAVISLINQEREGEQIDRALLKNVLDIFVEVGMSQMDYYENDFEA
 DMLKDTAAYYSRKASNWILEDSCPDYMLKAE ECLRREKDRVSNYLHSSSEP KLEKVQHELLSHYA
 TQLEKEHSGCHALLRDDKVADLSRMYRLFSKIPRGLDPVSNIFKQHVTAEGTALVKQAEDAASNK
 KAEKRDVVG LQE QVFVRKIIELHDKYLT VVND CFTNHTL FHKALKEAFEIFCNKGVSGSSSAELLA
 TFCDNILKKG GSEKLSDEAIEETLEKVVRLLAYISDKDLFAEFYRKKLARRL LFDKSANDEHERSI
 LTKLKQQCGGQFTSKMEGMVTDLT LAKENQSNFEEYLN NNSNVNPGIDLT VTVLTTGFWPSYKSFD
 LNLPAEMVKC VEVFREFYQTKTKHRKLTW IYSLGTCNII GKFDPKTMELIVTTYQASALLFNSSD
 RLSYNEIMTQLNLSDDDVRLLHSLSCAKYKILSKEPNTKTISP TDCFQFNSKFTDKMRRIKIPLP
 PVDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECVEQLGRMF KPDVKAIAKKRIEDLI
 TRDYLERDKDNANLFRYLA

Fig. 27

MNERKTIDLDNGWEFMQKGITKLKKILEGQPEPQFSSSEDYMMLYTT [1] YNMCTQKPPHDYSQQLY
 DKYREAFEEYITSTVLP SLREKHDEFMLREL VNRWTNHKVMVRWLSRFFHYLD RYFIARRSLPALH
 EVGLTCFRDLVYQELKVVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMSQMDQYENDFEEA
 MLTDTAAYYSRKASNWILEDSCPDYMLKAE ECLRREKDRVSHYLHFSSEP KLEKVQHELLSVYAT
 QLEKEHSGCHALLRDDKVDDLSRMYRLFSKIPKGLDPVSYIFKQHV TNEGMALVKQAEDAASNKK
 AEKRDVVS LQE QVFVRKIIELHDKYLAYVND CFTNHTL FHKALKEAFEIFCNKGVAGSSNAELLAT
 FCDNILKKG GSEKLSDEAIEETLEKVVKLLAYISDKDLFAEFYRKKLARRL LFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLT LAKENQSSFEEYLGNNANVNPGIDLT VTVLTTGFWPSYKSFDL
 NNLPAEMVKC VEVFREFYQTKTKHRKLTW IYSLGTCNIN GKFEPTIELIVTTYQASALLFN TSDR
 LSYQEIMTQLNLSDDDVRLLHSLSCAKYKILTKEPNNKTISP TDYFEFNSKFTDKMRRIKIPLPP
 VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECVEQLGRMF KPDVKAIAKKRIEDLIT
 RDYLERDKDNANLFRYLA

Fig. 28

MNERKTIDLEQGWDQMKGITKLKNILEGLPEPQFSSSEDYMMLYTT **[I]** YNMCTQKPPHDYSQQLY
 DKYRESFEEYITSTVLPSLREKHDEFMLRELVRWRWSNHKVMVRWLSRFFHYLDYFIARRSLPPLN
 EVGLACFRDLVYQEVNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMEYYENDFEAS
 MLNDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHSSSEPKLLEKVQTELLSVYAT
 QLLEKEHSGCHALLRDDKVDDL SRMYRLFSKI QKGLDPVSSMFKQHVTAEGTTLVKQAEDAAS TKK
 AEKRDVVGLQE QVFVRKVIELHDKYLAYVNDCFMNHTLFHKALKEAFEIFCNKGVAGSSSAELLAT
 FCDNILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARRLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLT LAKENQSHFEEYLNNPNVSPGIDLTVTVLTTGFWPSYKSFDL
 NLPAEMVKCEVFREFYQTKTKHRKLTWIYSLGTCNINGKFEPKTMELIVTTYQASALLLFNSSDR
 LSYQEIMTQLNLSDDDVRLLHSLSCAKYKILLKEPNTKTI SPTDFFEFNSKFTDKMRRIKIPLPP
 VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECVEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKENPNLFRYLA

Fig. 29

MNERKTIDLEQGWDQMKGITKLKNILEGLPEPQFSSSEDYMMLYTT **[I]** YNMCTQKPPHDYSQQLY
 DKYRESFEEYITSTVLPSLREKHDEFMLRELVRWRWSNHKVMVRWLSRFFHYLDYFIARRSLPPLN
 EVGLACFRDLVYQEVNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMEYYENDFEAS
 MLNDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHSSSEPKLLEKVQTELLSVYAT
 QLLEKEHSGCHALLRDDKVDDL SRMYRLFSKI QKGLDPVSSMFKQHVTAEGTTLVKQAEDAAS TKK
 AEKRDVVGLQE QVFVRKVIELHDKYLAYVNDCFMNHTLFHKALKEAFEIFCNKGVAGSSSAELLAT
 FCDNILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARRLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLT LAKENQSHFEEYLNNPNVSPGIDLTVTVLTTGFWPSYKSFDL
 NLPAEMVKCEVFREFYQTKTKHRKLTWIYSLGTCNINGKFEPKTMELIVTTYQASALLLFNSSDR
 LSYQEIMTQLNLSDDDVRLLHSLSCAKYKILLKEPNTKTI SPTDFFEFNSKFTDKMRRIKIPLPP
 VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECVEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKENPNLFRYLA

Fig. 30

MSLHERKTIDLEQGWAFMQKGITKLKNILDELNEPQFSSSEDYMMLYTT [I] YNMCTQKPPHDYSQE
 LYDKYRESFEEYITTTVLPSLREKHDEYMLRELVRWRWSNHKIMVRWLSRFFHYLDRIYFIARRSLPA
 LNEVGLTCFRDLVYNEVHGKVKDAVISLIDQEREGEQIDRALLKNVLGIFVEIGLGSMECYENDFE
 TSMLNATAAYYSRKASNWILEDSCPDYMLKAECECLKHEKDRVAHYLHSSSEQKLEKVVQHELLFVY
 ASQLEKEHSGCHALLRDDKVGDLRMYRLFCRITRGLDPVSQIFKHVTAEGTALVKHAEDAASN
 KKAEEKDIVGLQEQQVFVRKVIELHDKYLAYVTDCFNHSLFHKALKEAFEVFCNKGVAGSSSAELL
 AAFCDNILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARRLLFDKSANDDHRS
 ILTKLKQQCGGQFTSKMEGMVTDLTARENQSSFDYLLSSNPKANSGIDLTVTVLTTGFWPSYKSF
 DLNLPDEMVKCVEIFKEFYETKTKHRKLTWIIYSLGTCNINGKFETKTIELVVTTYQAALLLNFNSA
 DKLSYSEIVQQNLNSDDDDVIRLLHSLSCAKYKILNKEPATKTITPNDHFEFNSKFTDRMRRIKIPL
 PPVDEKKKVIDVDKDRRYAIDASIVRIMKSRKVLGHQQLVLECEQLGRMFKPDFKAIAKKRIEDL
 IARDYLERDKDNPNFLFKYLA

Fig. 31

MNERKTIDLEQGWDFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT [I] YNMCTQKPPHDYSQQLY
 DKYRESFEEYITSTVLPSLREKHDEFMLRELVRWRWSNHKVMVRWLSRFFHYLDRIYFIARRSLPPLN
 EVGLACFRDLVYQEVNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMEYYENDFEAS
 MLNDTAAYYSRKASNWILEDSCPDYMLKAECECLKREKDRVSHYLHSSSEPKLLEKVVQNELLSVYAT
 QLEKEHSGCHALLRDDKVDDLRLMYRLFSKIPKGLDPVSSMFKQHVTAEGTTLVKQAEDAASTKK
 AEKRDVVGLQEQQVFVRKVIELHDKYLAYVNDCFMNHTLFHKALKEAFEIFCNKGVAGSSSAELLAT
 FCDNILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARRLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLTAKENQSHFEEYLNHNPNVSPGIDLTVTVLTTGFWPSYKSFDL
 NLPAEMVKCVEVREFYQTKTKHRKLTWIIYSLGTCNINGKFEPKTMELIVTTYQASALLLNFNLSDR
 LSYQEIMTQLNSDDDDVIRLLHSLSCAKYKILLKEPNKTITISPTDYFEFNSKFTDKMRRIKIPLPP
 VDEKKKVIDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKENPNLFRYLA

Fig. 32

MERKTIDLEQGWDYMQTGITKLKRILEGLPEPQFDSEQYMMLYTT [I] YNMCTQKPPHDYSQQLYD
 KYREAFEEYIDSTVLPALKEKHDEYMLRELVKRWSNHKVMVRWLSRFFYYLDRYFIARRSLPPLNE
 VGLTCFRDRVYKELHSHKVKDAVIALVDKEREQIDRALLKNVLDIYVEIGMQMERYEVDVFESFM
 LLDASYYSRKASNWIQEDSCPDYMLKSEECLKKERERVAHYLHSSSEPKLVEKVQHELLVVYANQ
 LLEKEHSGCRALLRDDKVDDLSRMYRLYHKIAKGLEPVANIFKQHVTAEGNALVQQAEDTATNQAA
 NTASVQEQVLIRKVIELHDKYMVYVVECFQNHTLFHKALKEAFEIFCNKTVAGSSSAELLATFCDN
 ILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARLLFDRSANDDHERSILTKLK
 QQCGGQFTSKMEGMVTDLTARENQTSFEEYLGNNPAANPGIDLTVTVLTTGFWPSYKSFDINLPS
 EMVKCVEVFKGFYETKTKHRKLTWIYSLGTCHLNGKFDHKPIELVVSTYQAAVLLLFNNTDKLSYN
 DILTQLNLSHEDLVRLHSLSCARYKILLKEPSTKTVTQTDSEFNAKFTDRMRRIKIPLPPVDER
 KKVVEDVDKDRRYAIDAAIVRIMKSRKVLGHQQVLVSECVEQLSRMFKPDIIKIKRMEDLITRDYL
 ERDKENPNMFRYLA

Fig. 33

MNDRKVIELEQGWEFMGKGITKLKRILEGLPEPPFNSEDYMMLYTT [I] YNMCTQKPPHDYSQQLY
 DNYKEAFVDYIHSTVLP SLGDKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDRYFIARRSLPSLN
 DVGLTCFRDLVYQEISGKAKDAVIALIDEEREQIDRALLKNVLDIYVEIGMTQMDYYEKDFEAFH
 MLDDTAAYYSRKASSWILEDSCPEYMLKSEECLKKEKDRVAHYLHSSSEPKLLEKVQNELLVYEN
 QLLEKENSGCRALLKDDKVEDLSRMYRLYSKVTGLEPIGSIFKQHITDEGTALVQQAEDAAISKA
 ENAGGGSHEQVFVRKVIELHDKFMTYVTD CFNSHTIFHKALKEAFEVFLNKG VAGSSSAELLASFC
 DNILKKGSEKLSDEAIEDSLEKVVKLLAYVSDKDLFAEFYRKKLSRRLLFDKSANDDHERSILTK
 LKQQCGGQFTSKMEGMVTDLTARENQTNFEEYLGQNTDASPGLDLTVTVLTTGFWPSYKSSDLNL
 PAEMVRCVEVFKQFYQTKTKHRKLTWVYSLGSCNINGKFGPKTIELVVGTYQAAALMLFNNTSDRLS
 YSEITTQLNLADEDLVRLVQLSLSCAKYKILLKEPSTRNVISTDCFSFNSNFTDRMRRIKIPLPPMD
 ERKKVVEDVDKDRRYAIDASIVRIMKSRKALGYQQLITECVEQLSRMFKPDFKAIKKRIEDLITRD
 YIERDKENPQLFRYLA

Fig. 34

MNDRKVIELEQGWEFMGKGITKLKRILEGLPEPPFNSEDYMMLYTT [I] YNMCTQKPPHDYSQQLY
DNYKQAFVDYINSTVLPSLREKHDEFMLRELVKRWANHKVMVRWLSRFFHYLDRIYFIARRSLPSLN
EVGLTCFRDLVYQEISGKAKDAVIALIDIEREGGQIDRSLLKNVLDIYVEIGMQMDHYEKDFEAH
MLDDTAAYYSRKASSWILEDSCPEYMLKSEECLKKEKERVANYLHSSSEPKLLEKVQNELLVYES
QLLEKENSGCRALLKDDKVDDL SRMYRLYSKVTGLEPIGSIFKQHITDEGTALVQQAEDAAISKA
ENTGGSHEQVFVRKVIELHDKFMTYVTDCFNSTIFHKALKEAFEVFLNKG VAGSSSAELLATFCD
NILKKGSEKLSDEAIEDSLEKVVKLLAYVSDKDLFAEFYRKLSRRLLFDKSANDDHRSILTKL
KQQCGGQFTSKMEGMVDTLTLARENQTNFEEYLSQNPDASPGDLTVTVLTTGFWPSYKSSDLNLP
AEMVRCVEVFKQFYSTKTKHRKLTWVYSLGSCNINGKFGPKTIELVVGTYQAAALMLFNTSDRLSY
SEIATQLNLADEDLVRVLQSLSCAKYKILLKEPNTKTVSPTDCFSFNSSFTDRMRRIRIPLPPMDE
RKKVVEDVDKDRRYAIDASIVRIMKSRKVLGYQQ LITECVEQLSRMFKPDFKAIAKKRIEDLITRDY
IERDKENPQLFRYLA

Fig. 35

ATGACAATGGGCGAGCGGAAGACTATTGACTTGGAGCAGGGATGGGAGTTTATGCAGAAGGGTATC
 ACAAAGTTGAAGAACATTCTCGAGGGCTTGCCTGAGCCTCAGTTCAGCTCCGAGGACTACATGATG
 CTTTACACTACCAT **[G]** TATAACATGTGCACCCAAAAGCCGCCGCATGATTACTCCCAGCAGCTGT
 ATGATAAATATCGTGAATCTTTTGAAGAGTACATCACTTCTATGGTCTTACCATCCTTGAGGGAGA
 AGCACGATGAGTTCATGTTGAGAGAACTAGTAAAAAGGTGGACAAACCATAAAAGTCATGGTGAGGT
 GGCTTTCTCGCTTCTTCCACTATCTTGATCGGTACTTCATCGCTCGAAGGTCACTTCCACCTCTAA
 ATGAAGTTGGCCTCACATGCTTCCGCGAATTGGTGTACAAAGAGCTAAATAGTAAAGTGAGGGATG
 CAGTAATTTTATTGATTGATCAAGAACGTGAAGGAGAACAGATTGACAGAGCTCTACTGAAGAATG
 TACTAGATATATTTGTGGAAATTGGTATGGGGCAAATGGATTACTATGAAAATGACTTTGAAGCTG
 CCATGCTTAAAGATACTGCTGCTTATTACTCTAGGAAGGCTTCCAATTGGATCCTAGAAGATTCTT
 GTCCCGATTATATGCTTAAAGCAGAGGAGTGCTTGAAACGAGAAAAGGATAGGGTTTCCCACTATT
 TGCACTCTAGTAGCGAGCCAAAGTTGTTGGAGAAAGTTCAACATGAACTATTATCTGTTTATGCTA
 CTCAACTGCTGGAAAAAGAGCATTACAGGATGCCATGCATTGCTTAGAGATGACAAGGTGGAAGATT
 TGTCAAGGATGTTCCGTCTATTCTCCAAAATACCGAAGGGACTGGATCCAGTTTCCAACATATTTA
 AGCAGCATGTAAGTCTGAAGGAACAGCACTGGTCAAACAGGCAGAAGATGCTGCAAGTAACAAGA
 AGGCTGAGAAAAAGGACATAGTTGGTCTGCAGGAACAGGTTTTTGTAAAGAAAAGTGATTGAGCTTC
 ACGACAAGTACTTGGCTTATGTGAATGATTGTTTTCCAAAACACACACTTTTCCATAAGGCTCTCA
 AGGAAGCTTTTGAAGTATTTTGAATAAGGGTGTTGCTGGAAGTTCTAGTGCAGAATTGCTTGCTA
 CCTTTTGTGATAACATCCTTAAGAAAGGTGGGAGTGAGAAGTTGAGTGATGAAGCAATCGAGGAGA
 CACTTGAGAAGGTTGTGAAGTTGTTGGCATAACATTTGCGACAAAGATCTGTTTGCTGAATTCTATA
 GAAAAAACTTGCCCGAAGGCTTCTCTTTGACAAGAGCGCGAACGATGACCACGAGAGAAGTATAT
 TGACCAAATTGAAGCAACAATGTGGTGGTCAGTTCACCTCTAAGATGGAGGGAATGGTTACTGATT
 TGACTTTGGCAAGGGAGAACCAAACCTAGTTTTTGAGGAGTATCTGAGCAATAATCCACAAGCGAGTC
 CTGGCATCGACCTGACTGTTACTGTTTTAACTACTGGATTTTGGCCAAGCTACAAGTCTTTTGACC
 TCAACCTGCCGCGCAGAGATGGTAAAGTGTTGAAGTTTTTCAAGAGAGTTTTATCAAACAAAAACCA
 AGCATCGAAAACCTTACATGGATTTACTCATTGGGTACTTGTAACATCAGTGGAATAATTGAACCGA
 AAACGATGGAGCTGATTGTGACAACTTATCAGGCTTCTGCCCTGTTGCTATTCAATTCTTCGGATA
 GACTAAGTTACTCGGAAATCATGACACAATTAAATTTGAGTGACGATGATGTAGTTAGACTACTCC
 ACTCGTTGTCATGTGCCAAGTATAAAATTCTTAATAAGGAACCAAATACGAAAACCATCTCTCCGA
 ACGATCATTTTGAAGTTCAATGCAAAATTCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGC
 CTGTGGATGAGAAAAAGAAAGTCATTGAAGATGTTGACAAGGATCGAAGGTATGCTATTGACGCCT
 CAATCGTGCGTATCATGAAGAGTCGGAAGTTCTTGGTCATCAGCAACTAGTGATGGAGTGCGTCG
 AGCAATTGGGCCGTATGTTCAAGCCCGATTTCAAGGCGATAAAGAAGAGAATTGAAGACCTGATCA
 CTCGGGATTATCTAGAGAGAGACAAAGACAACCCCCACTTGTTTAGGTACTTGGCTTGA

Fig. 36

ATGACAATGGGCGAGCGGAAGACTATTGACTTGGAACAGGGATGGGAGTTTATGCAGAAGGGTATC
 ACAAAGTTGAAGAACATTCTTGAGGGCTTGCCTGAGCCCCAGTTCAGCTCCGAGGACTACATGATG
 CTTTACACTACCAT **[G]** TATAACATGTGCACCCAAAAGCCGCCGCATGATTACTCCCAGCAGCTGT
 ATGATAAATATCGTGAATCTTTTGAAGAGTACATCACTTCTATGGTCTTACCATCCTTGAGGGAGA
 AGCATGACGAGTTCATGTTGAGAGAACTAGTCAAAAGGTGGACAAACCATAAAAGTCATGGTGAGGT
 GGCTTTCTCGCTTCTTCCACTATCTTGATCGGTACTTCATCGCTCGAAGGTCACTTCCACCTCTAA
 ATGAAGTTGGCCTCACATGCTTCCGCGAATTGGTGTACAAAGAGCTAAACAGTAAAGTGAGGGATG
 CAGTAATCTCATTGATTGATCAAGAACGTGAAGGAGAACAGATTGACAGAGCTCTACTGAAGAATG
 TATTAGATATATTTGTGGAAATTGGTATGGGGCAAATGGATTACTATGAAAATGACTTTGAAGCTG
 CCATGCTTAAAGATACTGCTGCTTATTACTCTAGGAAGGCTTCCAATTGGATCCTAGAAGATTCTT
 GTCCCGATTATATGCTAAAAGCAGAGGAGTGCTTGAAGCGAGAAAAGGATAGGGTTTCCCACTATT
 TGCACTCTAGTAGCGAGCCAAAGTTGTTGGAGAAAGTTCAACACGAACTGTTATCTGTGTATGCTA
 CTCAACTGCTGGAAAAAGAGCATTACAGGATGCCATGCATTGCTTAGAGATGACAAGGTGGAAGATT
 TGTCAAGGATGTTCCGTCTCTTCTCCAAAATACCGAAGGGATTGGACCCAGTTTCCAACATATTTA
 AGCAGCATGTAAGTCTGAAGGAACAGCACTGGTCAAACAGGCAGAAGATGCTGCAAGTAACAAGA
 AGGCCGAGAAAAAGGACATAGTTGGTCTGCAGGAACAGGTTTTTGTAAAGAAAAGTGATTGAGCTTC
 ACGACAAGTACTTGGCTTATGTGAATGATTGTTTTCCAAAACACACACTTTTCCATAAGGCTCTCA
 AGGAAGCTTTTGAAGTCTTTTGAATAAGGGTGTTGCTGGAAGTTCTAGTGCAGAATTGCTTGCTA
 CCTTCTGCGATAACATCCTTAAGAAAGGTGGGAGTGAGAAGTTGAGTGATGAAGCAATCGAAGAGA
 CACTTGAGAAGGTTGTGAAGTTGTTGGCATAACATCTGCGACAAAGATCTGTTTGCTGAATTCTATA
 GAAAAAAaCTTGCCCGAAGGCTTCTCTTTGATAAGAGCGCCAACGATGACCACGAGAGAAGTATAT
 TGACCAAATTGAAGCAACAATGTGGTGGTCAGTTCACCTCTAAGATGGAGGGAATGGTTACTGATT
 TGACTTTGGCAAGGGAGAACCAAACCTAGTTTTCGAAGAGTATCTGAGCAATAATCCACAAGCTAGTC
 CTGGAATCGACCTAACTGTTACTGTTTTGACTACTGGATTTTGGCCAAGCTACAAGTCTTTTGACC
 TCAACCTGCCGGCGGAGATGGTAAAGTGTTGAAGTTTTTTCAGAGAGTTTTATCAAACAAAAACCA
 AGCATAGAAAACCTTACATGGATTTACTCATTGGGTACTTGTAAACATCAGTGGAATAATTGAACCGA
 AGACGATGGAGCTGATTGTGACAACATATCAGGCTTCTGCCCTGTTGCTATTCAATTCTTCGGACA
 GACTAAGTTACTCCGAAATCATGACACAATTAAATTTGAGTGATGATGATGTTGTTAGACTGCTCC
 ACTCATTGTCGTGTGCCAAGTATAAAATTCTTAATAAGGAGCCAAATACGAAAACCATCTCACCGA
 ACGATCATTTTGAGTTCAATGCAAAATTCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGC
 CTGTGGATGAGAAAAaGAAAGTCATTGAAGATGTTGACAAGGATCGAAGGTATGCTATTGACGCCT
 CAATCGTGCGTATCATGAAGAGTCGAAAAGTTCTTGGTCATCAGCAACTAGTGATGGAGTGCGTCG
 AGCAATTGGGTCGTATGTTCAAGCCCGATTTCAAGGCGATAAAGAAGAGAATTGAAGACCTGATCA
 CTCGGGACTATCTAGAGAGAGACAAAGACAACCCCCACTTGTTTAGGTACTTGGCTTGA

Fig. 37

ATGACAATGGGTGAGCGGAAGACTATTGACTTGGAGCAAGGATGGGAGTTTATGCAGAAGGGAATC
 ACAAATTGAAGAACATTCTGGAAGGATTGCCTGAGCCACAGTTCAGCTCCGAGGACTACATGATG
 CTTTACACTACAAT **[G]** TATAACATGTGTACCCAGAAGCCACCGCATGATTACTCCCAGCAGCTGT
 ATGATAAATACCGCGAATCGTTTGAGGAGTACATCAGTTCTATGGTTTTACCATCCTTGAGGGAGA
 AGCATGACGAATTTATGTTGAGAGAACTGGTCAAAAGGTGGACCAACCATAAAAGTCATGGTGAGGT
 GGCTTTCTCGCTTCTTCCACTATCTTGATCGATACTTCATTGCTCGAAGGTCACTTCCACCTCTCA
 ATGAAGTTGGCCTCACTTGCTTCCGTGAATTGGTGTACAAAGAGCTAAACAGTAAAGTGAGGGATG
 CAGTAATTTTATTGATCGATCAAGAACGTGAAGGAGAGCAGATTGACAGAGCTCTGTTGAAGAACG
 TGTGATATATTTGTGGAGATTGGGATGGGGCAAATGGATTATTATGAAAATGACTTTGAAGCTG
 CCATGCTTAAAGATACTGCTGCTTACTACTCTAGGAAGGCATCAAATTGGATCTTAGAAGATTCTT
 GTCCTGATTATATGCTAAAAGCAGAGGAGTGCTTGAGACGAGAAAAGGACCGAGTTTCTCACTATC
 TGCACTCTAGTAGCGAGCCAAAGTTATTGGAGAAAGTTCAACATGAACTATTGTCTGTTTATGCTA
 CTCAACTGCTGGAGAAAGAGCATTGAGGATGCCATGCATTGCTTAGAGATGACAAGGTGGAAGATT
 TGTCAAGGATGTTCCGTCTCTTCTCCAAAATACCCAAGGGATTGGACCCAGTTTCCAACATATTTA
 AGCAGCATGTCACTGCTGAAGGAACAGCATTAGTCAAACAGGCAGAAGACGCTGCAAGTAACAAGA
 AGGCCGAGAAAAAGGACATCGTTGGTCTGCAAGAACAGGTTTTTGTTAGAAAAGTGATTGAGCTTC
 ACGACAAGTACTTGGCATATGTGAATGATTGTTTTCCAAAACACACACTTTTTTCAAGGCTCTCA
 AGGAAGCTTTTTGAAGTCTTTTGAATAAGGGTGTGCTGGAAGTTCTAGTGCAGAATTACTTGCTA
 CCTTTTGTGATAACATCCTTAAGAAAGGTGGGAGTGAGAAGTTGAGTGATGAAGCAATTGAGGAAA
 CACTCGAGAAGGTCGTGAAATTGCTGGCGTATATCTGCGACAAAGATCTGTTTGCTGAATTCTATA
 GAAAAAACTCGCCCGAAGGCTTCTCTTCGACAAGAGTGCGAATGATGACCACGAGAGAAGTATAC
 TGACGAAATTGAAGCAACAATGTGGTGGTCAGTTTACCTCTAAGATGGAGGGAATGGTCACGGATT
 TGACACTGGCAAGGGAGAACCAAACCTAGTTTTGAGGAATATCTGAGCAATAATCCACAAGCTAGTC
 CTGGAATCGACTTGACCGTTACCGTTTTGACCACTGGTTTTTGGCCAAGCTACAAGTCTTTTGACC
 TCAACCTGCCGGCGGAGATGGTAAAGTGTTGAAGTTTTTCAAGGAATTTTATCAAACAAAACCA
 AGCACAGAAAACCTTACGTGGATTTACTCGTTGGGTACCTGTAACATCAGCGGAAAATTCGAACCGA
 AAACGATGGAGCTGATCGTGACAACCTATCAGGCTTCTGCCCTGCTGCTTTTCAATTCCTCGGATA
 AACTAAGTTACTCCGAGATCATGACTCAATTAACTTGAGTGACGATGATGTTGTTAGACTGCTCC
 ACTCGTTGTCGTGTGCGAAGTATAAAATTCTTAACAAGGAGCCAAATACGAAAACCATCTCTCCGA
 ACGATCATTTTGAAGTTCAACGCAAAATTCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGC
 CTGTGGATGAGAAAAAGAAAGTAATAGAAGATGTTGACAAGGATCGAAGATATGCTATCGATGCCT
 CGATCGTGCGTATCATGAAGAGTAGGAAAAGTTCTGGGTCAACAGCAGTTAGTGATGGAGTGCGTCG
 AGCAACTGGGTCGTATGTTCAAGCCTGATTTCAAGGCGATAAAGAAGAGAATCGAAGATCTGATCA
 CTCGTGACTATTTAGAGAGAGACAAAGACAACCCCACTTGTTTAGGTACTTGGCTTGA

Fig. 38

ATGACAATGGGCGAGCGGAAGACTATTGACTTGGAACAAGGATGGGAGTTTATGCAGAAGGGAATC
 ACAAAGTTGAAGAACATTCTTGAGGGCTTGCCTGAGCCTCAGTTCAGCTCCGAGGACTACATGATG
 CTTTATACCACCAT **[G]** TACAACATGTGCACACAAAAGCCGCCACATGATTACTCCCAGCAGCTAT
 ACGATAAATACCGTGAATCTTTTGAGGAGTATATCACTTCTATGGTCTTACCATCCTTGAGGGAGA
 AGCATGACGAGTTCATGTTGAGAGAACTGGTCAAAAGGTGGACGAACCATAAAAGTCATGGTGAGGT
 GGCTTTCTCGCTTCTTCCACTATCTTGACCGATACTTCATTGCTCGAAGATCACTTCCACCTCTCA
 ACGAAGTTGGCCTCACATGCTTCCGTGAATTGGTGTACAAAGAGCTAAACAGTAAAGTGAGGGATG
 CAGTAATTTTATTGATTGATCAAGAACGTGAAGGAGAGCAGATTGACAGAGCTCTACTGAAGAATG
 TATTAGATATATTTGTGGAAATTGGGATGGGGCAAATGGATTACTATGAAAATGACTTTGAAGCTG
 CCATGCTTAAAGATACTGCTGCTTATTACTCTAGGAAGGCTTCCAATTGGATCCTAGAAGATTCTT
 GTCCCGATTATATGCTAAAAGCAGAGGAGTGCTTGAAACGAGAAAAGGATAGAGTTTCTCACTATT
 TGCACTCTAGTAGCGAGCCAAAGTTATTAGAGAAAGTTCAACATGAACTGTTATCTGTGTATGCTA
 CTCAACTGCTGGAAAAAGAGCATTACAGGATGCCATGCATTGCTTAGAGATGACAAGGTGGAAGATT
 TGTCAAGGATGTTCCGCCTCTTCTCCAAAATACCCAAGGGATTGGACCCAGTTTCCAACATATTTA
 AGCAGCATGTCACTGCTGAAGGAACAGCATTGGTCAAACAGGCAGAAGATGCTGCAAGTAACAAGA
 AGGCCGAGAAAAAGGACATAGTTGGTCTGCAGGAACAGGTTTTTGTAAAGAAAAGTGATTGAGCTTC
 ACGACAAGTACTTTGGCTTACGTGAATGATTGTTTTCCAAACCACACACTTTTTTCACAAGGCTCTCA
 AGGAAGCTTTTTGAAGTCTTTTGCAATAAGGGTGTGTGCTGGAAGTTCTAGTGCAGAATTACTTGCTA
 CCTTTTGTGATAACATCCTTAAGAAAGGTGGGAGCGAGAAGTTGAGTGATGAAGCAATTGAGGAGA
 CACTTGAGAAGGTCGTGAAGTTGCTGGCATAACATCTGCGACAAAGATCTGTTTGCTGAATTCTATA
 GAAAAAACTTGCCCGAAGGCTTCTCTTTGACAAGAGTGCCAACGATGACCATGAGAGAAGTATAT
 TGACCAAATTGAAGCAACAATGTGGTGGCCAGTTCACCTCTAAGATGGAGGGGATGGTCACTGATT
 TGACTTTGGCAAGGGAGAACCAAACCTAGTTTCGAGGAGTATCTGAGCAATAATCCACAAGCTAGTC
 CTGGAATCGACTTGACTGTCACTGTTTTGACTACTGGCTTTTGGCCAAGCTACAAGTCTTTTGACC
 TCAACCTGCCGCGCAGAGATGGTAAAGTGTTGAAGTTTTTCAAGAGATTCTATCAAACAAAAACAA
 AGCATAGAAAACCTTACATGGATTTACTCATTGGGTACCTGTAACATCAGCGGAAAATTTGAACCGA
 AAACGATGGAGCTGATTGTAACAACCTTATCAGGCTTCTGCCCTGCTGCTATTCAATTCCTCAGATA
 GATTAAGTTATTCCGAGATCATGACACAATTAAATTTGAGTGACGATGATGTTGTTAGACTGCTCC
 ACTCATTGTCATGTGCCAAGTATAAAATTCTTAATAAGGAGCCGAACACGAAAACCATCTCTCCGA
 ATGATCATTTTTGAGTTCAATGCAAAATTCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGC
 CTGTGGATGAGAAAAAGAAAGTCATTGAAGATGTTGACAAGGATCGAAGGTATGCTATTGATGCCT
 CAATCGTGCGTATCATGAAGAGTCGGAAAAGTTCTGGGTCATCAGCAGCTAGTGATGGAGTGCGTCG
 AGCAATTGGGTCGTATGTTCAAGCCCGACTTCAAAGCGATAAAGAAGAGAATCGAAGATCTGATCA
 CTCGGGACTATTTAGAGAGAGACAAAGACAACCCCACTTGTTTAGGTACTTGGCTTGA

Fig. 39

ATGAACCAACGCAGCACAATCGATCTGGAACATGGATGGGATTTTCATGCAAAAGGGCATCACAAAG
CTGAAGAACATTCTAGAAGGGCTGCCTGAGCCTCAGTTCAGCTCAGAGGACTATATGATGCTGTAT
ACGACAAT **[G]** TACAACATGTGTACTCAGAAGCCCCACATGATTATTCTCAACAGCTGTATGACA
AATATCGTGAAGCTTTTGAAGAATATATCACAACGACGGTATTACCTTCTTTGAGAGAAAAACATG
ACGAGTTCATGTTGCGAGAGTTGGTAAAAAGGTGGTCAAACCATAAGGTCATGGTTAGATGGTTAT
CGCGATTCTTCCATTATCTTGACCGTTATTTTCATTGCTCGGAGATCACTGCCAGGGCTTAATGAAG
TTGGACTAACTTGCTTCCGCGATCTGGTCTACCAAGAGTTGAATGGAAAAGTCAGGGATGCTGTTA
TATCTCTGATTGATCAAGAGCGTGAGGGAGAGCAAATTGACAGAGCTCTACTGAAGAATGTGCTAG
ATATATTTGTTGAAATTGGAATGGGGTCAATGGATTATTATGAGAATGATTTTGAAGCTGCAATGC
TCAAGGACACTGCGGCTTATTATTCTCGCAAAGCTTCTAACTGGATCCTCGAAGATTCATGTCCAG
ATTATATGCTGAAAGCTGAGGAGTGCTTGAAACGGGAGAAGGATAGGGTCTCCCATTATCTCCATT
CTAGCAGTGAGACAAAAGTTGCTTGAGAAAAGTGCAACATGAGTTGTTATCTGTGTATGCCAATCAAC
TTCTTGAGAAGGAGCACTCTGGATGCCATGCATTACTTAGAGATGATAAGGTCGATGATTTATCAA
GGATGTATAGACTCTTTTCTAAGATTCCCTCGAGGCTTAGAGCCTGTGGCTAATATATTTAAGCAGC
ATGTTACTGCTGAAGGTACAGCTTTGGTGAAACAGGCTGAAGATGCTGCTAGCAACAAAAGGCAG
AGAAGAGAGATGTGGTTGGTTTGCAGGAACAGGTTTTTGTTCGAAAGTGATTGAGCTTCATGATA
AATATTTGGCGTATGTGAATAACTGTTTCCAAAACCACACACTTTTTTACAAGGCACTTAAAGAAG
CTTTCGAACTTTTCTGCAACAAGGGTGTTGCTGGTAGCTCAAATGCTGAACTTCTTGCCACATTCT
GCGACAACATTCTCAAAAAAGGCGGGAGTGAAAAATTGAGTGATGAAGCCATTGAAGAGACGCTGG
AGAAGGTGGTAAAGCTGCTGGCTTATATTAGTGATAAGGACTTGTTTGCAGAAATCTATAGGAAAA
AGCTCGCCCGGCGGTTGTTATTTGATAAGAGTGCCAATGATGAACATGAGAGAAGTATCCTAACAA
AGTTGAAGCAGCAGTGTGGAGGTCAGTTCACATCAAAGATGGAGGGAATGGTCACAGATTTGACAT
TGGCAAGGGAAAATCAAGCCAGCTTTGAGGAGTATTTGAGCAATAATCCAACAGCAAATCCAGGAA
TTGACTTGACGGTGACTGTCTTGACTACTGGCTTCTGGCCTAGCTACAAGTCTTTTGATCTCAACC
TCCCAGCAGAAATGGTTAGGTGTGTTGAAGTATTCAAGGAGTTTTATCAAACAAAACGAAGCACA
GGAAACTTACATGGATATACTCTTTGGGAACTTGCAACATAAATGGAAAATTTGAGGCAAAGACTA
TTGAGCTCGTTGTCACTACTTATCAGGCTTCTGCTCTGCTTCTCTTTAATGCATCAGATAGATTGA
GTTATCAGGAAATCATGACGCAATTAAACCTATCAGATGATGATGTTGTTTCGGCTTCTTCATTCCC
TTTCATGTGCGAAATACAAGATTCTCAACAAGGAGCCAAGCACCAAAACAATTTCTCCGACTGATG
TCTTTGAGTTCAACTCAAAGTTCACTGACAAAATGAGGAGGATCAAGATACCTCTCCCACCAGTTG
ATGAAAAGAAAAGGTAATTGAAGACGTTGACAAGGATAGGCGGTATGCTATAGATGCCTCAATTG
TGCGTATTATGAAGAGTCGTAAAGTATTGGGCTACCAGCAACTGGTCATGGAGTGCGTTGAGCAGT
TGGGACGCATGTTCAAGCCTGATGTCAAAGCTATCAAGAAGAGAATTGAAGATCTGATAACTAGAG
ATTACCTAGAGAGGGACAAAGATAACCCAACTTGTTCAAGTACTTGGCATGA

Fig. 40

ATGAACCAACGAAGCACAATCGATCTGGAACATGGATGGGACTTCATGCAAAGGGGCATTACAAAG
 CTGAAGAACATTCTAGAAGGGCTGCCTGAGCCTCAATTCAGCTCAGAGGACTATATGATGCTATAT
 ACGACAAT **[G]** TACAACATGTGTACTCAAAAGCCCCACATGATTATTCTCAACAGCTGTATGACA
 AATATCGTGAAGCTTTTGAAGAATATATCACAACAACGGTATTGCCTTCTTTGAGAGAAAAACATG
 ACGAGTTTATGTTGCGAGAGTTGGTAAAAAGGTGGTCAAATCATAAAGTCATGGTCAGATGGTTGT
 CAAGATTCTTCCATTACCTTGACCGGTATTTTCATTGCCCGGAGATCTCTGCCGGGGCTTAATGAAG
 TTGGACTAACTTGCTTCCGCGATCAGGTCTACCAAGAGTTGAATGGAAAAGTCAGGGATGCTGTTA
 TATCTCTGATTGATCAAGAGCGTGAGGGAGAGCAAATTGACAGAGCTCTACTTAAGAATGTGCTTG
 ATATATTTGTGCGAAATTGGAATGGGGTTAATGGATTATTATGAGAATGATTTTGAAGCTGCAATGC
 TCAAGGACACAGCGGCTTATTATTCTCGCAAAGCTTCTAATTGGATCCTCGAAGATTCATGTCCGG
 ATTATATGCTGAAAGCCGAGGAGTGCTTGAAACGGGAGAAGGATAGGGTCTCTCATTATCTCCATT
 CAAGCAGCGAGACGAAGTTGCTTGAGAAAGTGCAACATGAGTTGTTGTCTGTGTATGCCACTCAAC
 TTCTTGAGAAGGAGCACTCTGGATGCCATGCGTTACTGAGAGATGATAAGGTTGAAGATTTATCAA
 GGATGTATAGGCTCTTTTCTAAGATTTCTCGAGGCTTAGACCCTGTGGCCAATATTTTTAAGCAGC
 ATGTTACTGCTGAAGGTACAGCTTTGGTAAAACAGGCTGAAGATGCTGCTAGCAATAAAAAGGCAG
 AGAAGAGAGATGTGGTTGGTTTGCAGGAACAGGTTTTTGTTCGAAAGTGATTGAACTTCATGATA
 AATATTTGGCTTATGTGAATAACTGTTTCCAAAACCACACACTTTTTTACAAGGCGCTTAAAGAAG
 CTTTTGAGCTTTTTCTGCAACAAGGGTGTTGCTGGTAGCTCAAGCGCTGAACTTCTTGCCACCTTCT
 GTGACAACATTCTCAAAAAAGGCGGGAGTGAGAAATTGAGTGATGAAGCTATTGAAGAAACGTTGG
 AAAAGGTGGTAAAGCTACTAGCTTATATTAGTGATAAGGACTTGTTTGCAGAAATCTATAGGAAAA
 AGCTAGCCCCGGCGGTTGTTATTTGATAAGAGTGCCAATGATGAACATGAAAGAAGTATCCTAACAA
 AGTTGAAGCAGCAGTGTGGGGGCGAGTTCACATCAAAGATGGAGGGAATGGTCACAGATTTGACAT
 TGGCAAGGGAAAATCAAGCCAGCTTCGAGGAGTATTTGAGCAATAATCCAATAGCAAATCCAGGAA
 TTGACTTGACGGTGACTGTCTTGACTACTGGCTTCTGGCCTAGCTACAAGTCTTTTGATCTCAACC
 TCCCAGCAGAAATGGTTAGGTGCGTTGAAGTATTTAAGGAGTTCTATCAAACAAAAACAAAGCACA
 GGAAACTTACGTGGATATACTCTTTGGGAACTTGCAACATAAATGGAAAATTTGAGCCAAAACTA
 TTGAGCTCGTTGTCACTACTTATCAGGCTTCTGCTCTGCTGCTCTTTAATGCATCAGATAGATTGA
 GTTATCAGGAAATCATGACGCAATTAAACCTATCAGATGATGATGTTGTTTCGGCTTCTTCATTCCC
 TTTTCATGTGCGAAGTACAAGATACTCAACAAGGAGCCAAGCACCAAAACAATTTCTCCGACTGATG
 TCTTTGAGTTCAACTCAAAGTTCACTGACAAAATGAGGAGGATCAAGATACCTCTCCCTCCTGTTG
 ATGAGAAGAAAAAGGTAATTGAAGACGTTGACAAGGATAGGCGGTATGCTATAGATGCTTCAATTG
 TGCGTATTATGAAGAGCCGTAAAGTATTGGGCTACCAGCAACTAGTCATGGAGTGCGTTGAGCAGT
 TGGGGCGCATGTTCAAGCCTGATGTCAAAGCTATCAAGAAGAGAATCGAAGATTTGATAACTAGAG
 ATTACCTAGAGAGGGACAAAGATAATCCAAACCTGTTCAAGTACTTGGCATGA

Fig. 41

ATGAACCAGCGTTCCACAATCAATCTAGAACATGGATGGGACTTCATGCAAAGGGGCATTACAAAG
 CTGAAGAACATTCTAGAAGGGCTGCCCCGAGCCTCAGTTCAGCTCAGAGGACTATATGATGCTGTAT
 ACGACAAT **[G]** TACAACATGTGTACTCAGAAGCCCCCACATGATTATTCTCAACAGCTGTATGACA
 AATATCGTGAAGCTTTTGAAGAATATATCACAACAACGGTATTGCCTTCTTTGAGAGAAAAACATG
 ACGAGTTCATGTTGCGAGAGCTGGTAAAAAGGTGGTCAAACCATAAGGTCATGGTCAGATGGTTAT
 CGCGATTCTTCCATTATCTTGATCGCTATTTTCATTGCCCGGAGATCTCTACCGGGGCTTAATGAAG
 TTGGACTAACTTGCTTCCGAGATCTGGTCTACCAAGAGTTGAATGGAAAAGTCAGGGATGCTGTTA
 TATCTCTGATTGATCAAGAGCGTGAGGGAGAGCAAATTGACAGAGCTCTACTGAAGAATGTGCTAG
 ATATATTTGTTGAAATTGGAATGGGGTCGATGGATTATTATGAGAATGATTTTGAAGCTGCAATGC
 TCAAGGACACCGCAGCTTATTATTCTCGCAAAGCTTCTAACTGGATACTTGAAGATTCATGTCCAG
 ATTATATGCTGAAAGCCGAGGAGTGCTTGAAACGGGAGAAAAGATAGGGTCTCTCACTATCTTCATT
 TAAGCAGTGAGACAAAAGTTGCTTGAGAAAAGTGCAACATGAGTTGTTGTCTGTGTATGCCACTCAAC
 TTCTTGAGAAGGAGCACTCTGGGTGCCATGCGTTACTAAGAGATGATAAGGTTGAAGATTTATCAA
 GGATGTATAGGCTCTTTTCTAAGATTCCCTCGAGGCTTAGACCCTGTGGCTAATATATTTAAGCAGC
 ATGTTACTGCTGAAGGTACAGCTTTGGTCAAACAGGCTGAAGATGCTGCTAGCAACAAAAGGCAG
 AGAAAAGAGATGTGGTTGGTTTGCAGGAACAGATTTTTGTTTCGAAAGTGATTGAGCTTCATGATA
 AGTATATGGCATATGTGAATAACTGTTTCCAAAACCACACACTTTTTTACAAGGCGCTTAAAGAAG
 CTTTCGAACTTTTCTGCAACAAGGGTGTTGCTGGTAGCTCAAGTGCTGAACCTCTTGCCACATTCT
 GCGACAATATTCTCAAGAAAGGCGGGAGTGAGAAATTGAGTGATGAAGCCATTGAAGAGACGCTGG
 AGAAGGTTGTAAAGCTGCTAGCATATATTAGTGACAAGGACTTGTTTGCAGAAATTCTATAGGAAAA
 AGCTAGCCCCGGCGGTTGTTATTTGATAAGAGTGCCAATGATGAACACGAGAGAAGTATCCTTACAA
 AGTTGAAGCAGCAGTGTGGGGGCCAGTTCACATCAAAGATGGAGGGAATGGTGACAGATTTGACAT
 TGGCAAGGGAAAATCAAGCCAGCTTTGAGGAGTATTTGAGCAACAATCCAGCAGCAAATCCAGGAA
 TTGACTTGACGGTGACTGTCTTGACTACTGGCTTCTGGCCTAGCTACAAGTCTTTTGATCTCAACC
 TCCCAGCAGAAATGGTTAGGTGCGTTGAAGTATTCAAGGAGTTTTATCAAACAAAACGAAGCACA
 GGAAACTTACGTGGATATACTCTTTGGGAACTTGCAATATAAATGGAAAATTTGAGCCAAAGACTA
 TTGAGCTCGTTGTCACTACTTATCAGGCTTCTGCTCTGCTGCTCTTTAATGCATCGGATAGATTGA
 GTTATCAGGAAATCATGACGCAACTAAACCTATCAGATGATGATGTTGTTTCGGCTTCTTCATTCCC
 TTTTCATGTGCGAAGTACAAGATTCTCAACAAGGAGCCAAGCACCAAAACAATTTCTCCGACTGATG
 TCTTTGAGTTCAATTTTAAGTTCACTGACAAAATGAGGAGGATCAAGATACCTCTCCCTCCTGTTG
 ATGAGAAGAAAAGGTAATTGAAGATGTTGACAAAGATAGGCGGTACGCTATAGATGCTTCAATTG
 TGCGTATTATGAAGAGTCGTAAAGTATTGGGCTACCAGCAACTGGTCATGGAGTGTGTTGAGCAGT
 TGGGACGTATGTTCAAGCCTGATGTCAAAGCTATCAAGAAGAGAATTGAAGATTTGATAACTAGAG
 ATTACCTAGAGAGGGACAAAGATAATCCGAACCTTGTTCAAGTACTTGGCATGA

Fig. 42

ATGGAGCGCAAGACGATTGACTTGGACCAAGGATGGGACTATATGCAGACTGGTATCACTAAGCTG
 AAACGGATTCTTGAGGGGCTGCCTGAGCCGCAGTTTACTCTGAGCAATACATGATGCTCTATACG
 ACTAT **[G]** TACAACATGTGCACTCAGAAACCTCCTCATGATTACTCACAGCAGCTTTATGACAAGT
 ATCGTGAAGCATTTGAGGAGTATATTCACTCAACTGTTTTGCCTGCTCTAAGGGAGAAGCATGATG
 AGTACATGCTGAGGGAGCTGGTTAAGAGATGGTCTAACCATAAAGTTATGGTTCGATGGCTATCCC
 GCTTCTTCTACTATCTTGACCGTTACTTCATTGCTCGGAGGTCACCTCCACCCCTGAATGAAGTTG
 GCCTGACTTGCTTCCGTGACCTGGTTTATAACGAGTTGCATTCCAAGGTCAAAGATGCTGTAATAG
 CACTTGTGATAAAGAACGGGAGGGTGAGCAGATTGACAGGGCTCTATTGAAAAACGTATTAGACA
 TTTATGTAGAGATTGGAATGGGACAGATGGAAAGATACGAGGAGGATTTTGAAAGCTTCATGCTTT
 TAGATTGAGCATCTTACTATTCTCGCAAGGCGTCAAGCTGGATCCAAGAAGATTCTTGCCCTGATT
 ACATGCTGAAGTCTGAAGAATGTCTTAAGAAGGAGAGGGAGAGAGTGGCTCACTACCTTCACTCAA
 GCAGCGAGCCAAAGCTGGTTGAGAAAGTACAACATGAGCTGTTGGTAGTGTATGCAAATCAGCTTC
 TAGAAAAAGAGCATTGAGGGTGCCGTGCATTGCTGAGAGATGACAAGGTTGATGACCTCTCCAGGA
 TGTACAGGCTTTATCATAAAATTGTGAAAGGTTTGGAACTGTTGCAAACATATTTAAGCAGCATG
 TCACAGCAGAGGGTAACGCACCTTGTCCAACAGGCCGAAGACACGGCCACTAATCATGCTGCAAATA
 CTGCTAGCGTGCAGGAACAGGTTCTTATCAGAAAAGTGATTGAACTACATGATAAATACATGGTCT
 ATGTTGTTGAGTGTTCAGAACACACCCTCTTCCACAAGGCATTGAAAGAGGCATTTGAGATAT
 TCTGTAACAAAACAGTCGCTGGAAGTTCTAGTGCTGAATTGCTTGCAACATTTTGCGACAATATTC
 TCAAGAAGGGGGGAAGTGAAAAGCTGAGCGATGAAGCTATTGAAGATACCCCTTGAGAAGGTGGTCA
 AATTGCTTGCTTATATAAGTGACAAGGATCTTTTCGCCGAGTTCTACAGGAAGAAGCTGGCCCGTA
 GGCTCTTATTTGATCGCAGTGCTAATGATGATCATGAGAGAAGTATCCTGACAAAGCTCAAGCAAC
 AATGTGGTGGGCAGTTTACTTCGAAGATGGAGGGCATGGTGACTGATTTGACATTGGCAAGGGAAA
 ACCAAAACAGCTTCGAGGAGTATCTTGGAATAACCCCGCTGCAAACCCAGGGATTGATTTGACCG
 TAACTGTTCTTACCACTGGTTTTTTGGCCAAGTTACAAATCATTTGACATAAATCTACCCGCTGAAA
 TGGTCAAGTGTGTTGAAGTTTTCAAAGGGTTTTATGAAACAAAGACAAAACATAGGAACTTACCT
 GGATCTACTCACTAGGAACTTGCCACCTCAATGGGAAGTTTGATGTCAAGCCCATTGAGTTAGTTG
 TGTCTACATAACCAGGCTGCTGTGCTTCTGCTGTTCAACACAACAGACAAATTGAGCTACACTGATA
 TCCTAACTCAGCTGAACCTGAGCCACGAAGATCTAGTGAGGTTGCTTCATTCCTTGTCATGTGCTA
 GATACAAGATTCTTCTCAAGGAGCCAAGCACAAAGACTGTTTCCCAGTCTGATTCTTTTGAATTCA
 ACTCCAAATTCACCGACAGAATGCGGAGAATAAAGATCCCTCTCCACCTGTTGATGAGAGGAAGA
 AAGTTGTGGAAGACGTGGACAAAGACAGACGCTATGCGATTGATGCTGCCATTGTGAGGATCATGA
 AGAGCAGGAAAGTATTGGGACATCAACAACCTTGTTTTCTGAGTGCGTTGAGCAACTTAGCCGAATGT
 TCAAGCCTGATATCAAGGCAATCAAGAAGCGCATGGAGGATTTGATAACGAGAGATTATCTGGAGA
 GGGACAAGGAGAACGCTAACATGTTTAGGTACTTGGCTTAG

Fig. 43

ATGATGATTGAGCGGAAACTATAGACCTGGAGCAGGGATGGGACTTTATGCAAAAGGGAATCACA
 AAGCTAAAGAATATTTTAGAAGGCTTTCCGGAGCCGCAATTCAGCTCGGAGGATTATATGATGCTT
 TATACAACCTAT **[G]** TATAACATGTGTACACAGAAACCTCCACATGATTACTCTCAGCAGCTGTATG
 AAAAGTATCGTGAAGCTATTGAGGAGTACATTACTTCTACAGTATTGCCTTCATTGAGAGAGAAGC
 ATGATGAATTCATGCTTAGAGAACTTGTGAAGAGATGGTCTAATCATAAGGTCATGGTCAGGTGGC
 TTTCTCGATTCTTTCACTATCTTGATCGCTATTTTATTGCTCGGAGGTCACTTCCACCACTTCATG
 AAGTTGGACTCACTTGCTTTCCGGACCTGGTTTACCAGGAGATAAATGGGAAAGTAAGGGATGCTG
 TAATATCATTGATTAATCAAGAGCGCGAGGGAGAGCAAATTGACCGAGCTTTGTTGAAGAATGTTT
 TAGATATATTTGTTGAAGTTGGAATGAGTCAAATGGATTATTATGAGAATGACTTTGAAGCAGACA
 TGCTCAAAGATACAGCAGCATACTATTCTCGAAAGGCTTCCAAGTGGATCTTAGAAGATTCTTGTC
 CAGATTATATGCTCAAAGCGGAAGAGTGTTTGAGACGGGAAAAGGACAGGGTCTCTAACTACCTTC
 ATTCTAGTAGTGAACCCAAGTTGCTTGAGAAAGTTCAACATGAGTTACTATCACACTATGCAACTC
 AGCTGCTTGAGAAAGAACACTCTGGGTGTCATGCATTGCTTAGGGATGACAAGGTGGCAGATTTAT
 CAAGGATGTATAGGCTCTTCTCTAAATACCTCGAGGCCTAGATCCCGTGTCTAATATTTTCAAGC
 AGCATGTTACTGCTGAAGGTACAGCTTTGGTCAAACAAGCAGAAGATGCAGCTAGCAACAAGAAGG
 CAGAGAAGAGAGATGTAGTAGGTTTACAAGAACAGGTTTTTGTGAGGAAAATAATTGAATTGCATG
 ACAATAACCTTACATACGTAAATGACTGTTTTACAACACACTCTCTTCCATAAGGCGCTTAAGG
 AGGCTTTTGAATCTTCTGCAATAAGGGTGTCTCTGGAAGCTCTAGTGCAGAATTACTTGCCACAT
 TCTGTGATAATATTCTCAAGAAAGGTGGAAGCGAGAAGTTAAGTGATGAAGCCATTGAGGAAACAC
 TTGAGAAGGTTGTAAGGTTGCTTGCTTATATAAGTGACAAAGACTTATTTGCTGAATTTTATAGGA
 AAAAGCTTGCACGGCGTCTCTTATTTCGACAAGAGTGCCAATGATGAGCATGAGAGAAGTATATTGA
 CTAAGCTGAAGCAACAATGTGGGGGTCAATTTACATCAAAGATGGAAGGAATGGTCACTGACTTGA
 CGTTGGCAAAGGAAAAATCAGTCCAACCTTCGAGGAGTACCTCAATAATAATTCAAACGTAAATCCTG
 GAATTGACTTGACAGTTACTGTTCTAACCCTGGGTTTTGGCCAAGTTACAAATCTTTCGATCTCA
 ACCTCCCAGCAGAGATGGTCAAATGTGTTGAAGTTTTTAGAGAATTCTACCAAACAAAAACAAAGC
 ACAGAAAACCTGACATGGATATACTCTTTGGGTACTTGTAACATCATTGGAAAAATTTGATCCAAAAA
 CCATGGAGCTTATTGTGACAACATAACCAGGCCTCTGCTCTGCTGCTATTTAACTCTTCTGATAGAC
 TTAGTTATAATGAAATAATGACTCAGTTGAACTTGTCGGATGATGATGTTGTCAGACTACTTCATT
 CTCTTTCGTGTGCAAAGTACAAGATTCTATCTAAAGAGCCGAACACCAAAACTATATCTCCAACCTG
 ATTGCTTTTCAGTTCAATTCCAAATTTACTGATAAAATGAGGAGGATTAAGATTCCACTTCCCCCAG
 TGGATGAGAAGAAAAAGGTAATTGAAGATGTTGATAAAGACAGGCGATATGCTATAGATGCTTCAA
 TTGTCCGTATCATGAAGAGCCGCAAAGTTTTGGGTATCAGCAGCTAGTAATGGAGTGC GTTGAAC
 AATTGGGTGCGATGTTTAAGCCTGATGTCAAAGCAATCAAGAAGAGAATCGAAGATTTAATAACTC
 GGGATTATCTGGAAAGAGACAAGGACAATGCCAAGTGTTCAGGTATCTGGCATGA

Fig. 44

ATGAACGAGCGGAAGACTATCGATTTGGATAATGGATGGGAATTTATGCAGAAAGGGATCACTAAG
TTGAAGAAGATTCTCGAAGGTCAACCTGAGCCTCAGTTTAGCTCCGAGGACTATATGATGCTTTAC
ACAACTAT **[G]** TATAATATGTGTACGCAGAAGCCTCCACATGATTATTCTCAACAGCTGTATGACA
AGTACCGTGAGGCCTTTGAGGAGTACATAACTTCAACTGTCCTGCCTTCTTTACGAGAGAAGCATG
ATGAGTTTATGTTGAGAGAGCTCGTGAATAGATGGACAAACCATAAAGTCATGGTCAGGTGGCTTT
CTCGATTCTTTCACTATCTTGATCGGTACTTCATTGCGAGGAGGTCACTTCCTGCAC TTCATGAAG
TTGGACTCACGTGCTTCCGGGATCTGGTCTATCAGGAGCTGAAAGTTAAAGTGAGGGATGCTGTAA
TATCTCTGATCGATCAAGAGCGTGAGGGGGAACAGATTGACCGAGCTTTATTAAAGAACGTGTTAG
ATATATTTGTTGAAATCGGAATGAGTCAAATGGATCAATATGAGAATGACTTTGAAGAAGCCATGC
TCACTGATACTGCTGCTTACTATTCTCGAAAAGCTTCAAACCTGGATCCTTGAAGATTCTTGTCCTG
ATTATATGTTAAAGGCAGAAGAATGTTTGCGACGAGAGAAGGACAGGGTTTCCCACTACCTACATT
TTAGTAGCGAGCCAAAAGTTGCTTGAGAAAAGTGCAACATGAGCTGCTATCTGTGTATGCAACCCAAT
TACTCGAGAAGGAACATTCTGGTTGTCATGCATTGCTTAGGGATGACAAGGTGGATGATTTGTCTA
GGATGTACAGACTCTTCTCGAAAATACCTAAAGGCCTGGATCCAGTTTCTTATATTTTTAAGCAGC
ATGTTACAAATGAAGGGATGGCATTGGTTAAACAAGCAGAAGATGCAGCAAGCAACAAGAAGGCAG
AAAAGAGAGACGTGGTTAGTTTACAGGAGCAGGTTTTTGTAGAAAAATTATTGAATTACATGACA
AATACCTCGCCTATGTGAATGACTGCTTTACAAACCATACTCTTTTCCATAAGGCTCTCAAGGAGG
CTTTTGAAATCTTTTGCAACAAGGGTGTTGCTGGAAGCTCTAATGCTGAACTACTTGCTACTTTCT
GTGATAACATCCTCAAAAAGGGTGGGAGTGAGAAATTAAGTGATGAGGCTATTGAAGAAACACTTG
AGAAGGTAGTAAAATTGTTAGCTTACATTAGCGATAAAGACTTGTTTCGCTGAATTTTACAGAAAAA
AGCTTGACGAGACTTCTCTTTGATAAGAGTGCAAATGACGAGCATGAACGAAGTATTTTGACTA
AACTAAAGCAACAGTGCGGTGGTCAGTTCACATCGAAAATGGAGGGGATGGTCACAGATTTGACTT
TGGCTAAAGAAAATCAATCCAGCTTTGAGGAGTATCTGGGAAATAATGCCAATGTGAATCCTGGCA
TTGACTTGACGGTTACTGTTCTGACCACTGGCTTCTGGCCTAGTTATAAATCCTTTGATCTCAACC
TTCTGCTGAGATGGTCAAGTGCGTTGAAGTATTTAGAGAATTTTATCAAACAAAAACGAAGCATA
GAAAGCTCACATGGATATATTCTCTGGGTACTTGTAATATCAATGGAAAATTTGAACCCAAAACCA
TTGAGCTGATTGTGACAACCTACCAGGCCTCTGCTCTCCTGTTATTTAATACTTCTGATAGGTTGA
GTTATCAAGAAATCATGACTCAGTTAAATTTGTTCGGATGATGATGTTGTTTCGCCTGCTTCATTCCC
TTTCATGTGCCAAGTATAAAATTCTTACTAAAGAGCCGAACAACAAAACAATTTCCCTACGGATT
ACTTTGAGTTCAACTCCAAGTTCCTGACAAAATGAGGAGAATTAAGATTCCACTACCTCCAGTTG
ATGAGAAGAAAAAGGTAATTGAAGATGTTGACAAGGACCGGCGATATGCCATTGATGCATCTATTG
TCCGCATTATGAAGAGCCGTAAAGTTTTGGGCTACCAACAATTGGTTATGGAATGTGTTGAGCAAT
TGGGACGCATGTTTAAGCCTGATGTCAAAGCAATTAAGAAGAGAATCGAAGATTTAATAACGCGTG
ATTATCTGGAAAGAGACAAGGATAATGCCAACCTTTTCAGATATTTGGCATGA

Fig. 45

ATGAATGAAAGAAAAACAATAGACTTAGAACAAGGATGGGACTTCATGCAGAAAGGCATAACAAAG
 TTGAAGAACATTCTAGAAGGTCTTCCCGAGCCACAATTCAGCTCGGAAGATTACATGATGCTCTAC
 ACAACCAT **[G]** TACAATATGTGCACACAAAAACCGCCACATGATTACTCTCAACAATTGTATGACA
 AATACCGCGAGTCTTTTGAAGAGTACATTACTTCAACGGTGTTACCTTCTTTAAGAGAGAAGCATG
 ATGAGTTTATGCTTAGAGAGCTTGTTAGAAGATGGTCAAATCATAAAGTGATGGTTAGGTGGCTTT
 CTAGATTCTTCCATTATCTTGATCGATACTTCATTGCCCGAAGATCTCTCCACCATTAAATGAAG
 TTGGACTTGCGTGTTTTTCGTGATCTGGTATACCAAGAGGTGAATGGGAAAGTGAGAGATGCTGTAA
 TATCTTTGATTGATCAAGAGCGTGAAGGCGAGCAAATTGACCGAGCATTACTCAAGAATGTTCTAG
 ATATATTTGTTGAAATAGGAATGGGACAAATGGAATATTATGAGAATGATTTTGAAGCATCCATGC
 TTAATGATACAGCAGCATATTATTCACGCAAAGCTTCCAATTGGATTCTAGAAGATTCTTGTCCAG
 ATTATATGCTCAAAGCTGAGGAGTGCTTAAAAAGAGAAAAGGACAGAGTTTCTCATTATCTTCATT
 CCAGCAGTGAACCAAAGCTTCTTGAGAAAAGTTCAAACAGAGTTATTATCTGTTTATGCAACTCAAT
 TGCTTGAAAAGGAGCACTCCGGTTGTCATGCATTACTTAGGGATGACAAGGTTGATGATTTATCAA
 GAATGTACAGACTCTTTTCAAAGATACAAAAAGGGCTGGATCCTGTTTCTAGTATGTTTAAAGCAGC
 ATGTCACTGCTGAAGGCACAACATTGGTTAAACAGGCAGAAGATGCAGCAAGTACTAAGAAGGCTG
 AAAAGAGAGACGTGGTTGGCTTACAAGAACAGGTTTTTGTAGAAAAGTTATCGAGCTTCATGACA
 AGTACCTTGCATATGTAAATGACTGTTTTATGAATCATACCCTGTTTCACAAGGCTCTTAAAGAGG
 CATTGAAATATTCTGCAACAAGGGCGTTGCTGGAAGTTCAAGTGCAGAATTACTTGCTACATTTT
 GTGATAATATTCTTAAAAAAGGTGGAAGTGAAAAATTGAGTGATGAAGCCATTGAGGACACACTTG
 AGAAGGTGGTAAAGTTGCTTGCTTACATCAGCGATAAAGATCTATTTGCAGAGTTTTATAGGAAAA
 AACTGGCTAGACGGCTTTTATTTGACAAAAGTGCAAATGATGAGCACGAAAGAAGTATTTTGACAA
 AATTGAAACAACAATGTGGCGGTCAATTTACATCAAAAATGGAAGGAATGGTTACAGATTTGACAT
 TGGCAAAAGAAAATCAATCACATTTTGAAGGAGTATTTGAATAATAATCCCAATGTTAGCCCTGGCA
 TTGACTTGACCGTGACTGTGTTGACCACTGGTTTTTGGCCTAGTTACAAATCTTTTGACCTAAATC
 TCCCTGCAGAAATGGTCAAATGCGTTGAAGTTTTTCAGAGAATTTTATCAAACAAAAACAAAACACA
 GAAAACTCACATGGATATATTCATTGGGCACCTGCAATATAAACGGAAAATTCGAACCAAAAACCA
 TGGAGCTAATCGTTACAACCTACCAGGCATCTGCTTTATTACTGTTCAACTCATCAGATCGATTGA
 GTTATCAAGAAATCATGACTCAATTAACTTATCAGATGATGATGTTGTTAGACTACTCCATTCAT
 TATCATGTGCAAAATATAAAATTTTATTAAAAGAACCAAATACAAAACAATCTCTCCAACTGATT
 TCTTTGAATTCAACTCAAAGTTTACAGATAAAATGAGAAGGATCAAGATTCCTCTACCTCCTGTTG
 ATGAAAAGAAAAAGTAATTGAAGATGTTGACAAAGACCGACGTTATGCAATTGATGCTTCAATTG
 TACGGATAATGAAAAGCAGAAAAGTTCTTGATACCAACAATTGGTCATGGAATGTGTTGAACAAT
 TAGGCCGTATGTTTAAAGCTGATGTAAAAGCAATCAAGAAACGTATTGAAGATCTCATAACTCGTG
 ATTATCTTGAAAGAGACAAAGAAAATCCAATTTGTTTTCGGTACTTGGCATGA

Fig. 46

ATGAATGAAAGAAAAACAATAGACTTAGAACAAGGATGGGACTTCATGCAAAAAGGCATAACAAAG
 TTGAAGAACATTCTAGAAGGTCTTCCCGAGCCACAATTCAGCTCAGAGGATTACATGATGCTCTAC
 ACAACCAT **[G]** TACAATATGTGCACACAAAAACCGCCACATGATTACTCTCAACAATTATATGACA
 AATACCGCGAGTCTTTTGAAGAGTACATAACTTCAACGGTGTTACCTTCTTTAAGAGAGAAGCATG
 ATGAGTTTATGCTTAGAGAGCTTGTTAGAAGGTGGTCAAATCATAAAGTGATGGTTAGGTGGCTTT
 CTAGATTCTTCCATTATCTTGATCGATACTTTATTGCAAGAAGATCTCTTCCACCATTAAATGAAG
 TTGGACTTGCGTGTTTTTCGTGATCTGGTATACCAAGAGGTGAATGGAAAAGTGAGAGATGCTGTAA
 TATCTTTGATTGATCAAGAGCGTGAAGGCGAGCAAATTGACCGAGCATTACTGAAGAATGTTCTAG
 ATATATTTGTTGAAATAGGAATGGGACAAATGGAATATTATGAGAATGATTTTGAAGCATCTATGC
 TTAATGATACAGCAGCATATTATTCACGCAAAGCTTCCAAGTGGATTCTAGAAGATTCTTGTCAG
 ATTATATGCTCAAAGCTGAGGAGTGCTTAAAAAGAGAAAAGGACAGAGTTTCTCATTATCTTCATT
 CAAGTAGTGAACCAAAGCTTCTTGAGAAAAGTTCAAACAGAGTTATTATCTGTTTATGCAACTCAAT
 TGCTCGAAAAGGAACACTCAGGTTGTCATGCATTACTTAGAGATGACAAGGTTGATGATTTATCAA
 GAATGTACAGACTCTTTTCAAAGATACAAAAAGGACTGGATCCTGTTTCCAGTATGTTTAAGCAGC
 ATGTCACCTGCTGAAGGCACAACATTAGTAAAACAAGCAGAAGATGCAGCAAGTACTAAGAAGGCTG
 AAAAGAGAGACGTGGTTGGCTTACAGGAACAGGTTTTTGTAGAAAAGTAATCGAGCTTCATGACA
 AGTACCTCGCATATGTAAACGACTGTTTTATGAATCACACATTGTTCCACAAGGCTCTTAAAGAGG
 CATTGAAATATTCTGCAACAAGGGCGTTGCTGGAAGTTCAAGTGCAGAATTACTTGCCACATTTT
 GTGATAATATTCTTAAAAAAGGTGGAAGTGAAAAATTGAGTGATGAAGCCATTGAAGACACACTTG
 AGAAGGTAGTAAAGTTGCTTGCTTACATCAGCGATAAAGATCTATTTGCAGAGTTTTATAGGAAAA
 AACTGGCTAGAAGGCTTTTATTTGACAAAAGTGCAAATGATGAGCATGAAAGAAGTATTTTAACAA
 AGTTGAAGCAACAATGTGGTGGTCAGTTTACATCAAAGATGGAAGGAATGGTTACAGATTTAACAC
 TGGCAAAAGAAAATCAATCACATTTTGAAGGAGTATTTGAATAATAATCCCAATGTTAGCCCTGGCA
 TTGACTTGACCGTGACTGTGTTGACCACGGGATTTTGGCCTAGTTACAAATCTTTTGACCTAAATC
 TTCTGCGAGAAATGGTCAAATGCGTTGAAGTTTTTCAGAGAATTTTATCAAACAAAAACAAAACACA
 GAAAACTCACATGGATTTATTCATTGGGCACCTGCAATATTAACGGAAAATTCGAACCAAAAACCA
 TGGAGCTAATCGTTACAACCTACCAGGCATCTGCTTTATTGTTATTCAACTCATCAGATCGATTAA
 GTTATCAAGAAATCATGACTCAATTAAATTTATCAGATGATGATGTTGTTAGACTACTACATTCAT
 TATCATGTGCAAAATATAAAATTTTATTAAAAGAACCAAATACCAAAACAATATCTCCAACCGATT
 TCTTTGAATTCAACTCAAAGTTTACAGATAAAATGAGAAGGATCAAGATTCCTCTACCTCCTGTTG
 ATGAAAAGAAAAAGTAATTGAAGATGTTGACAAAGATAGAAGGTATGCAATTGATGCTTCAATTG
 TACGAATAATGAAAAGCAGAAAAGTTCTTGATACCAACAATTGGTTATGGAGTGTGTTGAACAAT
 TAGGCCGTATGTTTAAGCCTGATGTAAAAGCAATCAAGAAGCGTATTGAAGATTTGATAACGCGTG
 ATTATCTTGAAAGAGACAAAGAAAATCCAAATTTGTTTCGGTACTTGGCATGA

Fig. 47

ATGTCGTTGCACGAAAGGAAAACCATTTGATTTGGAGCAGGGATGGGCTTTTATGCAGAAAGGGATC
 ACCAACTGAAGAATATTCTTGATGAGTTGAATGAACCTCAGTTCAGCTCAGAGGATTACATGATG
 CTCTATACGACTAT **[G]** TATAATATGTGTACTCAGAAGCCGCCACATGATTATTCTCAGGAGTTGT
 ATGATAAGTACCGAGAGTCCTTTGAAGAGTATATCACTACCACTGTGCTTCCTTCATTGAGAGAAA
 AGCATGATGAATACATGTTAAGGGAGCTCGTGAGAAGGTGGTCAAATCATAAAATAATGGTTAGAT
 GGCTTTCACGCTTTTTTCCATTATCTTGATCGCTACTTTATAGCACGAAGATCATTGCCTGCTCTTA
 ATGAAGTCGGTCTCACTTGTTCCTGTGATCTGGTGTACAACGAAGTCCATGGGAAAGTTAAAGATG
 CCGTGATCTCATTGATTGACCAAGAGAGGGAAGGGGAGCAAATTGACAGAGCTTTATTAAAGAATG
 TTTTGGGTATTTTTGTAGAGATTGGTTTGGGAAGCATGGAATGTTATGAGAATGATTTTGAAACAT
 CAATGCTTAATGCTACAGCAGCCTATTATTCACGAAAAGCTTCAAATTGGATTCTAGAAGATTCAT
 GTCCAGATTATATGCTAAAAGCCGAGGAGTGCTTAAACATGAGAAAGATAGAGTTGCTCATTATT
 TGCATTCAAGCAGTGAACAGAAGCTGTTAGAGAAAGTGCAACATGAGTTACTTTTCGTATATGCAA
 GTCAACTTCTCGAGAAAGAACATTCCGGATGTCATGCATTGCTTCGCGATGACAAGGTGGGAGATC
 TTTACGCATGTATCGGCTGTTCTGTAGAATTACACGTGGTTTGGACCCTGTGTCTCAAATATTTA
 AGCAGCATGTGACTGCAGAAGGTACTGCTTTGGTCAAACATGCCGAAGATGCTGCAAGTAACAAGA
 AGGCCGAGAAAAAAGACATTGTTGGTTTGCAAGAGCAGGTCTTCGTTAGGAAAGTAATTGAGCTGC
 ATGATAAATACTTGGCCTATGTGACTGACTGCTTTCAAATCACTCTCTATTTTACAAGGCACTTA
 AAGAGGCATTTCGAGGTATTCTGCAATAAAGGTGTTGCAGGTAGCTCAAGCGCTGAACCTTCTGGCTG
 CTTTTTGTGACAATATATTGAAGAAGGGTGGAAGCGAGAACTAAGCGATGAGGCCATAGAGGATA
 CTCTTGAGAAGGTTGTAAACTATTGGCATATATTAGCGATAAAGATCTGTTTGCTGAATTTTACA
 GGAAGAAGCTTGACGAAGATTACTCTTTGACAAAAGTGCTAATGATGACCATGAGAGGAGCATCC
 TTACAAAGCTGAAACAGCAATGTGGAGGGCAGTTCACCTCTAAAATGGAAGGCATGGTAACCGATC
 TGACACTTGACAGAGAAAATCAATCAAGTTTTTGACGATTACCTTAGCAGCAATCCTAAAGCAAATT
 CTGGAATTGACTTGACTGTTACAGTCTTAACAACTGGCTTCTGGCCCAGTTACAAGTCTTTTGATC
 TCAATCTTCCTGATGAGATGGTAAAATGCGTTGAAATTTTTAAAGAGTTTTTACGAGACAAAACCA
 AACACAGAAAACCTTACATGGATTTATTCGTTGGGCACTTGCAACATCAATGGCAAGTTCGAAACCA
 AGACAATAGAGTTGGTTGTTACAACCTATCAGGCTGCAGTGTTGCTTCTATTCAACTCTGCAGATA
 AATTAAGTTATTCTGAGATTGTGCAGCAGCTAACTTATCTGATGATGATGTAATCAGATTACTTC
 ACTCTCTTTCATGCGCTAAATACAAAATTCTCAATAAAGAACCCGCTACCAAGACTATTACCCCGA
 ATGATCATTTTTGAGTTCAATTCTAAATTCAGTATAGAATGAGAAGGATCAAGATTCCTGCTC
 CTGTGGATGAGAAGAAAAAGTAATTGAAGATGTTGACAAAGACAGAAGATATGCAATTGACGCAT
 CCATAGTTCGAATAATGAAAAGTAGAAAAGTTCTTGGTCATCAGCAGCTTGTTTTGGAATGTGTTG
 AGCAATTAGGCCGCATGTTTAAGCCTGACTTTAAGGCCATCAAGAAAAGGATTGAAGATCTGATCG
 CTAGAGATTATTTGGAGAGGGACAAGGACAATCCAAACCTCTTTAAATATTTGGCCTAA

Fig. 48

ATGAACGAAAGAAAAACAATAGACTTAGAGCAAGGATGGGACTTCATGCAGAAAGGAATAACAAAG
 TTGAAGAATATTCTAGAAGGTCTTCCCGAGCCACAATTCAGCTCGGAGGATTACATGATGCTCTAC
 ACAACCAT **[G]** TACAACATGTGTACACAGAAACCACCACATGATTACTCCCAACAGTTGTATGACA
 AATATCGTGAGTCTTTTGAAGAGTATATTACTTCAACTGTGTTACCTTCTTTAAGAGAGAAGCATG
 ATGAGTTCATGCTGAGAGAGCTTGTTAGAAGGTGGTCAAATCATAAAGTCATGGTGCGGTGGCTTT
 CTAGATTCTTCCATTATCTTGACCGATATTTTATTGCCCGAAGATCTCTTCCGCCACTAAATGAAG
 TTGGACTTGCCTGTTTTCTGTGATCTGGTATACCAAGAGGTGAATGGTAAAGTGAGAGATGCTGTAA
 TATCTTTGATTGATCAAGAGCGTGAAGGGGAGCAGATTGATCGAGCTTTACTGAAGAATGTTCTAG
 ATATATTTGTTGAGATAGGAATGGGACAAATGGAGTATTATGAGAATGATTTTGAAGCATCCATGC
 TTAATGATACAGCAGCATATTATTCACGCAAGGCTTCCAACCTGGATTCTAGAAGATTCTTGTCCAG
 ATTATATGCTCAAAGCAGAGGAGTGCTTAAAAAGAGAAAAGGACAGAGTGTCTCATTATCTTCATT
 CCAGCAGTGAGCCAAAGCTTCTTGAGAAAAGTTCAAATGAGTTATTGTCTGTTTATGCAACTCAAT
 TGCTTGAGAAAGAGCACTCAGGTTGTTCATGCATTGCTCAGGGATGACAAGGTTGATGATTTATCAA
 GAATGTACAGACTCTTTTCAAAGATACCAAAGGATTGGATCCTGTTTCTAGTATGTTTAAGCAGC
 ATGTCACCTGCTGAAGGCACAACATTGGTTAAACAAGCAGAAGATGCAGCAAGTACCAAGAAGGCTG
 AAAAGAGAGATGTGGTTGGGTTGCAGGAACAGGTTTTTGTAGAAAAGTTATTGAGCTCCATGACA
 AGTACCTGGCATATGTAAATGACTGTTTCATGAACCATACTCTTTTCCACAAGGCTCTTAAAGAGG
 CATTTGAAATATTCTGCAACAAGGGTGTTGCTGGAAGTTCAAGTGCAGAGTTACTTGCCACATTTT
 GTGATAATATTCTTAAAAAAGGTGGAAGTGAGAACTGAGCGATGAAGCCATTGAGGACACCCTTG
 AGAAGGTAGTAAAGTTGCTTGCCATACATCAGTGATAAAGATCTATTTGCTGAATTTTACAGGAAAA
 AACTTGCTAGGAGGCTTTTGTGTTGACAAGAGTGCAAACGATGAGCATGAGAGAAGTATTCTCACAA
 AGCTGAAGCAACAGTGTGGTGGTCAGTTCACATCAAAGATGGAAGGGATGGTTACAGATTTGACAT
 TGGCAAAGGAAAACCAATCCCATTTTGAAGAGTATTTGAACAATAATCCAATGTCAGCCCTGGAA
 TTGACTTGACTGTCACTGTGTTGACTACCGGCTTCTGGCCCAGCTACAAATCTTTTGACCTAAATC
 TCCCTGCCGAAATGGTTAAATGCGTTGAAGTTTTTCAGAGAATTTTATCAAACAAAAACAAAGCACA
 GGAAGCTTACATGGATATATTCATTGGGTACCTGCAATATAAACGGGAAATTTGAACCCAAAACAA
 TGGAGCTCATAGTCACAACCTACCAGGCATCTGCTTTATTACTGTTCAACTTATCGGATCGATTGA
 GTTATCAAGAAATCATGACTCAGTTGAACTTGTCAGATGATGATGTTGTTAGGCTGCTCCATTCTT
 TGTCATGTGCAAAATACAAAATTCTTTTAAAGGAGCCTAATACCAAACAATCTCTCCAACCGATT
 ACTTCGAATTCAACTCCAAGTTTACAGATAAAATGAGGAGGATCAAGATTCCTCTACCTCCTGTGG
 ATGAGAAGAAAAAGGTGATTGAGGATGTTGACAAAGACAGACGTTATGCCATTGATGCTTCCATTG
 TAAGGATAATGAAGAGCAGAAAGGTGCTTGGATACCAGCAGTTGGTTATGGAGTGTGTTGAACAGT
 TGGGACGCATGTTTAAGCCTGATGTAAAAGCAATCAAGAAGCGGATTGAAGATCTGATAACTCGTG
 ATTATCTTGAAAGAGACAAAGAGAACCCCAACTTGTTCCGATACTTGGCATGA

Fig. 49

ATGGAGCGGAAGACGATTGATCTGGAACAAGGATGGGACTATATGCAGACTGGGATCACTAAGCTG
 AAACGGATTCTTGAAGGATTGCCTGAGCCGCAATTCGACTCTGAGCAGTACATGATGCTTTATACG
 ACTAT **[G]** TACAACATGTGCACCCAGAAACCTCCTCATGATTACTCTCAGCAGCTTTATGACAAGT
 ATCGCGAAGCTTTTGAGGAGTACATTGACTCTACTGTTTTGCCTGCTTTGAAGGAGAAGCATGATG
 AATACATGCTACGGGAGCTGGTTAAGAGATGGTCTAACCATAAAGTTATGGTTAGATGGCTATCCC
 GATTCTTCTACTATCTTGACCGTTACTTCATTGCTCGGAGATCGCTGCCACCGCTTAATGAAGTTG
 GGCTCACATGCTTCCGTGACCGGGTGTATAAGGAGTTGCATTCCAAGGTCAAAGATGCTGTAATAG
 CACTTGTGATAAAGAACGGGAAGGCGAGCAGATTGACAGGGCTCTTCTGAAAAACGTATTAGATA
 TCTATGTAGAGATTGGAATGGGACAGATGGAAAGATACGAAGTGGATTTTGAAAGCTTCATGCTTT
 TGGATTGAGCATCTTACTATTCTCGAAAGCATCAAACCTGGATCCAGGAAGATTCTTGCCCTGATT
 ACATGCTGAAGTCTGAAGAATGCCTTAAGAAGGAGAGGGAGAGGGTTGCTCACTACCTTCATTCAA
 GCAGCGAGCCAAAGCTGGTTGAGAAAGTACAACATGAGCTGTTGGTTGTCTATGCAAATCAGCTTC
 TTGAAAAGGAGCACTCAGGGTGCCGTGCATTGCTGAGAGACGACAAGGTTGACGATCTCTCCAGGA
 TGTACAGGCTCTATCATAAAATTGCTAAAGGTTTAGAACCTGTTGCAAACATATTTAAGCAGCATG
 TCACAGCCGAGGGTAACGCACTTGTCCAACAGGCCGAAGACACAGCCACTAATCAGGCTGCAAATA
 CTGCTAGCGTGCAGGAACAGGTTCTCATCAGAAAAGTGATTGAGCTACATGATAAGTACATGGTCT
 ATGTCGTGGAGTGCTTCCAGAACCACACCCTCTTCCACAAGGCTCTGAAAGAGGCATTTGAGATAT
 TCTGTAACAAAACAGTCGCTGGAAGTTCAAGTGCAGAACTGCTTGCAACATTCTGCGACAACATCC
 TCAAGAAGGGGGTAGTGAGAAGCTGAGTGACGAAGCTATTGAAGATACGCTTGAGAAGGTTGTCA
 AATTGCTTGCTTATATAAGCGACAAGGATCTTTTCGCCGAGTTCTACAGGAAGAAGCTGGCACGTA
 GGCTCTTATTTGATCGCAGTGCGAATGATGATCATGAGAGAAGCATCCTTACAAAGCTCAAGCAAC
 AATGTGGTGGGCAGTTCCTTCTAAGATGGAGGGCATGGTAACGGACTTGACATTGGCAAGAGAGA
 ACCAAACCAGTTTCGAGGAGTATCTAGGCAATAACCCCGCTGCAAACCCAGGGATTGATTTGACCG
 TCACTGTTCTTACCACTGGTTTCTGGCCAAGTTACAAATCATTCGACATAAATCTACCAAGTGAAA
 TGGTCAAGTGTGTTGAAGTTTTCAAAGGGTTTTATGAGACGAAAACATAAGGAACTTACAT
 GGATCTACTCACTAGGAACTTGTCACCTCAACGGAAAGTTTGATCACAAGCCCATTGAGTTAGTTG
 TGTCTACTTACCAGGCTGCTGTGCTTCTGCTGTTCAACACAACAGACAAATTGAGCTACAACGATA
 TCCTAACTCAACTGAACCTAAGCCACGAAGATTTAGTGAGGTTGCTTCATTCCCTGTCATGTGCTA
 GGTACAAGATCCTTCTCAAGGAGCCAAGCACGAAGACTGTTACACAGACTGATTCATTTGAATTCA
 ATGCCAAATTCACGGACAGAATGCGCAGAATCAAGATCCCTCTCCCTCCTGTTGATGAAAGGAAGA
 AGGTTGTGGAAGATGTGGACAAAGACAGACGCTATGCGATTGATGCTGCCATTGTTAGGATCATGA
 AGAGCAGGAAAGTGTTGGGACATCAACAACCTCGTCTCTGAGTGCGTTGAGCAACTTAGCCGAATGT
 TCAAGCCTGATATCAAAGCGATCAAGAAGCGTATGGAGGATCTAATTACGAGGGATTATTTGGAGA
 GGGACAAGGAGAACCCTAACATGTTTAGGTACTTGGCTTAG

Fig. 50

ATGAACGATCGTAAAGTTATCGAACTAGAGCAAGGATGGGAGTTCATGGGGAAGGGGATTACGAAG
 TTGAAAAGGATTTTGAAGGATTACCAGAGCCGCCTTTTAATTCGGAAGACTACATGATGCTGTAC
 ACGACAAT **[G]** TACAACATGTGTACACAGAAACCCCTCATGATTACTCTCAACAACTCTATGACA
 ATTACAAAGAGGCATTTGTGGATTACATACATTCAACGGTTTTACCTTCTTTGGGGGACAAACATG
 ATGAGTTTATGCTGAGAGAGCTTGTGAAGAGATGGTCAAATCATAAAGTAATGGTGAGGTGGTTGT
 CTCGCTTCTTCCATTATCTGGATCGGTACTTCATCGCTCGGAGATCGCTTCTTCTTTGAATGATG
 TTGGATTGACGTGCTTCCGTGATCTGGTTTATCAAGAAATATCTGGCAAAGCCAAGGATGCTGTTA
 TTGCTCTGATTGATGAAGAAAGAGAGGGTGGGCAAATTGACAGAGCCTTATTGAAGAATGTACTTG
 ATATATACGTTGAAATTGGAATGACACAAATGGATTACTACGAAAAGGACTTTGAAGCTCATATGC
 TGGATGATACTGCTGCTTATTACTCACGCAAGGCCTCAAGCTGGATTCTGGAGGACTCATGTCCGG
 AATACATGTTGAAGTCGGAGGAGTGTTTGAAGAAAGAGAAAAGATAGAGTGGCTCATTATCTACATT
 CCAGCAGTGAGCCAAAGCTTCTGGAGAAAAGTACAAAATGAGTTGCTACTGGTTTACGAAAATCAGT
 TGCTTGAGAAGGAGAATTCTGGATGTCGTGCATTGTTGAAAGATGACAAGGTGGAAGATCTTTCCA
 GGATGTACAGGCTTTATAGCAAGGTTACCAAAGGGTTGGAACCCATTGGCAGTATCTTCAAACAGC
 ATATAACCGATGAAGGAACAGCCCTGGTGCAGCAGGCCGAAGACGCTGCAATTAGCAAGGCTGAAA
 ATGCTGGCGGTGGTTCACATGAGCAGGTCTTCGTCAGGAAAGTGATTGAGTTGCATGACAAATTTA
 TGACCTATGTTACAGATTGCTTCAACAGCCATAACCATCTTTCACAAGGCTCTCAAGGAAGCTTTTG
 AGGTATTCTTAAACAAGGGTGTTGCTGGTAGTTCAAGTGCTGAACCTCTAGCTTCATTTTGTGATA
 ATATTCTCAAGAAAGGTGGTAGTGAAAAATTAAGTGATGAGGCTATTGAGGATTCAGTGGAGAAGG
 TGGTGAAGCTTCTCGCATATGTCAGTGATAAAGACCTGTTTGCTGAATTTTACAGAAAGAAGCTCT
 CTCGCCGGCTACTCTTTGACAAAAGTGCTAATGATGATCATGAGAGGAGTATTTTAAACAAATTGA
 AGCAGCAGTGTTGGGGGACAGTTCACATCAAAGATGGAGGGGATGGTGACAGACTTGACATTGGCGA
 GGGAGAATCAAATAATTTTGAGGAATATCTTGGACAAAATACAGATGCCAGTCCTGGTCTTGATT
 TGAAGTGACAGTTTTGACCACTGGGTCTGGCCAAGTTACAAATCTTCTGATCTTAACCTTCCTG
 CTGAGATGGTGAGGTGTGTTGAAGTTTTTAAGCAATTTTATCAAACAAAGACAAAACACAGGAAGC
 TCACCTGGGTATATTCGTTGGGAAGTTGTAACATTAATGGCAAGTTTGGTCCGAAAACAATTGAAT
 TGGTTGTTGGAACCTTATCAGGCTGCTGCGCTGATGCTCTTTAACACATCAGATCGACTGAGTTATT
 CAGAAATAACGACCCAACTAAATCTAGCTGACGAAGACTTGGTTAGAGTGCTTCAATCTCTATCTT
 GCGCAAAGTATAAGATTCTTCTAAAAGAGCCAAGCACAAAGAAACGTGATCTCAACTGATTGTTTTT
 CATTCAACTCTAATTTTACTGACAGAATGAGGAGGATTAGGATTCCTCTTCCTCCAATGGATGAGA
 GGAAAAAGGTTGTTGAAGATGTTGACAAAGATAGAAGATATGCTATTGATGCCTCAATTGTACGCA
 TAATGAAAAGTAGGAAGGCTTTGGGATATCAACAATTAATCACGGAGTGTGTGGAGCAGCTAAGCC
 GCATGTTCAAGCCTGATTTCAAAGCAATTAAGAAGAGGATCGAGGACTTGATAACCAGAGATTATA
 TTGAAAGAGACAAGGAAAACCCCTCAGCTATTCCGGTACTTGGCTTGA

Fig. 51

ATGAATGATCGTAAAGTTATTGAACTAGAGCAAGGATGGGAGTTCATGGGGAAGGGGATTACAAAG
TTGAAGAGGATTCTGGAAGGATTGCCAGAGCCACCATTTAATTCTGAAGACTACATGATGTTGTAC
ACGACGAT **[G]** TACAATATGTGTACTCAGAAACCCCCACATGATTACTCTCAACAGCTCTATGACA
ATTACAAACAGGCTTTTGTGGATTACATCAACTCGACGGTTTTACCTTCTTTGCGGGAGAAGCATG
ATGAGTTTATGTTAAGAGAACTTGTGAAAAGATGGGCAAATCATAAAGTAATGGTCAGGTGGTTGT
CTCGTTTCTTCCATTATCTGGACCGGTATTTTCATTGCTCGGAGGTCGCTTCCTTCTTTGAATGAAG
TTGGACTGACTTGTTTCCGTGATCTGGTTTATCAAGAAATATCTGGCAAAGCCAAGGATGCTGTTA
TAGCCCTGATTGATATAGAAAGAGAAGGTGGGCAGATTGACAGATCATTATTGAAAAATGTACTTG
ATATATATGTTGAAATTGGAATGGGACAAATGGATCACTATGAAAAAGACTTTGAAGCTCATATGC
TGGATGATACTGCTGCTTACTACTCGCGCAAAGCGTCTAGCTGGATTCTTGAGGACTCTTGTCCGG
AATACATGTTAAAGTCTGAGGAGTGTTTGAAGAAGGAGAAAAGAGAGAGTGGCTAATTATTTACATT
CCAGCAGTGAGCCAAAGCTTCTGGAGAAAAGTGCAAACGAGTTGCTATTGGTTTATGAAAGCCAAT
TGCTTGAGAAGGAGAATTCGGGATGTCTGTCATTACTGAAAGATGACAAGGTGGATGATCTTTCCA
GGATGTACAGGCTTTACAGTAAGGTTACCAAAGGATTGGAACCCATTGGCAGTATCTTCAAACAGC
ATATAACTGATGAAGGAACAGCCTTAGTGACAGCAGGCCGAAGATGCTGCTATCAGCAAGGCTGAAA
ATACTGGTGGTTACATGAGCAGGTCTTCGTCAGGAAAGTAATAGAGTTGCATGACAAATTCATGA
CTTATGTCACCGATTGCTTCAACAGCCATACCATATTTTACAAGGCTCTTAAGGAGGCTTTTGAAG
TATTTTGAACAAGGGTGTTGCTGGTAGCTCAAGTGCTGAGTTGCTAGCTACATTCTGTGATAACA
TTCTCAAGAAAGGTGGGAGCGAAAACTAAGCGATGAGGCTATTGAGGATTCACTTGAGAAGGTGG
TGAAGCTTCTGGCCTATGTCAGTGATAAAGACCTGTTTGCTGAATTTTACAGAAAGAAGCTCTCTC
GCCGCTACTCTTTGACAAGAGTGCTAATGATGATCATGAAAGAAGTATTTTAACCAAATTGAAGC
AGCAGTGTGGCGGACAATTCACATCAAAGATGGAGGGGATGGTGACAGACTTGACCTTGGCGAGGG
AGAATCAAATAATTTTGAAGGAATATCTTAGTCAGAATCCAGATGCCAGTCCTGGTCTTGATTTGA
CTGTGACTGTTCTGACAACTGGGTTCTGGCCAAGTTACAAATCTTCCGATCTTAACCTTCCCGCTG
AGATGGTGAGGTGTGTTGAAGTTTTTAAGCAGTTCTATTCAACTAAAACAAAGCACAGGAAGCTGA
CCTGGGTTTACTCATTGGGAAGCTGTAATATTAATGGCAAAGTTTGGTCCAAAACTATTGAATTGG
TTGTGCGAACTTATCAGGCTGCTGCTTTGATGCTCTTTAACACATCAGACCGACTGAGTTATTCAG
AGATAGCAACTCAACTAAATTTAGCTGATGAAGATCTGGTTAGAGTGCTTCAATCTTTATCCTGCG
CAAAGTATAAGATTCTTTTAAAGGAGCCAAACACGAAAACCGTGTCCCCGACTGATTGTTTTTCAT
TTAACTCTAGTTTCACTGACAGGATGAGGAGGATAAGAATTCCTCTTCTCCGATGGATGAGAGGA
AAAAGGTTGTTGAGGATGTTGACAAAGATAGAAGATATGCTATTGATGCCTCAATTGTACGCATAA
TGAAAAGTAGGAAGGTTTTGGGGTACCAGCAATTAATCACAGAGTGTGTGGAGCAGCTAAGCCGCA
TGTTCAAGCCTGATTTCAAGGCAATTAAGAAGAGGATCGAGGACTTAATAACCCGAGATTATATTG
AAAGAGACAAGGAGAACCCGCAGCTATTCCGATACTTGGCTTGA

Fig. 52

MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQ
 LYDKYRESFEEYITSMVLPSLREKHDEFMLRELVKRWTHHKVMVRWLSRFFHYLDRIYFIARRSLPP
 LNEVGLTCFRELVIKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMDYYENDFE
 AAMLKDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHSSSEPKLLEKVQHELLSVY
 ATQLEKEHSGCHALLRDDKVEDLSRMFRLFSKIPKGLDPVSNIFQHVTAEGTALVKQAEDAASN
 KKAEEKDIVGLQEQVFVRKVIELHDKYLAYVNDCFQNHITLFHKALKEAFEVFCNKGVAGSSSAELL
 ATFCDNILKKGSEKLSDEAIEETLEKVVKLLAYICDKDLFAEFYRKKLARRLLFDKSANDDHRS
 ILTKLKQQCGGQFTSKMEGMVTDLTARENQTSFEEYLSNNPQASPGIDLTVTVTLTGFWPSYKSF
 DLNLPAEMVKCVEVFRIFYQTKTKHRKLTWIYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSS
 DRLSYSEIMTQLNLSDDDVRLHLSLCAKYKILNKEPNTKTISPNDHFEFNAKFSKMRRIKIPL
 PPVDEKKKVIDVDKDRRYAIDASIVRIMKSRKVLGHQQLVMECVEQLGRMFKPDFKAICKRIEDL
 ITRDYLERDKDNPHLFRYLA

Fig. 53

MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQ
 LYDKYRESFEEYITSMVLPSLREKHDEFMLRELVKRWTHHKVMVRWLSRFFHYLDRIYFIARRSLPP
 LNEVGLTCFRELVIKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMDYYENDFE
 AAMLKDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHSSSEPKLLEKVQHELLSVY
 ATQLEKEHSGCHALLRDDKVEDLSRMFRLFSKIPKGLDPVSNIFQHVTAEGTALVKQAEDAASN
 KKAEEKDIVGLQEQVFVRKVIELHDKYLAYVNDCFQNHITLFHKALKEAFEVFCNKGVAGSSSAELL
 ATFCDNILKKGSEKLSDEAIEETLEKVVKLLAYICDKDLFAEFYRKKLARRLLFDKSANDDHRS
 ILTKLKQQCGGQFTSKMEGMVTDLTARENQTSFEEYLSNNPQASPGIDLTVTVTLTGFWPSYKSF
 DLNLPAEMVKCVEVFRIFYQTKTKHRKLTWIYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSS
 DRLSYSEIMTQLNLSDDDVRLHLSLCAKYKILNKEPNTKTISPNDHFEFNAKFSKMRRIKIPL
 PPVDEKKKVIDVDKDRRYAIDASIVRIMKSRKVLGHQQLVMECVEQLGRMFKPDFKAICKRIEDL
 ITRDYLERDKDNPHLFRYLA

Fig. 54

MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQ
 LYDKYRESFEEYIISSMVLP SLREKHDEFMLRELVKRWTHHKVMVRWLSRFFHYLDRIYFIARRSLPP
 LNEVGLTCFRELVIKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMDYYENDFE
 AAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELRREKDRVSHYLSHSSEPKLLEKVQHELLSVY
 ATQLEKEHSGCHALLRDDKVEDLSRMFRLFSKIPKGLDPVSNIFQHVTAEGTALVKQAEDAASN
 KKAEEKDIVGLQEQVFVRKVIELHDKYLAYVNDCFQNHITLFHKALKEAFEVFCNKG VAGSSSAELL
 ATFCDNILKKGSEKLSDEAIEETLEKVVKLLAYICDKDLFAEFYRKKLARRLLFDKSANDDHRS
 ILTKLKQQCGGQFTSKMEGMVTDLT LARENQTSFEEYLSNNPQASPGIDLT VTLTTFWPSYKSF
 DLNLPAEMVKCVEVFREFYQTKTKHRKLTWIYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSS
 DKLSYSEIMTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNAKFS DKMRRIKIPL
 PPVDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQLVMECVEQLGRMF KPDKAIAKKRIEDL
 ITRDYLERDKDNPHLFRYLA

Fig. 55

MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQ
 LYDKYRESFEEYITSMVLP SLREKHDEFMLRELVKRWTHHKVMVRWLSRFFHYLDRIYFIARRSLPP
 LNEVGLTCFRELVIKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMDYYENDFE
 AAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELRREKDRVSHYLSHSSEPKLLEKVQHELLSVY
 ATQLEKEHSGCHALLRDDKVEDLSRMFRLFSKIPKGLDPVSNIFQHVTAEGTALVKQAEDAASN
 KKAEEKDIVGLQEQVFVRKVIELHDKYLAYVNDCFQNHITLFHKALKEAFEVFCNKG VAGSSSAELL
 ATFCDNILKKGSEKLSDEAIEETLEKVVKLLAYICDKDLFAEFYRKKLARRLLFDKSANDDHRS
 ILTKLKQQCGGQFTSKMEGMVTDLT LARENQTSFEEYLSNNPQASPGIDLT VTLTTFWPSYKSF
 DLNLPAEMVKCVEVFREFYQTKTKHRKLTWIYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSS
 DRLSYSEIMTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNAKFS DKMRRIKIPL
 PPVDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQLVMECVEQLGRMF KPDKAIAKKRIEDL
 ITRDYLERDKDNPHLFRYLA

Fig. 56

MNQRSTIDLEHGWDFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQLY
 DKYREAFEEYITTTVLPSLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDRYFIARRSLPGLN
 EVGLTCFRDLVYQELNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGSMDDYYENDFEAA
 MLKDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHSSSETKLEKVQHELLSVYAN
 QLLEKEHSGCHALLRDDKVDDLRSRMYRLFSKIPRGLEPVANIFKQHVTAEGTALVKQAEDAASNKK
 AEKRDVVGLQEQQVFVRKVIELHDKYLAYVNNCFQNHTLFHKALKEAFELFCNKGVAGSSNAELLAT
 FCDNILKKGSEKLSDEAIEETLEKVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLTARENQASFEYLSNNPTANPGIDLTVTVLTTGFWPSYKSFDL
 NLPAEMVRCVEVFKEFYQTKTKHRKLTWIYSLGTCNINGKFEAKTIELVVTTYQASALLLFNASDR
 LSYQEIMTQLNLSDDDVRLLHSLSCAKYKILNKEPSTKTISPTDVFEFNSKFTDKMRRIKIPLPP
 VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECQEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKDNPNFLFKYLA

Fig. 57

MNQRSTIDLEHGWDFMQRGITKLKNILEGLPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQLY
 DKYREAFEEYITTTVLPSLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDRYFIARRSLPGLN
 EVGLTCFRDQVYQELNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGLMDYYENDFEAA
 MLKDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHSSSETKLEKVQHELLSVYAT
 QLLEKEHSGCHALLRDDKVEDLSRMYRLFSKISRGLDPVANIFKQHVTAEGTALVKQAEDAASNKK
 AEKRDVVGLQEQQVFVRKVIELHDKYLAYVNNCFQNHTLFHKALKEAFELFCNKGVAGSSSAELLAT
 FCDNILKKGSEKLSDEAIEETLEKVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLTARENQASFEYLSNNPIANPGIDLTVTVLTTGFWPSYKSFDL
 NLPAEMVRCVEVFKEFYQTKTKHRKLTWIYSLGTCNINGKFEKPTIELVVTTYQASALLLFNASDR
 LSYQEIMTQLNLSDDDVRLLHSLSCAKYKILNKEPSTKTISPTDVFEFNSKFTDKMRRIKIPLPP
 VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECQEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKDNPNFLFKYLA

Fig. 58

MNQIRSTINLEHGWDQMQRGITKLKNILEGLPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQLY
 DKYREAFEEYITTTVLPSLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDRYFIARRSLPGLN
 EVGLTCFRDLVYQELNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGSMDDYYENDFEAA
 MLKDTAAYYSRKASNWILEDSCPDYMLKAECECLKREKDRVSHYLHLSSETKLEKVQHELLSVYAT
 QLLEKEHSGCHALLRDDKVEDLSRMYRLFSKIPRGLDPVANIFKQHVTAEGTALVKQAEDAASNKK
 AEKRDVVGLEQEIFVRKVIELHDKYMAVNNCFQNHTLFHKALKEAFELFCNKGVAGSSSAELLAT
 FCDNILKKGSEKLSDEAIEETLEKVVKLLAYISDKDLFAEFYRKKLARRLLFDKSANDHERSIL
 TKLKQQCGGQFTSKMEGMVTDLTARENQASFEYLSNNPAANPGIDLTVTVLTTGFWPSYKSFIDL
 NLPAEMVRCVEVFKEFYQTKTKHRKLTWIYSLGTCNINGKFEPKTIELVVTTYQASALLLFNASDR
 LSYQEIMTQLNLSDDDDVRLHLSLSCAKYKILNKEPSTKTISPTDVFEFNFKFTDKMRRIKIPLPP
 VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECQEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKDNPNLFKYLA

Fig. 59

MERKTIDLDQGWDYMQTGITKLKRILEGLPEPQFDSEQYMMLYTT **[M]** YNMCTQKPPHDYSQQLYD
 KYREAFEEYIHSTVLPALREKHDEYMLRELVKRWSNHKVMVRWLSRFFYYLDRYFIARRSLPPLNE
 VGLTCFRDLVYNELHSHKVKDAVIALVDKEREGEQIDRALLKNVLDIYVEIGMQMERYEEDFESFM
 LLDSASYYSRKASSWIQEDSCPDYMLKSEECLKKERERVAHYLHSSSEPKLVEKVQHELLVVYANQ
 LLEKEHSGCRALLRDDKVDDLSRMYRLYHKIVKGLEPVANIFKQHVTAEGNALVQQAEDTATNHAA
 NTASVQEQLIRKVIELHDKYMVYVVECFQNHTLFHKALKEAFEIFCNKTVAGSSSAELLATFCDN
 ILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARRLLFDRSANDDHERSILTKLK
 QQCGGQFTSKMEGMVTDLTARENQNSFEYLGNNPAANPGIDLTVTVLTTGFWPSYKSFIDINLPA
 EMVKCVEVFKEGFYETKTKHRKLTWIYSLGTCHLNGKFDVKPIELVVSTYQAAVLLLFNTTDKLSYT
 DILTQLNLSHEDLVRLHLSLSCARYKILLKEPSTKTVSQSDSFENSKFTDRMRRIKIPLPPVDER
 KKVVEDVDKDRRYAIDAAIVRIMKSRKVLGHQQLVSECQEQLSRMFKPDIAIAKKRMEDLITRDYL
 ERDKENANMFRYLA

Fig. 60

MMIERKTIDLEQQGWDFMQKGITKLKNILEGFPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQL
 YEKYREAIEEYITSTVLPSLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDYFIARRSLPPL
 HEVGLTCFRDLVYQEINGKVRDAVISLINQEREGEQIDRALLKNVLDIFVEVGMSQMDYYENDFEA
 DMLKDTAAYYSRKASNWILEDSCPDYMLKAEELRREKDRVSNYLHSSSEPKLLEKVQHELLSHYA
 TQLEKEHSGCHALLRDDKVADLSRMYRLFSKIPRGLDPVSNIFKQHVTAEGTALVKQAEDAASNK
 KAEKRDVVGLEQVQVVRKIIELHDKYLTYNDCFTNHTLTFHKALKEAFEIFCNKGVSGSSSAELLA
 TFCDNILKKGSEKLSDEAIEETLEKVVRLLAYISDKDLFAEFYRKKLARLLFDKSANDEHERSI
 LTKLKQQCGGQFTSKMEGMVTDLTAKENQSNFEEYLNNSNVNPGIDLTVTVLTGFWPSYKSFD
 LNLPAEMVKCVEVFREFYQTKTKHRKLTWYISLGTNCNIIIGKFDPKTMELIVTTYQASALLFNSSD
 RLSYNEIMTQLNLSDDDVRLLHSLSCAKYKILSKEPNTKTISPTDCFQFNSKFTDKMRRIKIPLP
 PVDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECVEQLGRMFKPDVKAIAKKRIEDLI
 TRDYLERDKDNANLFRYLA

Fig. 61

MNERKTIDLDNGWEFMQKGITKLKKILEGQPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQLY
 DKYREAFEEYITSTVLPSLREKHDEFMLRELVNRWTHKVMVRWLSRFFHYLDYFIARRSLPALH
 EVGLTCFRDLVYQELKVVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMSQMDQYENDFEEA
 MLTDTAAYYSRKASNWILEDSCPDYMLKAEELRREKDRVSHYLHFSSEPKLLEKVQHELLSVYAT
 QLEKEHSGCHALLRDDKVDDLSRMYRLFSKIPKGLDPVSYIFKQHVTNEGMALVKQAEDAASNKK
 AEKRDVVSLEQVQVVRKIIELHDKYLAYVNDCTNHTLTFHKALKEAFEIFCNKGVAGSSNAELLAT
 FCDNILKKGSEKLSDEAIEETLEKVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLTAKENQSSFEEYLGNNANVNPGLDLTVTVLTGFWPSYKSFDL
 NNLPAEMVKCVEVFREFYQTKTKHRKLTWYISLGTNCNINGKFEPKTIELIVTTYQASALLFNNTSDR
 LSYQEIMTQLNLSDDDVRLLHSLSCAKYKILTKEPNNTKTISPTDYFEFNSKFTDKMRRIKIPLPP
 VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECVEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKDNANLFRYLA

Fig. 62

MNERKTIDLEQGWDFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQLY
 DKYRESFEEYITSTVLPSLREKHDEFMLRELVRWWSNHKVMVRWLSRFFHYLDRIYFIARRSLPPLN
 EVGLACFRDLVYQEVNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMEYYENDFEAS
 MLNDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHSSSEPKLLEKVQTELLSVYAT
 QLLEKEHSGCHALLRDDKVDDL SRMYRLF SKIQKGLDPVSSMFKQHVTAEGTTLVKQAEDAASSTK
 AEKRDVVGLQEQQVFVRKVIELHDKYLAYVNDCFMNHTLFHKALKEAFEIFCNKGVAGSSSAELLAT
 FCDNILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLTAKENQSHFEEYLNNPNVSPGIDLTVTVLTTGFWPSYKSFDL
 NLPAEMVKCEVFREFYQTKTKHRKLTWIYSLGTCNINGKFEPKTMELIVTTYQASALLFNSSDR
 LSYQEIMTQLNLSDDDVRLLHLSLSCAKYKILLKEPNKTISPTDFFEFNSKFTDKMRRIKIPLPP
 VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECQEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKENPNLFRYLA

Fig. 63

MNERKTIDLEQGWDFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQLY
 DKYRESFEEYITSTVLPSLREKHDEFMLRELVRWWSNHKVMVRWLSRFFHYLDRIYFIARRSLPPLN
 EVGLACFRDLVYQEVNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMEYYENDFEAS
 MLNDTAAYYSRKASNWILEDSCPDYMLKAECLKREKDRVSHYLHSSSEPKLLEKVQTELLSVYAT
 QLLEKEHSGCHALLRDDKVDDL SRMYRLF SKIQKGLDPVSSMFKQHVTAEGTTLVKQAEDAASSTK
 AEKRDVVGLQEQQVFVRKVIELHDKYLAYVNDCFMNHTLFHKALKEAFEIFCNKGVAGSSSAELLAT
 FCDNILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLTAKENQSHFEEYLNNPNVSPGIDLTVTVLTTGFWPSYKSFDL
 NLPAEMVKCEVFREFYQTKTKHRKLTWIYSLGTCNINGKFEPKTMELIVTTYQASALLFNSSDR
 LSYQEIMTQLNLSDDDVRLLHLSLSCAKYKILLKEPNKTISPTDFFEFNSKFTDKMRRIKIPLPP
 VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECQEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKENPNLFRYLA

Fig. 64

MSLHERKTIDLEQGWAFMQKGITKLKNILDELNEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQE
 LYDKYRESFEEYITTTVLPSLREKHDEYMLRELVRWRWSNHKIMVRWLSRFFHYLDRIYFIARRSLPA
 LNEVGLTCFRDLVYNEVHGKVKDAVISLIDQEREGEQIDRALLKNVLGIFVEIGLGSMECYENDFE
 TSMLNATAAYYSRKASNWILEDSCPDYMLKAECECLKHEKDRVAHYLHSSSEQKLEKVVQHELLFVY
 ASQLEKEHSGCHALLRDDKVGDLRMYRLFCRITRGLDPVSQIFKQHVTAEGTALVKHAEDAASN
 KKAEEKDIVGLQEQQVFVRKVIELHDKYLAYVTDCFNHSLFHKALKEAFEVFCNKGVAGSSSAELL
 AAFCDNILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARRLLFDKSANDDHRS
 ILTKLKQQCGGQFTSKMEGMVTDLTARENQSSFDYLLSSNPKANSGIDLTVTVLTTGFWPSYKSF
 DLNLPDEMVKCVEIFKEFYETKTKHRKLTWIIYSLGTCNINGKFETKTIELVVTTYQAALLLNFNSA
 DKLSYSEIVQQNLNSDDDDVIRLLHSLSCAKYKILNKEPATKTITPNDHFEFNSKFTDRMRRIKIPL
 PPVDEKKKVIDVDKDRRYAIDASIVRIMKSRKVLGHQQLVLECEQLGRMFKPDFKAIAKKRIEDL
 IARDYLERDKDNPNFLFKYLA

Fig. 65

MNERKTIDLEQGWDFMQKGITKLKNILEGLPEPQFSSSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQLY
 DKYRESFEEYITSTVLPSLREKHDEFMLRELVRWRWSNHKVMVRWLSRFFHYLDRIYFIARRSLPPLN
 EVGLACFRDLVYQEVNGKVRDAVISLIDQEREGEQIDRALLKNVLDIFVEIGMGQMEYYENDFEAS
 MLNDTAAYYSRKASNWILEDSCPDYMLKAECECLKREKDRVSHYHSSSEPKLLEKVVQNELLSVYAT
 QLEKEHSGCHALLRDDKVDDLSRMYRLFSKIPKGLDPVSSMFKQHVTAEGTTLVKQAEDAASTKK
 AEKRDVVGLQEQQVFVRKVIELHDKYLAYVNDCFMNHTLFHKALKEAFEIFCNKGVAGSSSAELLAT
 FCDNILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARRLLFDKSANDEHERSIL
 TKLKQQCGGQFTSKMEGMVTDLTAKENQSHFEEYLNNNPNVSPGIDLTVTVLTTGFWPSYKSFDL
 NLPAEMVKCVEVREFYQTKTKHRKLTWIIYSLGTCNINGKFEPKTMELIVTTYQASALLLNFNLSDR
 LSYQEIMTQLNLNSDDDDVIRLLHSLSCAKYKILLKEPNTKTISPTDYFEFNSKFTDKMRRIKIPLPP
 VDEKKKVIDVDKDRRYAIDASIVRIMKSRKVLGYQQLVMECEQLGRMFKPDVKAIAKKRIEDLIT
 RDYLERDKENPNLFRYLA

Fig. 66

MERKTIDLEQGWDYMQTGITKLKRILEGLPEPQFDSEQYMMLYTT **[M]** YNMCTQKPPHDYSQQLYD
 KYREAFEEYIDSTVLPALKEKHDEYMLRELVKRWSNHKVMVRWLSRFFYYLDRYFIARRSLPPLNE
 VGLTCFRDRVYKELHSHKVKDAVIALVDKEREQIDRALLKNVLDIYVEIGMQMERYEVDVFESFM
 LLDASYYSRKASNWIQEDSCPDYMLKSEECLKKERERVAHYLHSSSEPKLVEKVQHELLVVYANQ
 LLEKEHSGCRALLRDDKVDDLSRMYRLYHKIAKGLEPVANIFKQHVTAEGNALVQQAEDTATNQAA
 NTASVQEQVLIRKVIELHDKYMVYVVECFQNHTLFHKALKEAFEIFCNKTVAGSSSAELLATFCDN
 ILKKGSEKLSDEAIEDTLEKVVKLLAYISDKDLFAEFYRKKLARLLFDRSANDDHERSILTKLK
 QQCGGQFTSKMEGMVTDLTARENQTSFEEYLGNNPAANPGIDLTVTVLTTGFWPSYKSFDINLPS
 EMVKCVEVFKGFYETKTKHRKLTWIYSLGTCHLNGKFDHKPIELVVSTYQAAVLLLFNNTDKLSYN
 DILTQLNLSHEDLVRLHSLSCARYKILLKEPSTKTVTQTDSFEFNAKFTDRMRRIKIPLPPVDER
 KKVVEDVDKDRRYAIDAAIVRIMKSRKVLGHQQVLVSECVEQLSRMFKPDIIKIKRMEDLITRDYL
 ERDKENPNMFRYLA

Fig. 67

MNDRKVIELEQGWEFMGKGITKLKRILEGLPEPPFNSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQLY
 DNYKEAFVDYIHSTVLP SLGDKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDRYFIARRSLPSLN
 DVGLTCFRDLVYQEISGKAKDAVIALIDEEREQIDRALLKNVLDIYVEIGMTQMDYYEKDFEAH
 MLDDTAAYYSRKASSWILEDSCPEYMLKSEECLKKEKDRVAHYLHSSSEPKLLEKVQNELLVYEN
 QLLEKENSGCRALLKDDKVEDLSRMYRLYSKVTGLEPIGSIFKQHITDEGTALVQQAEDAAISKA
 ENAGGGSHEQVFVRKVIELHDKFMTYVTD CFNSHTIFHKALKEAFEVFLNKG VAGSSSAELLASFC
 DNILKKGSEKLSDEAIEDSLEKVVKLLAYVSDKDLFAEFYRKKLSRRLLFDKSANDDHERSILTK
 LKQQCGGQFTSKMEGMVTDLTARENQTNFEEYLGQNTDASPGLDLTVTVLTTGFWPSYKSSDLNL
 PAEMVRCVEVFKQFYQTKTKHRKLTWVYSLGSCNINGKFGPKTIELVVGTYQAAALMLFNNTSDRLS
 YSEITTQLNLADEDLVRLQSLSCAKYKILLKEPSTRNVISTDCFSFNSNFTDRMRRIKIPLPPMD
 ERKKVVEDVDKDRRYAIDASIVRIMKSRKALGYQQLITECVEQLSRMFKPDFKAIKKRIEDLITRD
 YIERDKENPQLFRYLA

Fig. 68

MNDRKVIELEQGWEFMGKGITKLKRILEGLPEPPFNSEDYMMLYTT **[M]** YNMCTQKPPHDYSQQLY
DNYKQAFVDYINSTVLPSLREKHDEFMLRELVKRWANHKVMVRWLSRFFHYLDRIYFIARRSLPSLN
EVGLTCFRDLVYQEISGKAKDAVIALIDIEREGGQIDRSLLKNVLDIYVEIGMQMDHYEKDFEAH
MLDDTAAYYSRKASSWILEDSCPEYMLKSEECLKKEKERVANYLHSSSEPKLLEKVQNELLVYES
QLLEKENS GCRALLKDDKVDDL SRMYRLYSKVTGLEPIGSIFKQHITDEGTALVQQAEDAAISKA
ENTGGSHEQVFVRKVIELHDKFMTYVTDCFNSTIFHKALKEAFEVFLNKG VAGSSSAELLATFCD
NILKKGSEKLSDEAIEDSLEKVVKLLAYVSDKDLFAEFYRKLSRRLLFDKSANDDHERSILTKL
KQQCGGQFTSKMEGMVDTLTLARENQTNFEEYLSQNPDASPGDLTVTVLTTGFWPSYKSSDLNLP
AEMVRCVEVFKQFYSTKTKHRKLTWVYSLGSCNINGKFGPKTIELVVGTYQAAALMLFNTSDRLSY
SEIATQLNLADEDLVRVLQSLSCAKYKILLKEPNTKTVSPTDCFSFNSSFTDRMRRIRIPLPPMDE
RKKVVEDVDKDRRYAIDASIVRIMKSRKVLGYQQLITECVEQLSRMFKPDFKAIAKKRIEDLITRDY
IERDKENPQLFRYLA

Fig. 69-1

Brassica_Cull1_Cds	-----ATGGAGCGCAAGACGATTGACTTGGACCAAGGATGGGACTATATGCAGACT
Radish_Cull1_Cds	-----ATGGAGCGGAAGACGATTGATCTGGAACAAGGATGGGACTATATGCAGACT
Beet_Cull1_Cds	----ATGAATGATCGTAAAGTTATTGAACTAGAGCAAGGATGGGAGTTCATGGGGAAG
Spinach_Cull1_Cds	----ATGAACGATCGTAAAGTTATCGAACTAGAGCAAGGATGGGAGTTCATGGGGAAG
Leek_Cull1_Cds	ATGTCGTTGCACGAAAGGAAAACCATTGATTTGGAGCAGGGATGGGCTTTTATGCAGAAA
Squash_Cull1_Cds	ATGACAATGGGTGAGCGGAAGACTATTGACTTGGAGCAAGGATGGGAGTTTATGCAGAAG
WaterMelon_Cull1_Cds	ATGACAATGGGCGAGCGGAAGACTATTGACTTGGAAACAAGGATGGGAGTTTATGCAGAAG
Cucumber_Cull1_Cds	ATGACAATGGGCGAGCGGAAGACTATTGACTTGGAGCAGGGATGGGAGTTTATGCAGAAG
Melon_Cull1_Cds	ATGACAATGGGCGAGCGGAAGACTATTGACTTGGAAACAGGGATGGGAGTTTATGCAGAAG
Tomato_Cull1_Cds	----ATGAACCAACGAAGCACAATCGATCTGGAACATGGATGGGACTTTCATGCAAAGG
Eggplant_Cull1_Cds	----ATGAACCAACGCAGCACAATCGATCTGGAACATGGATGGGATTTTCATGCAAAAG
Pepper_Cull1_Cds	----ATGAACGAGCGTTCCACAATCAATCTAGAACATGGATGGGACTTTCATGCAAAGG
Lettuce_Cull1_Cds	----ATGAACGAAAGAAAAACAATAGACTTAGAGCAAGGATGGGACTTTCATGCAGAAA
Chicory_Cull1_Cds	----ATGAATGAAAGAAAAACAATAGACTTAGAACAAGGATGGGACTTTCATGCAGAAA
Endive_Cull1_Cds	----ATGAATGAAAGAAAAACAATAGACTTAGAACAAGGATGGGACTTTCATGCAAAAA
Carrot_Cull1_Cds	-ATGATGATTGAGCGGAAAACATAGACCTGGAGCAGGGATGGGACTTTTATGCAAAAG
Celery_Cull1_Cds	----ATGAACGAGCGGAAGACTATCGATTTGGATAATGGATGGGAATTTATGCAGAAA
Brassica_Cull1_Cds	GGTATCACTAAGCTGAAACGGATTCTTGAGGGGCTGCCTGAGCCGAGTTTGACTCTGAG
Radish_Cull1_Cds	GGGATCACTAAGCTGAAACGGATTCTTGAAGGATTGCCTGAGCCGCAATTCGACTCTGAG
Beet_Cull1_Cds	GGGATTACAAAGTTGAAGAGGATTCTGGAAGGATTGCCAGAGCCACCATTTAATTCTGAA
Spinach_Cull1_Cds	GGGATTACGAAGTTGAAAAGGATTTTGGAAGGATTACCAGAGCCGCCTTTTAATTCCGAA
Leek_Cull1_Cds	GGGATCACCAAACCTGAAGAATATTCTTGATGAGTTGAATGAACCTCAGTTCAGCTCAGAG
Squash_Cull1_Cds	GGAATCACAAAATTGAAGAACATTCTGGAAGGATTGCCTGAGCCACAGTTCAGCTCCGAG
WaterMelon_Cull1_Cds	GGAATCACAAAGTTGAAGAACATTCTTGAGGGCTTGCTGAGCCTCAGTTCAGCTCCGAG
CuCumber_Cull1_Cds	GGTATCACAAAGTTGAAGAACATTCTCGAGGGCTTGCTGAGCCTCAGTTCAGCTCCGAG
Melon_Cull1_Cds	GGTATCACAAAGTTGAAGAACATTCTTGAGGGCTTGCTGAGCCCCAGTTCAGCTCCGAG
Tomato_Cull1_Cds	GGCATTACAAAGCTGAAGAACATTCTAGAAGGGCTGCCTGAGCCTCAATTCAGCTCAGAG
Eggplant_Cull1_Cds	GGCATCACAAAGCTGAAGAACATTCTAGAAGGGCTGCCTGAGCCTCAGTTCAGCTCAGAG
Pepper_Cull1_Cds	GGCATTACAAAGCTGAAGAACATTCTAGAAGGGCTGCCGAGCCTCAGTTCAGCTCAGAG
Lettuce_Cull1_Cds	GGAATAACAAAGTTGAAGAATATTCTAGAAGGTCTTCCCGAGCCACAATTCAGCTCGGAG
Chicory_Cull1_Cds	GGCATAACAAAGTTGAAGAACATTCTAGAAGGTCTTCCCGAGCCACAATTCAGCTCGGAA
Endive_Cull1_Cds	GGCATAACAAAGTTGAAGAACATTCTAGAAGGTCTTCCCGAGCCACAATTCAGCTCAGAG
Carrot_Cull1_Cds	GGAATCACAAAGCTAAAGAATATTTTGAAGGTCTTCCGGAGCCGCAATTCAGCTCGGAG
Celery_Cull1_Cds	GGGATCACTAAGTTGAAGAAGATTCTCGAAGGTCAACCTGAGCCTCAGTTTAGCTCCGAG

Fig. 69-2

Brassica_Cull1_Cds	CAATACATGATGCTCTATACGACTAT [C] TACAACATGTGCACTCAGAAACCTCCTCATGAT
Radish_Cull1_Cds	CAGTACATGATGCTTTATACGACTAT [C] TACAACATGTGCACCCAGAAACCTCCTCATGAT
Beet_Cull1_Cds	GACTACATGATGTTGTACACGACGAT [A] TACAATATGTGTACTCAGAAACCCCCACATGAT
Spinach_Cull1_Cds	GACTACATGATGCTGTACACGACAAT [A] TACAACATGTGTACACAGAAACCCCTCATGAT
Leek_Cull1_Cds	GATTACATGATGCTCTATACGACTAT [C] TATAATATGTGTACTCAGAAGCCGCCACATGAT
Squash_Cull1_Cds	GACTACATGATGCTTTTACACTACAAT [A] TATAACATGTGTACCCAGAAGCCACCGCATGAT
WaterMelon_Cull1_Cds	GACTACATGATGCTTTTATACCACCAT [A] TACAACATGTGCACACAAAAGCCGCCACATGAT
CuCumber_Cull1_Cds	GACTACATGATGCTTTTACACTACCAT [A] TATAACATGTGCACCCAAAAGCCGCCCATGAT
Melon_Cull1_Cds	GACTACATGATGCTTTTACACTACCAT [A] TATAACATGTGCACCCAAAAGCCGCCCATGAT
Tomato_Cull1_Cds	GACTATATGATGCTATATACGACAAT [T] TACAACATGTGTACTCAAAGCCCCACATGAT
Eggplant_Cull1_Cds	GACTATATGATGCTGTATACGACAAT [T] TACAACATGTGTACTCAGAAGCCCCACATGAT
Pepper_Cull1_Cds	GACTATATGATGCTGTATACGACAAT [T] TACAACATGTGTACTCAGAAGCCCCACATGAT
Lettuce_Cull1_Cds	GATTACATGATGCTCTACACAACCAT [C] TACAACATGTGTACACAGAAACCACCACATGAT
Chicory_Cull1_Cds	GATTACATGATGCTCTACACAACCAT [C] TACAATATGTGCACACAAAACCGCCACATGAT
Endive_Cull1_Cds	GATTACATGATGCTCTACACAACCAT [C] TACAATATGTGCACACAAAACCGCCACATGAT
Carrot_Cull1_Cds	GATTATATGATGCTTTTATACAACAT [C] TATAACATGTGTACACAGAAACCTCCACATGAT
Celery_Cull1_Cds	GACTATATGATGCTTTTACACAACAT [C] TATAATATGTGTACGCAGAAGCCTCCACATGAT
Brassica_Cull1_Cds	TACTCACAGCAGCTTTATGACAAGTATCGTGAAGCATTTGAGGAGTATATCACTCAACT
Radish_Cull1_Cds	TACTCTCAGCAGCTTTATGACAAGTATCGCGAAGCTTTTGAGGAGTACATTGACTCTACT
Beet_Cull1_Cds	TACTCTCAACAGCTCTATGACAATTACAAACAGGCTTTTGTGGATTACATCAACTCGACG
Spinach_Cull1_Cds	TACTCTCAACAACCTCTATGACAATTACAAAGAGGCATTTGTGGATTACATACATTCAACG
Leek_Cull1_Cds	TATTCTCAGGAGTTGTATGATAAGTACCGAGAGTCCTTTGAAGAGTATATCACTACCACT
Squash_Cull1_Cds	TACTCCCAGCAGCTGTATGATAAATACCGGAATCGTTTGAGGAGTACATCAGTTCTATG
WaterMelon_Cull1_Cds	TACTCCCAGCAGCTATACGATAAATACCGTGAATCTTTTGAGGAGTATATCACTTCTATG
CuCumber_Cull1_Cds	TACTCCCAGCAGCTGTATGATAAATATCGTGAATCTTTTGAAGAGTACATCACTTCTATG
Melon_Cull1_Cds	TACTCCCAGCAGCTGTATGATAAATATCGTGAATCTTTTGAAGAGTACATCACTTCTATG
Tomato_Cull1_Cds	TATTCTCAACAGCTGTATGACAAATATCGTGAAGCTTTTGAAGAATATATCACAAACAG
Eggplant_Cull1_Cds	TATTCTCAACAGCTGTATGACAAATATCGTGAAGCTTTTGAAGAATATATCACAAACAG
Pepper_Cull1_Cds	TATTCTCAACAGCTGTATGACAAATATCGTGAAGCTTTTGAAGAATATATCACAAACAG
Lettuce_Cull1_Cds	TACTCCCAACAGTTGTATGACAAATATCGTGAGTCTTTTGAAGAGTATATTACTTCAACT
Chicory_Cull1_Cds	TACTCTCAACAATTGTATGACAAATACCGCGAGTCTTTTGAAGAGTACATTACTTCAACG
Endive_Cull1_Cds	TACTCTCAACAATTATATGACAAATACCGCGAGTCTTTTGAAGAGTACATAACTTCAACG
Carrot_Cull1_Cds	TACTCTCAGCAGCTGTATGAAAAGTATCGTGAAGCTATTGAGGAGTACATTACTTCTACA
Celery_Cull1_Cds	TATTCTCAACAGCTGTATGACAAGTACCGTGAGGCCTTTGAGGAGTACATAACTTCAACT

Fig. 69-3

Brassica_Cull1_Cds	GTTTTGCCTGCTCTAAGGGAGAAGCATGATGAGTACATGCTGAGGGAGCTGGTTAAGAGA
Radish_Cull1_Cds	GTTTTGCCTGCTTTGAAGGAGAAGCATGATGAATACATGCTACGGGAGCTGGTTAAGAGA
Beet_Cull1_Cds	GTTTTACCTTCTTTGCGGGAGAAGCATGATGAGTTTATGTTAAGAGAACTTGTGAAAAGA
Spinach_Cull1_Cds	GTTTTACCTTCTTTGGGGGACAAACATGATGAGTTTATGCTGAGAGAGCTTGTGAAGAGA
Leek_Cull1_Cds	GTGCTTCCTTCATTGAGAGAAAAGCATGATGAATACATGTTAAGGGAGCTCGTGAGAAGG
Squash_Cull1_Cds	GTTTTACCATCCTTGAGGGAGAAGCATGACGAATTTATGTTGAGAGAACTGGTCAAAAGG
WaterMelon_Cull1_Cds	GTCTTACCATCCTTGAGGGAGAAGCATGACGAGTTCATGTTGAGAGAACTGGTCAAAAGG
CuCumber_Cull1_Cds	GTCTTACCATCCTTGAGGGAGAAGCACGATGAGTTCATGTTGAGAGAACTAGTAAAAAGG
Melon_Cull1_Cds	GTCTTACCATCCTTGAGGGAGAAGCATGACGAGTTCATGTTGAGAGAACTAGTCAAAAGG
Tomato_Cull1_Cds	GTATTGCCTTCTTTGAGAGAAAAACATGACGAGTTTATGTTGCGAGAGTTGGTAAAAAGG
Eggplant_Cull1_Cds	GTATTACCTTCTTTGAGAGAAAAACATGACGAGTTCATGTTGCGAGAGTTGGTAAAAAGG
Pepper_Cull1_Cds	GTATTGCCTTCTTTGAGAGAAAAACATGACGAGTTCATGTTGCGAGAGCTGGTAAAAAGG
Lettuce_Cull1_Cds	GTGTTACCTTCTTTAAGAGAGAAGCATGATGAGTTCATGCTGAGAGAGCTTGTTAGAAGG
Chicory_Cull1_Cds	GTGTTACCTTCTTTAAGAGAGAAGCATGATGAGTTTATGCTTAGAGAGCTTGTTAGAAGA
Endive_Cull1_Cds	GTGTTACCTTCTTTAAGAGAGAAGCATGATGAGTTTATGCTTAGAGAGCTTGTTAGAAGG
Carrot_Cull1_Cds	GTATTGCCTTCATTGAGAGAGAAGCATGATGAATTCATGCTTAGAGAACTTGTGAAGAGA
Celery_Cull1_Cds	GTCTGCCTTCTTTACGAGAGAAGCATGATGAGTTTATGTTGAGAGAGCTCGTGAATAGA
Brassica_Cull1_Cds	TGGTCTAACCATAAAGTTATGGTTCGATGGCTATCCCGCTTCTTCTACTATCTTGACCGT
Radish_Cull1_Cds	TGGTCTAACCATAAAGTTATGGTTAGATGGCTATCCCGATTCTTCTACTATCTTGACCGT
Beet_Cull1_Cds	TGGGCAAATCATAAAGTAATGGTCAGGTGGTTGTCTCGTTTCTTCCATTATCTGGACCGG
Spinach_Cull1_Cds	TGGTCAAATCATAAAGTAATGGTGAGGTGGTTGTCTCGCTTCTTCCATTATCTGGATCGG
Leek_Cull1_Cds	TGGTCAAATCATAAAATAATGGTTAGATGGCTTTCACGCTTTTCCATTATCTTGATCGC
Squash_Cull1_Cds	TGGACCAACCATAAAGTCATGGTGAGGTGGCTTCTCGCTTCTTCCACTATCTTGATCGA
WaterMelon_Cull1_Cds	TGGACGAACCATAAAGTCATGGTGAGGTGGCTTCTCGCTTCTTCCACTATCTTGACCGA
CuCumber_Cull1_Cds	TGGACAAACCATAAAGTCATGGTGAGGTGGCTTCTCGCTTCTTCCACTATCTTGATCGG
Melon_Cull1_Cds	TGGACAAACCATAAAGTCATGGTGAGGTGGCTTCTCGCTTCTTCCACTATCTTGATCGG
Tomato_Cull1_Cds	TGGTCAAATCATAAAGTCATGGTCAGATGGTTGTCAAGATTCTTCCATTACCTTGACCGG
Eggplant_Cull1_Cds	TGGTCAAACCATAAAGTCATGGTTAGATGGTTATCGCGATTCTTCCATTATCTTGACCGT
Pepper_Cull1_Cds	TGGTCAAACCATAAAGTCATGGTCAGATGGTTATCGCGATTCTTCCATTATCTTGATCGC
Lettuce_Cull1_Cds	TGGTCAAATCATAAAGTCATGGTGCGGTGGCTTCTAGATTCTTCCATTATCTTGACCGA
Chicory_Cull1_Cds	TGGTCAAATCATAAAGTGATGGTTAGGTGGCTTCTAGATTCTTCCATTATCTTGATCGA
Endive_Cull1_Cds	TGGTCAAATCATAAAGTGATGGTTAGGTGGCTTCTAGATTCTTCCATTATCTTGATCGA
Carrot_Cull1_Cds	TGGTCTAATCATAAAGTCATGGTCAGGTGGCTTCTCGATTCTTCCACTATCTTGATCGC
Celery_Cull1_Cds	TGGACAAACCATAAAGTCATGGTCAGGTGGCTTCTCGATTCTTCCACTATCTTGATCGG

Fig. 69-4

Brassica_Cull1_Cds	TACTTCATTGCTCGGAGGTCACCTCCACCCCTGAATGAAGTTGGCCTGACTTGCTTCCGT
Radish_Cull1_Cds	TACTTCATTGCTCGGAGATCGCTGCCACCGCTTAATGAAGTTGGGCTCACATGCTTCCGT
Beet_Cull1_Cds	TATTTCAATTGCTCGGAGGTCGCTTCCTTCTTTGAATGAAGTTGGACTGACTTGTTCCGT
Spinach_Cull1_Cds	TACTTCATCGCTCGGAGATCGCTTCCTTCTTTGAATGATGTTGGATTGACGTGCTTCCGT
Leek_Cull1_Cds	TACITTTATAGCACGAAGATCATTGCCTGCTCTTAATGAAGTCGGTCTCATTGTTTCCGT
Squash_Cull1_Cds	TACTTCATTGCTCGAAGGTCACCTCCACCTCTCAATGAAGTTGGCCTCACTTGCTTCCGT
WaterMelon_Cull1_Cds	TACTTCATTGCTCGAAGATCACTTCCACCTCTCAACGAAGTTGGCCTCACATGCTTCCGT
CuCumber_Cull1_Cds	TACTTCATCGCTCGAAGGTCACCTCCACCTCTAAATGAAGTTGGCCTCACATGCTTCCGC
Melon_Cull1_Cds	TACTTCATCGCTCGAAGGTCACCTCCACCTCTAAATGAAGTTGGCCTCACATGCTTCCGC
Tomato_Cull1_Cds	TATTTCAATTGCCCCGAGATCTCTGCCGGGGCTTAATGAAGTTGGACTAATTGCTTCCGC
Eggplant_Cull1_Cds	TATTTCAATTGCTCGGAGATCACTGCCAGGGCTTAATGAAGTTGGACTAATTGCTTCCGC
Pepper_Cull1_Cds	TATTTCAATTGCCCGGAGATCTCTACCGGGGCTTAATGAAGTTGGACTAATTGCTTCCGA
Lettuce_Cull1_Cds	TATTTCAATTGCCCGAAGATCTCTTCCGCCACTAAATGAAGTTGGACTTGCCTGTTTTCGT
Chicory_Cull1_Cds	TACTTCATTGCCCGAAGATCTCTTCCACCATTAAATGAAGTTGGACTTGCCTGTTTTCGT
Endive_Cull1_Cds	TACTTTATTGCAAGAAGATCTCTTCCACCATTAAATGAAGTTGGACTTGCCTGTTTTCGT
Carrot_Cull1_Cds	TATTTTATTGCTCGGAGGTCACCTCCACCACCTTCATGAAGTTGGACTCACTTGCTTCCGG
Celery_Cull1_Cds	TACTTCATTGCGAGGAGGTCACCTCCTGCACTTCATGAAGTTGGACTCACGTGCTTCCGG
Brassica_Cull1_Cds	GACCTGGTTTATAACGAGTTGCATTCCAAGGTCAAAGATGCTGTAATAGCACTTGTTGAT
Radish_Cull1_Cds	GACCGGGTGTTATAAGGAGTTGCATTCCAAGGTCAAAGATGCTGTAATAGCACTTGTTGAT
Beet_Cull1_Cds	GATCTGGTTTATCAAGAAATATCTGGCAAAGCCAAGGATGCTGTTATAGCCCTGATTGAT
Spinach_Cull1_Cds	GATCTGGTTTATCAAGAAATATCTGGCAAAGCCAAGGATGCTGTTATTGCTCTGATTGAT
Leek_Cull1_Cds	GATCTGGTGTACAACGAAGTCCATGGGAAAAGTTAAAGATGCCGTGATCTCATTGATTGAC
Squash_Cull1_Cds	GAATTGGTGTAACAAAGAGCTAAACAGTAAAGTGAGGGATGCAGTAATTTTATTGATCGAT
WaterMelon_Cull1_Cds	GAATTGGTGTAACAAAGAGCTAAACAGTAAAGTGAGGGATGCAGTAATTTTATTGATTGAT
CuCumber_Cull1_Cds	GAATTGGTGTAACAAAGAGCTAAATAGTAAAGTGAGGGATGCAGTAATTTTATTGATTGAT
Melon_Cull1_Cds	GAATTGGTGTAACAAAGAGCTAAACAGTAAAGTGAGGGATGCAGTAATCTCATTGATTGAT
Tomato_Cull1_Cds	GATCAGGCTTACCAAGAGTTGAATGGAAAAGTCAGGGATGCTGTTATATCTCTGATTGAT
Eggplant_Cull1_Cds	GATCTGGTCTACCAAGAGTTGAATGGAAAAGTCAGGGATGCTGTTATATCTCTGATTGAT
Pepper_Cull1_Cds	GATCTGGTCTACCAAGAGTTGAATGGAAAAGTCAGGGATGCTGTTATATCTCTGATTGAT
Lettuce_Cull1_Cds	GATCTGGTATACCAAGAGGTGAATGGTAAAGTGAGAGATGCTGTAATATCTTTGATTGAT
Chicory_Cull1_Cds	GATCTGGTATACCAAGAGGTGAATGGGAAAAGTGAGAGATGCTGTAATATCTTTGATTGAT
Endive_Cull1_Cds	GATCTGGTATACCAAGAGGTGAATGGAAAAGTGAGAGATGCTGTAATATCTTTGATTGAT
Carrot_Cull1_Cds	GACCTGGTTTACCAGGAGATAAATGGGAAAAGTAAGGGATGCTGTAATATCATTGATTAAAT
Celery_Cull1_Cds	GATCTGGTCTATCAGGAGCTGAAAGTTAAAGTGAGGGATGCTGTAATATCTCTGATCGAT

Fig. 69-5

Brassica_Cull1_Cds	AAAGAACGGGAGGGTGAGCAGATTGACAGGGCTCTATTGAAAAACGTATTAGACATTTAT
Radish_Cull1_Cds	AAAGAACGGGAAGGCGAGCAGATTGACAGGGCTCTTCTGAAAAACGTATTAGATATCTAT
Beet_Cull1_Cds	ATAGAAAGAGAAGGTGGGCAGATTGACAGATCATTATTGAAAAATGTACTTGATATATAT
Spinach_Cull1_Cds	GAAGAAAGAGAGGGTGGGCAAATTGACAGAGCCTTATTGAAGAATGTACTTGATATATAC
Leek_Cull1_Cds	CAAGAGAGGGAAGGGGAGCAAATTGACAGAGCTTTATTAAAGAATGTTTTGGGTATTTTT
Squash_Cull1_Cds	CAAGAACGTGAAGGAGAGCAGATTGACAGAGCTCTGTTGAAGAACGTGTTGGATATATTT
WaterMelon_Cull1_Cds	CAAGAACGTGAAGGAGAGCAGATTGACAGAGCTCTACTGAAGAATGTATTAGATATATTT
CuCumber_Cull1_Cds	CAAGAACGTGAAGGAGAACAGATTGACAGAGCTCTACTGAAGAATGTACTAGATATATTT
Melon_Cull1_Cds	CAAGAACGTGAAGGAGAACAGATTGACAGAGCTCTACTGAAGAATGTATTAGATATATTT
Tomato_Cull1_Cds	CAAGAGCGTGAGGGAGAGCAAATTGACAGAGCTCTACTTAAGAATGTGCTTGATATATTT
Eggplant_Cull1_Cds	CAAGAGCGTGAGGGAGAGCAAATTGACAGAGCTCTACTGAAGAATGTGCTAGATATATTT
Pepper_Cull1_Cds	CAAGAGCGTGAGGGAGAGCAAATTGACAGAGCTCTACTGAAGAATGTGCTAGATATATTT
Lettuce_Cull1_Cds	CAAGAGCGTGAAAGGGGAGCAGATTGATCGAGCTTTACTGAAGAATGTTCTAGATATATTT
Chicory_Cull1_Cds	CAAGAGCGTGAAAGGCGAGCAAATTGACCGAGCATTACTCAAGAATGTTCTAGATATATTT
Endive_Cull1_Cds	CAAGAGCGTGAAAGGCGAGCAAATTGACCGAGCATTACTGAAGAATGTTCTAGATATATTT
Carrot_Cull1_Cds	CAAGAGCGCGAGGGGAGAGCAAATTGACCGAGCTTTGTTGAAGAATGTTCTAGATATATTT
Celery_Cull1_Cds	CAAGAGCGTGAGGGGGAACAGATTGACCGAGCTTTATTAAAGAACGTGTTAGATATATTT
Brassica_Cull1_Cds	GTAGAGATTGGAATGGGACAGATGGAAAGATACGAGGAGGATTTTGAAAGCTTCATGCTT
Radish_Cull1_Cds	GTAGAGATTGGAATGGGACAGATGGAAAGATACGAAGTGGATTTTGAAAGCTTCATGCTT
Beet_Cull1_Cds	GTTGAAATTGGAATGGGACAAATGGATCACTATGAAAAAGACTTTGAAGCTCATATGCTG
Spinach_Cull1_Cds	GTTGAAATTGGAATGACACAAATGGATTACTACGAAAAGGACTTTGAAGCTCATATGCTG
Leek_Cull1_Cds	GTAGAGATTGGTTTGGGAAGCATGGAATGTTATGAGAATGATTTTGAACATCAATGCTT
Squash_Cull1_Cds	GTGGAGATTGGGATGGGGCAAATGGATTATTATGAAAATGACTTTGAAGCTGCCATGCTT
WaterMelon_Cull1_Cds	GTGGAAATTGGGATGGGGCAAATGGATTACTATGAAAATGACTTTGAAGCTGCCATGCTT
CuCumber_Cull1_Cds	GTGGAAATTGGTATGGGGCAAATGGATTACTATGAAAATGACTTTGAAGCTGCCATGCTT
Melon_Cull1_Cds	GTGGAAATTGGTATGGGGCAAATGGATTACTATGAAAATGACTTTGAAGCTGCCATGCTT
Tomato_Cull1_Cds	GTCGAAATTGGAATGGGGTTAATGGATTATTATGAGAATGATTTTGAAGCTGCAATGCTC
Eggplant_Cull1_Cds	GTTGAAATTGGAATGGGGTCAATGGATTATTATGAGAATGATTTTGAAGCTGCAATGCTC
Pepper_Cull1_Cds	GTTGAAATTGGAATGGGGTCGATGGATTATTATGAGAATGATTTTGAAGCTGCAATGCTC
Lettuce_Cull1_Cds	GTTGAGATAGGAATGGGACAAATGGAGTATTATGAGAATGATTTTGAAGCATCCATGCTT
Chicory_Cull1_Cds	GTTGAAATAGGAATGGGACAAATGGAATATTATGAGAATGATTTTGAAGCATCCATGCTT
Endive_Cull1_Cds	GTTGAAATAGGAATGGGACAAATGGAATATTATGAGAATGATTTTGAAGCATCTATGCTT
Carrot_Cull1_Cds	GTTGAAGTTGGAATGAGTCAAATGGATTATTATGAGAATGACTTTGAAGCAGACATGCTC
Celery_Cull1_Cds	GTTGAAATCGGAATGAGTCAAATGGATCAATATGAGAATGACTTTGAAGAAGCCATGCTC

Fig. 69-6

Brassica_Cull1_Cds	TTAGATTCAGCATCTTACTATTCTCGCAAAGCGTCAAGCTGGATCCAAGAAGATTCTTGCTTGGATTCAGCATCTTACTATTCTCGCAAAGCATCAAAGCTGGATCCAGGAAGATTCTTGCTGATGATACTGCTGCTTACTACTCGCGCAAAGCGTCTAGCTGGATTCTTGAGGACTCTTGTTGATGATACTGCTGCTTATTACTCACGCAAGGCCCTCAAGCTGGATTCTGGAGGACTCATGTAATGCTACAGCAGCCTATTATTACGAAAAGCTTCAAATTGGATTCTAGAAGATTTCATGTAAGATACTGCTGCTTACTACTCTAGGAAGGCATCAAATTGGATCTTAGAAGATTCTTGTTAAGATACTGCTGCTTATTACTCTAGGAAGGCTTCCAATTGGATCCTAGAAGATTCTTGTTAAGATACTGCTGCTTATTACTCTAGGAAGGCTTCCAATTGGATCCTAGAAGATTCTTGTTAAGATACTGCTGCTTATTACTCTAGGAAGGCTTCCAATTGGATCCTAGAAGATTCTTGTTAAGGACACAGCGGCTTATTATTCTCGCAAAGCTTCTAATTGGATCCTCGAAGATTTCATGTAAGGACACTGCGGCTTATTATTCTCGCAAAGCTTCTAAGCTGGATCCTCGAAGATTTCATGTAAGGACACCGCAGCTTATTATTCTCGCAAAGCTTCTAAGCTGGATCCTAGAAGATTTCATGTAATGATACAGCAGCATATTATTACGCAAGGCTTCCAAGCTGGATTCTAGAAGATTCTTGTTAATGATACAGCAGCATATTATTACGCAAAGCTTCCAATTGGATTCTAGAAGATTCTTGTTAATGATACAGCAGCATATTATTACGCAAAGCTTCCAAGCTGGATTCTAGAAGATTCTTGTTAAGATACTGCTGCTTACTATTCTCGCAAAGGCTTCCAAGCTGGATCCTAGAAGATTCTTGTTACTGATACTGCTGCTTACTATTCTCGAAAAGCTTCAAAGCTGGATCCTAGAAGATTCTTGTT
Radish_Cull1_Cds	
Beet_Cull1_Cds	
Spinach_Cull1_Cds	
Leek_Cull1_Cds	
Squash_Cull1_Cds	
WaterMelon_Cull1_Cds	
CuCumber_Cull1_Cds	
Melon_Cull1_Cds	
Tomato_Cull1_Cds	
Eggplant_Cull1_Cds	
Pepper_Cull1_Cds	
Lettuce_Cull1_Cds	
Chicory_Cull1_Cds	
Endive_Cull1_Cds	
Carrot_Cull1_Cds	
Celery_Cull1_Cds	
Brassica_Cull1_Cds	CCTGATTACATGCTGAAGTCTGAAGAATGTCTTAAGAAGGAGAGGGAGAGAGTGGCTCACCTGATTACATGCTGAAGTCTGAAGAATGCCTTAAGAAGGAGAGGGAGAGGGTTGCTCACCCGGAATACATGTTAAAGTCTGAGGAGTGTGTTGAAGAAGGAGAAAGAGAGAGTGGCTAATCCGGAATACATGTTGAAGTCGAGGAGTGTGTTGAAGAAAGAGAAAGATAGAGTGGCTCATCCAGATTATATGCTAAAAGCCGAGGAGTGCTTAAAACATGAGAAAGATAGAGTTGCTCATCCTGATTATATGCTAAAAGCAGAGGAGTGCTTGAGACGAGAAAAGGACCGAGTTTCTCACCCCATTATATGCTAAAAGCAGAGGAGTGCTTGAAACGAGAAAAGGATAGAGTTTCTCACCCCATTATATGCTTAAAGCAGAGGAGTGCTTGAAACGAGAAAAGGATAGGGTTTCCCACCCCATTATATGCTAAAAGCAGAGGAGTGCTTGAAACGAGAAAAGGATAGGGTTTCCCACCCGATTATATGCTGAAAGCCGAGGAGTGCTTGAAACGGGAGAAAGATAGGGTCTCTCATCCAGATTATATGCTGAAAGCTGAGGAGTGCTTGAAACGGGAGAAAGATAGGGTCTCCCATCCAGATTATATGCTGAAAGCCGAGGAGTGCTTGAAACGGGAGAAAGATAGGGTCTCTCACCCAGATTATATGCTCAAAGCAGAGGAGTGCTTAAAAAGAGAAAAGGACAGAGTGTCTCATCCAGATTATATGCTCAAAGCTGAGGAGTGCTTAAAAAGAGAAAAGGACAGAGTTTCTCATCCAGATTATATGCTCAAAGCTGAGGAGTGCTTAAAAAGAGAAAAGGACAGAGTTTCTCATCCAGATTATATGCTCAAAGCGGAAGAGTGTGTTGAGACGGGAAAAGGACAGGGTCTCTAACCTGATTATATGTTAAAGGCAGAAGAATGTTTGCGACGAGAGAAGGACAGGGTTTCCCAC
Radish_Cull1_Cds	
Beet_Cull1_Cds	
Spinach_Cull1_Cds	
Leek_Cull1_Cds	
Squash_Cull1_Cds	
WaterMelon_Cull1_Cds	
CuCumber_Cull1_Cds	
Melon_Cull1_Cds	
Tomato_Cull1_Cds	
Eggplant_Cull1_Cds	
Pepper_Cull1_Cds	
Lettuce_Cull1_Cds	
Chicory_Cull1_Cds	
Endive_Cull1_Cds	
Carrot_Cull1_Cds	
Celery_Cull1_Cds	

Fig. 69-7

Brassica_Cull1_Cds	TACCTTCACTCAAGCAGCGAGCCAAAGCTGGTTGAGAAAGTACAACATGAGCTGTTGGTA
Radish_Cull1_Cds	TACCTTCATTCAAGCAGCGAGCCAAAGCTGGTTGAGAAAGTACAACATGAGCTGTTGGTT
Beet_Cull1_Cds	TATTTACATTCCAGCAGTGAGCCAAAGCTTCTGGAGAAAGTGCAAAACGAGTTGCTATTG
Spinach_Cull1_Cds	TATCTACATTCCAGCAGTGAGCCAAAGCTTCTGGAGAAAGTACAAAATGAGTTGCTACTG
Leek_Cull1_Cds	TATTTGCATTCAAGCAGTGAACAGAAGCTGTTAGAGAAAGTGCAACATGAGTTACTTTTC
Squash_Cull1_Cds	TATCTGCACCTCTAGTAGCGAGCCAAAGTTATTGGAGAAAGTTCAACATGAACTATTGTCT
WaterMelon_Cull1_Cds	TATTTGCACCTCTAGTAGCGAGCCAAAGTTATTAGAGAAAGTTCAACATGAACTGTTATCT
CuCumber_Cull1_Cds	TATTTGCACCTCTAGTAGCGAGCCAAAGTTGTTGGAGAAAGTTCAACATGAACTATTATCT
Melon_Cull1_Cds	TATTTGCACCTCTAGTAGCGAGCCAAAGTTGTTGGAGAAAGTTCAACACGAACTGTTATCT
Tomato_Cull1_Cds	TATCTCCATTCAAGCAGCGAGACGAAGTTGCTTGAGAAAGTGCAACATGAGTTGTTGTCT
Eggplant_Cull1_Cds	TATCTCCATTCTAGCAGTGAGACAAAGTTGCTTGAGAAAGTGCAACATGAGTTGTTATCT
Pepper_Cull1_Cds	TATCTTCATTTAAGCAGTGAGACAAAGTTGCTTGAGAAAGTGCAACATGAGTTGTTGTCT
Lettuce_Cull1_Cds	TATCTTCATTCCAGCAGTGAGCCAAAGCTTCTTGAGAAAGTTCAAAAATGAGTTATTGTCT
Chicory_Cull1_Cds	TATCTTCATTCCAGCAGTGAACCAAAGCTTCTTGAGAAAGTTCAAACAGAGTTATTATCT
Endive_Cull1_Cds	TATCTTCATTCAAGTAGTGAACCAAAGCTTCTTGAGAAAGTTCAAACAGAGTTATTATCT
Carrot_Cull1_Cds	TACCTTCATTCTAGTAGTGAACCAAAGTTGCTTGAGAAAGTTCAACATGAGTTACTATCA
Celery_Cull1_Cds	TACCTACATTTTAGTAGCGAGCCAAAGTTGCTTGAGAAAGTGCAACATGAGCTGCTATCT
Brassica_Cull1_Cds	GTGTATGCAAAATCAGCTTCTAGAAAAAGAGCATTGAGGTTGCCGTGCATTGCTGAGAGAT
Radish_Cull1_Cds	GTCTATGCAAAATCAGCTTCTTGAAAAAGGAGCACTGAGGTTGCCGTGCATTGCTGAGAGAC
Beet_Cull1_Cds	GTTTATGAAAGCCAATTGCTTGAGAAGGAGAATTGCGGATGTCGTGCATTACTGAAAGAT
Spinach_Cull1_Cds	GTTTACGAAAAATCAGTTGCTTGAGAAGGAGAATTCTGGATGTCGTGCATTGTTGAAAGAT
Leek_Cull1_Cds	GTATATGCAAGTCAACTTCTCGAGAAAGAACATTCCGGATGTCATGCATTGCTTCGCGAT
Squash_Cull1_Cds	GTTTATGCTACTCAACTGCTGGAGAAAGAGCATTGAGGATGCCATGCATTGCTTAGAGAT
WaterMelon_Cull1_Cds	GTGTATGCTACTCAACTGCTGGAAAAAGAGCATTGAGGATGCCATGCATTGCTTAGAGAT
CuCumber_Cull1_Cds	GTTTATGCTACTCAACTGCTGGAAAAAGAGCATTGAGGATGCCATGCATTGCTTAGAGAT
Melon_Cull1_Cds	GTGTATGCTACTCAACTGCTGGAAAAAGAGCATTGAGGATGCCATGCATTGCTTAGAGAT
Tomato_Cull1_Cds	GTGTATGCCACTCAACTTCTTGAGAAGGAGCACTCTGGATGCCATGCCATTACTGAGAGAT
Eggplant_Cull1_Cds	GTGTATGCCAATCAACTTCTTGAGAAGGAGCACTCTGGATGCCATGCATTACTTAGAGAT
Pepper_Cull1_Cds	GTGTATGCCACTCAACTTCTTGAGAAGGAGCACTCTGGGTGCCATGCCATTACTAAGAGAT
Lettuce_Cull1_Cds	GTTTATGCAACTCAATTGCTTGAGAAAGAGCACTCAGGTTGTCATGCATTGCTCAGGGAT
Chicory_Cull1_Cds	GTTTATGCAACTCAATTGCTTGAAAAAGGAGCACTCCGGTTGTCATGCATTACTTAGGGAT
Endive_Cull1_Cds	GTTTATGCAACTCAATTGCTCGAAAAAGGAACACTCAGGTTGTCATGCATTACTTAGAGAT
Carrot_Cull1_Cds	CACTATGCAACTCAGCTGCTTGAGAAAGAACACTCTGGGTGTCATGCATTGCTTAGGGAT
Celery_Cull1_Cds	GTGTATGCAACCCAATTACTCGAGAAGGAACATTCTGGTTGTCATGCATTGCTTAGGGAT

Fig. 69-8

Brassica_Cull1_Cds	GACAAGGTTGATGACCTCTCCAGGATGTACAGGCTTTATCATAAAATTGTGAAAGGTTTG
Radish_Cull1_Cds	GACAAGGTTGACGATCTCTCCAGGATGTACAGGCTCTATCATAAAATTGCTAAAGGTTTA
Beet_Cull1_Cds	GACAAGGTGGATGATCTTTCCAGGATGTACAGGCTTTACAGTAAGGTTACCAAAGGATTG
Spinach_Cull1_Cds	GACAAGGTGGAAGATCTTTCCAGGATGTACAGGCTTTATAGCAAGGTTACCAAAGGGTTG
Leek_Cull1_Cds	GACAAGGTGGGAGATCTTTTCACGCATGTATCGGCTGTTCTGTAGAATTACACGTGGTTTG
Squash_Cull1_Cds	GACAAGGTGGAAGATTTGTCAAGGATGTTCCGTCTCTTCTCCAAAATACCCAAGGGATTG
WaterMelon_Cull1_Cds	GACAAGGTGGAAGATTTGTCAAGGATGTTCCGCCTCTTCTCCAAAATACCCAAGGGATTG
CuCumber_Cull1_Cds	GACAAGGTGGAAGATTTGTCAAGGATGTTCCGTCTATTCTCCAAAATACCGAAGGGACTG
Melon_Cull1_Cds	GACAAGGTGGAAGATTTGTCAAGGATGTTCCGTCTCTTCTCCAAAATACCGAAGGGATTG
Tomato_Cull1_Cds	GATAAGGTTGAAGATTTATCAAGGATGTATAGGCTCTTTTCTAAGATTTCTCGAGGCTTA
Eggplant_Cull1_Cds	GATAAGGTCGATGATTTATCAAGGATGTATAGACTCTTTTCTAAGATTCCTCGAGGCTTA
Pepper_Cull1_Cds	GATAAGGTTGAAGATTTATCAAGGATGTATAGGCTCTTTTCTAAGATTCCTCGAGGCTTA
Lettuce_Cull1_Cds	GACAAGGTTGATGATTTATCAAGAATGTACAGACTCTTTTCAAAGATACCAAAGGATTG
Chicory_Cull1_Cds	GACAAGGTTGATGATTTATCAAGAATGTACAGACTCTTTTCAAAGATACAAAAGGGCTG
Endive_Cull1_Cds	GACAAGGTTGATGATTTATCAAGAATGTACAGACTCTTTTCAAAGATACAAAAGGACTG
Carrot_Cull1_Cds	GACAAGGTGGCAGATTTATCAAGGATGTATAGGCTCTTCTCTAAAATACCTCGAGGCCTA
Celery_Cull1_Cds	GACAAGGTGGATGATTTGTCTAGGATGTACAGACTCTTCTCGAAAATACCTAAAGGCCTG
Brassica_Cull1_Cds	GAACCTGTTGCAAACATATTTAAGCAGCATGTACAGCAGAGGGTAACGCACTTGTCCAA
Radish_Cull1_Cds	GAACCTGTTGCAAACATATTTAAGCAGCATGTACAGCCGAGGGTAACGCACTTGTCCAA
Beet_Cull1_Cds	GAACCCATTGGCAGTATCTTCAAACAGCATATAACTGATGAAGGAACAGCCTTAGTGCAG
Spinach_Cull1_Cds	GAACCCATTGGCAGTATCTTCAAACAGCATATAACCGATGAAGGAACAGCCCTGGTGCAG
Leek_Cull1_Cds	GACCCTGTGTCTCAAAATATTTAAGCAGCATGTGACTGCAGAAGGTACTGCTTTGGTCAAA
Squash_Cull1_Cds	GACCCAGTTTCCAACATATTTAAGCAGCATGTCACTGCTGAAGGAACAGCATTAGTCAAA
WaterMelon_Cull1_Cds	GACCCAGTTTCCAACATATTTAAGCAGCATGTCACTGCTGAAGGAACAGCATTGGTCAAA
CuCumber_Cull1_Cds	GATCCAGTTTCCAACATATTTAAGCAGCATGTAAGTCTGAAGGAACAGCACTGGTCAAA
Melon_Cull1_Cds	GACCCAGTTTCCAACATATTTAAGCAGCATGTAAGTCTGAAGGAACAGCACTGGTCAAA
Tomato_Cull1_Cds	GACCCTGTGGCCAATATTTTTAAGCAGCATGTTACTGCTGAAGGTACAGCTTTGGTAAAA
Eggplant_Cull1_Cds	GAGCCTGTGGCTAATATATTTAAGCAGCATGTTACTGCTGAAGGTACAGCTTTGGTGAAA
Pepper_Cull1_Cds	GACCCTGTGGCTAATATATTTAAGCAGCATGTTACTGCTGAAGGTACAGCTTTGGTCAAA
Lettuce_Cull1_Cds	GATCCTGTTTCTAGTATGTTTAAGCAGCATGTCACTGCTGAAGGCACAACATTGGTTAAA
Chicory_Cull1_Cds	GATCCTGTTTCTAGTATGTTTAAGCAGCATGTCACTGCTGAAGGCACAACATTGGTTAAA
Endive_Cull1_Cds	GATCCTGTTTCCAGTATGTTTAAGCAGCATGTCACTGCTGAAGGCACAACATTAGTAAAA
Carrot_Cull1_Cds	GATCCCGTGTCTAATATTTTTAAGCAGCATGTTACTGCTGAAGGTACAGCTTTGGTCAAA
Celery_Cull1_Cds	GATCCAGTTTCTTATATTTTTAAGCAGCATGTTACAAATGAAGGGATGGCATTGGTTAAA

Fig. 69-9

Brassica_Cull1_Cds	CAGGCCGAAGACACGGCCACTAATCATGCTGCA-----AATACTGCTAGCGTGCAG
Radish_Cull1_Cds	CAGGCCGAAGACACAGCCACTAATCAGGCTGCA-----AATACTGCTAGCGTGCAG
Beet_Cull1_Cds	CAGGCCGAAGATGCTGTCTATCAGCAAGGCTGAA-----AATACT-GGTGGTTTCACAT
Spinach_Cull1_Cds	CAGGCCGAAGACGCTGCAATTAGCAAGGCTGAA----AATGCTGGCGGTGGTTTCACAT
Leek_Cull1_Cds	CATGCCGAAGATGCTGCAAGTAACAAGAAGGCCGAGAAAAAGACATTGTTGGTTTGCAA
Squash_Cull1_Cds	CAGGCAGAAGACGCTGCAAGTAACAAGAAGGCCGAGAAAAAGGACATCGTTGGTCTGCAA
WaterMelon_Cull1_Cds	CAGGCAGAAGATGCTGCAAGTAACAAGAAGGCCGAGAAAAAGGACATAGTTGGTCTGCAG
CuCumber_Cull1_Cds	CAGGCAGAAGATGCTGCAAGTAACAAGAAGGCTGAGAAAAAGGACATAGTTGGTCTGCAG
Melon_Cull1_Cds	CAGGCAGAAGATGCTGCAAGTAACAAGAAGGCCGAGAAAAAGGACATAGTTGGTCTGCAG
Tomato_Cull1_Cds	CAGGCTGAAGATGCTGCTAGCAATAAAAAAGGCAGAGAAGAGAGATGTGGTTGGTTTGCA
Eggplant_Cull1_Cds	CAGGCTGAAGATGCTGCTAGCAATAAAAAAGGCAGAGAAGAGAGATGTGGTTGGTTTGCA
Pepper_Cull1_Cds	CAGGCTGAAGATGCTGCTAGCAATAAAAAAGGCAGAGAAAAGAGATGTGGTTGGTTTGCA
Lettuce_Cull1_Cds	CAAGCAGAAGATGCAGCAAGTACCAAGAAGGCTGAAAAGAGAGATGTGGTTGGTTTGCA
Chicory_Cull1_Cds	CAGGCAGAAGATGCAGCAAGTACTAAGAAGGCTGAAAAGAGAGACGTGGTTGGCTTACAA
Endive_Cull1_Cds	CAAGCAGAAGATGCAGCAAGTACTAAGAAGGCTGAAAAGAGAGACGTGGTTGGCTTACAG
Carrot_Cull1_Cds	CAAGCAGAAGATGCAGCTAGCAACAAGAAGGCAGAGAAGAGAGATGTAGTAGGTTTACAA
Celery_Cull1_Cds	CAAGCAGAAGATGCAGCAAGCAACAAGAAGGCAGAAAAGAGAGACGTGGTTAGTTTACAG
Brassica_Cull1_Cds	GAACAGGTTCTTATCAGAAAAGTGATTGAACTACATGATAAATACATGGTCTATGTTGTT
Radish_Cull1_Cds	GAACAGGTTCTCATCAGAAAAGTGATTGAGCTACATGATAAGTACATGGTCTATGTCGTG
Beet_Cull1_Cds	GAGCAGGTCTTCGTCAGGAAAGTAATAGAGTTGCATGACAAATTCATGACTTATGTCACC
Spinach_Cull1_Cds	GAGCAGGTCTTCGTCAGGAAAGTGATTGAGTTGCATGACAAATTTATGACCTATGTTACA
Leek_Cull1_Cds	GAGCAGGTCTTCGTTAGGAAAGTAATTGAGCTGCATGATAAATACTTGGCCTATGTGACT
Squash_Cull1_Cds	GAACAGGTTTTTGTAGAAAAGTGATTGAGCTTCACGACAAGTACTTGGCATATGTGAAT
WaterMelon_Cull1_Cds	GAACAGGTTTTTGTAGAAAAGTGATTGAGCTTCACGACAAGTACTTGGCTTACGTGAAT
CuCumber_Cull1_Cds	GAACAGGTTTTTGTAGAAAAGTGATTGAGCTTCACGACAAGTACTTGGCTTATGTGAAT
Melon_Cull1_Cds	GAACAGGTTTTTGTAGAAAAGTGATTGAGCTTCACGACAAGTACTTGGCTTATGTGAAT
Tomato_Cull1_Cds	GAACAGGTTTTTGTTCGGAAAAGTGATTGAACTTCATGATAAATATTTGGCTTATGTGAAT
Eggplant_Cull1_Cds	GAACAGGTTTTTGTTCGGAAAAGTGATTGAGCTTCATGATAAATATTTGGCTTATGTGAAT
Pepper_Cull1_Cds	GAACAGATTTTTGTTCGGAAAAGTGATTGAGCTTCATGATAAGTATATGGCATATGTGAAT
Lettuce_Cull1_Cds	GAACAGGTTTTTGTTCGAAAAGTTATTGAGCTCCATGACAAGTACCTGGCATATGTAAAT
Chicory_Cull1_Cds	GAACAGGTTTTTGTTCGAAAAGTTATCGAGCTTCATGACAAGTACCTGGCATATGTAAAT
Endive_Cull1_Cds	GAACAGGTTTTTGTTCGAAAAGTAATCGAGCTTCATGACAAGTACCTGGCATATGTAAAC
Carrot_Cull1_Cds	GAACAGGTTTTTGTGAGGAAAATAATTGAATTGCATGACAAATACCTTACATACGTAAAT
Celery_Cull1_Cds	GAGCAGGTTTTTGTTCGAAAAGTTATTGAATTGCATGACAAATACCTCGCCTATGTGAAT

Fig. 69-10

Brassica_Cull1_Cds	GAGTGTTTCCAGAACCACACCCTCTTCCACAAGGCATTGAAAGAGGCATTTGAGATATTC
Radish_Cull1_Cds	GAGTGCTTCCAGAACCACACCCTCTTCCACAAGGCTCTGAAAGAGGCATTTGAGATATTC
Beet_Cull1_Cds	GATTGCTTCAACAGCCATACCATATTTTACAAGGCTCTTAAGGAGGCTTTTGAGGTATTT
Spinach_Cull1_Cds	GATTGCTTCAACAGCCATACCATCTTTTACAAGGCTCTCAAGGAAGCTTTTGAGGTATTC
Leek_Cull1_Cds	GACTGCTTTCAAAATCACTCTCTATTTTACAAGGCACCTTAAAGAGGCATTTCGAGGTATTC
Squash_Cull1_Cds	GATTGTTTCCAAAACCACACACTTTTTTACAAGGCTCTCAAGGAAGCTTTTGAAAGCTTTT
WaterMelon_Cull1_Cds	GATTGTTTCCAAAACCACACACTTTTTTACAAGGCTCTCAAGGAAGCTTTTGAAAGCTTTT
CuCumber_Cull1_Cds	GATTGTTTCCAAAACCACACACTTTTTCCATAAGGCTCTCAAGGAAGCTTTTGAAGTATTT
Melon_Cull1_Cds	GATTGTTTCCAAAACCACACACTTTTCCATAAGGCTCTCAAGGAAGCTTTTGAAAGCTTTT
Tomato_Cull1_Cds	AACTGTTTCCAAAACCACACACTTTTTTACAAGGCGCTTAAAGAAGCTTTTGAGCTTTTC
Eggplant_Cull1_Cds	AACTGTTTCCAAAACCACACACTTTTTTACAAGGCACCTTAAAGAAGCTTTTGAACCTTTTC
Pepper_Cull1_Cds	AACTGTTTCCAAAACCACACACTTTTTTACAAGGCGCTTAAAGAAGCTTTTGAACCTTTTC
Lettuce_Cull1_Cds	GACTGTTTCATGAACCATACTCTTTTCCACAAGGCTCTTAAAGAGGCATTTGAAATATTC
Chicory_Cull1_Cds	GACTGTTTTATGAATCATACCCTGTTTACAAGGCTCTTAAAGAGGCATTTGAAATATTC
Endive_Cull1_Cds	GACTGTTTTATGAATCACACATTGTTCCACAAGGCTCTTAAAGAGGCATTTGAAATATTC
Carrot_Cull1_Cds	GACTGTTTTACAAACCACACTCTCTTCCATAAGGCGCTTAAAGAGGCATTTTGAAATCTTC
Celery_Cull1_Cds	GACTGCTTTACAAACCATACTCTTTTCCATAAGGCTCTCAAGGAGGCTTTTGAAATCTTT
Brassica_Cull1_Cds	TGTAACAAAACAGTCGCTGGAAGTTCTAGTGCTGAATTGCTTGCAACATTTTGCGACAAT
Radish_Cull1_Cds	TGTAACAAAACAGTCGCTGGAAGTTCAAGTGCGAAGTCTTGCAACATTCTGCGACAAC
Beet_Cull1_Cds	TTGAACAAGGGTGTGCTGGTAGCTCAAGTGCTGAGTTGCTAGCTACATTCTGTGATAAC
Spinach_Cull1_Cds	TTAAACAAGGGTGTGCTGGTAGTTCAAGTGCTGAACCTCTAGCTTCATTTTGTGATAAT
Leek_Cull1_Cds	TGCAATAAAGGTGTGTCAGGTAGCTCAAGCGCTGAACCTCTGGCTGCTTTTTGTGACAAAT
Squash_Cull1_Cds	TGCAATAAAGGTGTGCTGGAAGTTCTAGTGCGAATTACTTGCTACCTTTTGTGATAAC
WaterMelon_Cull1_Cds	TGCAATAAAGGTGTGCTGGAAGTTCTAGTGCGAATTACTTGCTACCTTTTGTGATAAC
CuCumber_Cull1_Cds	TGCAATAAAGGTGTGCTGGAAGTTCTAGTGCGAATTGCTTGCTACCTTTTGTGATAAC
Melon_Cull1_Cds	TGCAATAAAGGTGTGCTGGAAGTTCTAGTGCGAATTGCTTGCTACCTTCTGCGATAAC
Tomato_Cull1_Cds	TGCAACAAGGGTGTGCTGGTAGCTCAAGCGCTGAACCTCTTGCCACCTTCTGTGACAAC
Eggplant_Cull1_Cds	TGCAACAAGGGTGTGCTGGTAGCTCAATGCTGAACCTCTTGCCACATTCTGCGACAAC
Pepper_Cull1_Cds	TGCAACAAGGGTGTGCTGGTAGCTCAAGTGCTGAACCTCTTGCCACATTCTGCGACAAT
Lettuce_Cull1_Cds	TGCAACAAGGGTGTGCTGGAAGTTCAAGTGCGAGTTACTTGCCACATTTTGTGATAAT
Chicory_Cull1_Cds	TGCAACAAGGGCGTTGCTGGAAGTTCAAGTGCGAATTACTTGCTACATTTTGTGATAAT
Endive_Cull1_Cds	TGCAACAAGGGCGTTGCTGGAAGTTCAAGTGCGAATTACTTGCCACATTTTGTGATAAT
Carrot_Cull1_Cds	TGCAATAAAGGTGTCTCTGGAAGCTCTAGTGCGAATTACTTGCCACATTCTGTGATAAT
Celery_Cull1_Cds	TGCAACAAGGGTGTGCTGGAAGCTCTAATGCTGAACCTACTTGCTACCTTTCTGTGATAAC

Fig. 69-11

Brassica_Cull1_Cds	ATTCTCAAGAAGGGGGGAAGTGAAAAGCTGAGCGATGAAGCTATTGAAGATACCCTTGAG
Radish_Cull1_Cds	ATCCTCAAGAAGGGGGGTAGTGAGAAGCTGAGTGACGAAGCTATTGAAGATACGCTTGAG
Beet_Cull1_Cds	ATTCTCAAGAAAGGTGGGAGCGAAAACTAAGCGATGAGGCTATTGAGGATTCACTTGAG
Spinach_Cull1_Cds	ATTCTCAAGAAAGGTGGTAGTGAAAAATTAAGTGATGAGGCTATTGAGGATTCACTGGAG
Leek_Cull1_Cds	ATATTGAAGAAGGGTGGAAGCGAGAACTAAGCGATGAGGCCATAGAGGATACTCTTGAG
Squash_Cull1_Cds	ATCCTTAAGAAAGGTGGGAGTGAGAAGTTGAGTGATGAAGCAATTGAGGAAACACTCGAG
WaterMelon_Cull1_Cds	ATCCTTAAGAAAGGTGGGAGCGAGAAGTTGAGTGATGAAGCAATTGAGGAGACACTTGAG
CuCumber_Cull1_Cds	ATCCTTAAGAAAGGTGGGAGTGAGAAGTTGAGTGATGAAGCAATCGAGGAGACACTTGAG
Melon_Cull1_Cds	ATCCTTAAGAAAGGTGGGAGTGAGAAGTTGAGTGATGAAGCAATCGAAGAGACACTTGAG
Tomato_Cull1_Cds	ATTCTCAAAAAAGGCGGGAGTGAGAAATTGAGTGATGAAGCTATTGAAGAAACGTTGGAA
Eggplant_Cull1_Cds	ATTCTCAAAAAAGGCGGGAGTGAAAAATTGAGTGATGAAGCCATTGAAGAGACGCTGGAG
Pepper_Cull1_Cds	ATTCTCAAGAAAGGCGGGAGTGAGAAATTGAGTGATGAAGCCATTGAAGAGACGCTGGAG
Lettuce_Cull1_Cds	ATTCTTAAAAAAGGTGGAAGTGAGAACTGAGCGATGAAGCCATTGAGGACACCCCTTGAG
Chicory_Cull1_Cds	ATTCTTAAAAAAGGTGGAAGTGAAAAATTGAGTGATGAAGCCATTGAGGACACACTTGAG
Endive_Cull1_Cds	ATTCTTAAAAAAGGTGGAAGTGAAAAATTGAGTGATGAAGCCATTGAAGACACACTTGAG
Carrot_Cull1_Cds	ATTCTCAAGAAAGGTGGAAGCGAGAAGTTAAGTGATGAAGCCATTGAGGAAACACTTGAG
Celery_Cull1_Cds	ATCCTCAAAAAAGGTGGGAGTGAGAAATTAAGTGATGAGGCTATTGAAGAAACACTTGAG
Brassica_Cull1_Cds	AAGGTGGTCAAATTGCTTGCTTATATAAGTGACAAGGATCTTTTCGCCGAGTTCTACAGG
Radish_Cull1_Cds	AAGGTGTGCAAATTGCTTGCTTATATAAGCGACAAGGATCTTTTCGCCGAGTTCTACAGG
Beet_Cull1_Cds	AAGGTGGTGAAAGCTTCTGCGCTATGTCAGTGATAAAGACCTGTTTGCTGAATTTTACAGA
Spinach_Cull1_Cds	AAGGTGGTGAAAGCTTCTCGCATATGTCAGTGATAAAGACCTGTTTGCTGAATTTTACAGA
Leek_Cull1_Cds	AAGGTGTGTAAGCTATTGGCATATATTAGCGATAAAGATCTGTTTGCTGAATTTTACAGG
Squash_Cull1_Cds	AAGGTCGTGAAATTGCTGGCGTATATCTGCGACAAAGATCTGTTTGCTGAATTTCTATAGA
WaterMelon_Cull1_Cds	AAGGTCGTGAAAGTTGCTGGCATACATCTGCGACAAAGATCTGTTTGCTGAATTTCTATAGA
CuCumber_Cull1_Cds	AAGGTTGTGAAAGTTGTTGGCATACATTTGCGACAAAGATCTGTTTGCTGAATTTCTATAGA
Melon_Cull1_Cds	AAGGTTGTGAAAGTTGTTGGCATACATCTGCGACAAAGATCTGTTTGCTGAATTTCTATAGA
Tomato_Cull1_Cds	AAGGTGGTAAAGCTACTAGCTTATATTAGTGATAAGGACTTGTTTGCGAATTTCTATAGG
Eggplant_Cull1_Cds	AAGGTGGTAAAGCTGCTGGCTTATATTAGTGATAAGGACTTGTTTGCGAATTTCTATAGG
Pepper_Cull1_Cds	AAGGTTGTAAAGCTGCTAGCATATATTAGTGACAAGGACTTGTTTGCGAATTTCTATAGG
Lettuce_Cull1_Cds	AAGGTAGTAAAGTTGCTTGCCCTACATCAGTGATAAAGATCTATTTGCTGAATTTTACAGG
Chicory_Cull1_Cds	AAGGTGGTAAAGTTGCTTGCTTACATCAGCGATAAAGATCTATTTGCGAGTTTTATAGG
Endive_Cull1_Cds	AAGGTAGTAAAGTTGCTTGCTTACATCAGCGATAAAGATCTATTTGCGAGTTTTATAGG
Carrot_Cull1_Cds	AAGGTGTGTAAGTTGCTTGCTTATATAAGTGACAAGACTTATTTGCTGAATTTTATAGG
Celery_Cull1_Cds	AAGGTAGTAAATTTGTTAGCTTACATTAGCGATAAAGACTTGTTTCGCTGAATTTTACAGA

Fig. 69-12

Brassica_Cull1_Cds	AAGAAGCTGGCCCGTAGGCTCTTATTTGATCGCAGTGCTAATGATGATCATGAGAGAAGT
Radish_Cull1_Cds	AAGAAGCTGGCACGTAGGCTCTTATTTGATCGCAGTGCGAATGATGATCATGAGAGAAGC
Beet_Cull1_Cds	AAGAAGCTCTCTCGCCGGCTACTCTTTGACAAGAGTGCTAATGATGATCATGAAAGAAGT
Spinach_Cull1_Cds	AAGAAGCTCTCTCGCCGGCTACTCTTTGACAAAAGTGCTAATGATGATCATGAGAGGAGT
Leek_Cull1_Cds	AAGAAGCTTGACGCAAGATTACTCTTTGACAAAAGTGCTAATGATGACCATGAGAGGAGC
Squash_Cull1_Cds	AAAAAACTCGCCCGAAGGCTTCTCTTCGACAAGAGTGCGAATGATGACCACGAGAGAAGT
WaterMelon_Cull1_Cds	AAAAAACTTGCCCGAAGGCTTCTCTTTGACAAGAGTGCCAACGATGACCATGAGAGAAGT
CuCumber_Cull1_Cds	AAAAAACTTGCCCGAAGGCTTCTCTTTGACAAGAGCGCGAACGATGACCACGAGAGAAGT
Melon_Cull1_Cds	AAAAAACTTGCCCGAAGGCTTCTCTTTGATAAGAGCGCCAACGATGACCACGAGAGAAGT
Tomato_Cull1_Cds	AAAAAGCTAGCCCGCGGTTGTTATTTGATAAGAGTGCCAATGATGAACATGAAAGAAGT
Eggplant_Cull1_Cds	AAAAAGCTCGCCCGCGGTTGTTATTTGATAAGAGTGCCAATGATGAACATGAGAGAAGT
Pepper_Cull1_Cds	AAAAAGCTAGCCCGCGGTTGTTATTTGATAAGAGTGCCAATGATGAACACGAGAGAAGT
Lettuce_Cull1_Cds	AAAAAACTTGCTAGGAGGCTTTTGTGTTGACAAGAGTGCAAACGATGAGCATGAGAGAAGT
Chicory_Cull1_Cds	AAAAAACTGGCTAGACGGCTTTTATTTGACAAAAGTGCAAATGATGAGCAGCAAAGAAGT
Endive_Cull1_Cds	AAAAAACTGGCTAGAAGGCTTTTATTTGACAAAAGTGCAAATGATGAGCATGAAAGAAGT
Carrot_Cull1_Cds	AAAAAGCTTGACGCGCTCTCTTATTCGACAAGAGTGCCAATGATGAGCATGAGAGAAGT
Celery_Cull1_Cds	AAAAAGCTTGACGCGGACTTCTCTTTGATAAGAGTGCAAATGACGAGCATGAACGAAGT
Brassica_Cull1_Cds	ATCCTGACAAAGCTCAAGCAACAATGTGGTGGGCAGTTTACTTCGAAGATGGAGGGCATG
Radish_Cull1_Cds	ATCCTTACAAAGCTCAAGCAACAATGTGGTGGGCAGTTCACTTCTAAGATGGAGGGCATG
Beet_Cull1_Cds	ATTTTAACCAAATTGAAGCAGCAGTGTTGGCGGACAATTCACATCAAAGATGGAGGGGATG
Spinach_Cull1_Cds	ATTTTAACAAAATTGAAGCAGCAGTGTTGGGGGACAGTTCACATCAAAGATGGAGGGGATG
Leek_Cull1_Cds	ATCCTTACAAAGCTGAAACAGCAATGTGGAGGGCAGTTCACCTCTAAATGGAAGGCATG
Squash_Cull1_Cds	ATACTGACGAAATTGAAGCAACAATGTGGTGGTCAGTTTACCTCTAAGATGGAGGGAATG
WaterMelon_Cull1_Cds	ATATTGACCAAATTGAAGCAACAATGTGGTGGCCAGTTCACCTCTAAGATGGAGGGGATG
CuCumber_Cull1_Cds	ATATTGACCAAATTGAAGCAACAATGTGGTGGTCAGTTCACCTCTAAGATGGAGGGAATG
Melon_Cull1_Cds	ATATTGACCAAATTGAAGCAACAATGTGGTGGTCAGTTCACCTCTAAGATGGAGGGAATG
Tomato_Cull1_Cds	ATCCTAACAAAGTTGAAGCAGCAGTGTTGGGGGACAGTTCACATCAAAGATGGAGGGAATG
Eggplant_Cull1_Cds	ATCCTAACAAAGTTGAAGCAGCAGTGTTGGAGGTCAGTTCACATCAAAGATGGAGGGAATG
Pepper_Cull1_Cds	ATCCTTACAAAGTTGAAGCAGCAGTGTTGGGGGCCAGTTCACATCAAAGATGGAGGGAATG
Lettuce_Cull1_Cds	ATTCTCACAAAGCTGAAGCAACAGTGTTGGTGGTCAGTTCACATCAAAGATGGAAGGGATG
Chicory_Cull1_Cds	ATTTTGACAAAATTGAAACAACAATGTGGCGGTCAATTTACATCAAAAAATGGAAGGAATG
Endive_Cull1_Cds	ATTTTAACAAAGTTGAAGCAACAATGTGGTGGTCAGTTTACATCAAAGATGGAAGGAATG
Carrot_Cull1_Cds	ATATTGACTAAGCTGAAGCAACAATGTGGGGGTCAATTTACATCAAAGATGGAAGGAATG
Celery_Cull1_Cds	ATTTTGACTAAACTAAAGCAACAGTGCAGTGGTCAGTTCACATCGAAAAATGGAGGGGATG

Fig. 69-13

Brassica_Cull1_Cds	GTGACTGATTGACATTGGCAAGGGAAAAACCAAACAGCTTCGAGGAGTATCTTGGCAAT
Radish_Cull1_Cds	GTAACGGACTTGACATTGGCAAGAGAGAACCAAACAGTTTTCGAGGAGTATCTAGGCAAT
Beet_Cull1_Cds	GTGACAGACTTGACCTTGGCGAGGGAGAATCAAACATAATTTTGAGGAATATCTTAGTCAG
Spinach_Cull1_Cds	GTGACAGACTTGACATTGGCGAGGGAGAATCAAACATAATTTTGAGGAATATCTTGACAA
Leek_Cull1_Cds	GTAACCGATCTGACACTTGACAGAGAAAAATCAATCAAGTTTTGACGATTACCTTAGCAGC
Squash_Cull1_Cds	GTCACGGATTGACACTGGCAAGGGAGAACCAAACAGTTTTTGAGGAATATCTGAGCAAT
WaterMelon_Cull1_Cds	GTCAGTGATTGACATTGGCAAGGGAGAACCAAACAGTTTTCGAGGAGTATCTGAGCAAT
CuCumber_Cull1_Cds	GTTACTGATTGACATTGGCAAGGGAGAACCAAACAGTTTTTGAGGAGTATCTGAGCAAT
Melon_Cull1_Cds	GTTACTGATTGACATTGGCAAGGGAGAACCAAACAGTTTTCGAAGAGTATCTGAGCAAT
Tomato_Cull1_Cds	GTCACAGATTGACATTGGCAAGGGAAAAATCAAGCCAGCTTCGAGGAGTATTTGAGCAAT
Eggplant_Cull1_Cds	GTCACAGATTGACATTGGCAAGGGAAAAATCAAGCCAGCTTTGAGGAGTATTTGAGCAAT
Pepper_Cull1_Cds	GTGACAGATTGACATTGGCAAGGGAAAAATCAAGCCAGCTTTGAGGAGTATTTGAGCAAC
Lettuce_Cull1_Cds	GTTACAGATTGACATTGGCAAAGGAAAAACCAATCCCATTTTGAAGAGTATTTGAACAA
Chicory_Cull1_Cds	GTTACAGATTGACATTGGCAAAAAGAAAAATCAATCACATTTTGAGGAGTATTTGAATAAT
Endive_Cull1_Cds	GTTACAGATTAACTGGCAAAAAGAAAAATCAATCACATTTTGAGGAGTATTTGAATAAT
Carrot_Cull1_Cds	GTCAGTGATTGACGTTGGCAAAGGAAAAATCAGTCCAACTTCGAGGAGTACCTCAATAAT
Celery_Cull1_Cds	GTCACAGATTGACATTGGCTAAAGAAAAATCAATCCAGCTTTGAGGAGTATCTGGGAAAT
Brassica_Cull1_Cds	AACCCCGCTGCAAACCCAGGGATTGATTGACCGTAACGTGTTCTTACCAGTGGTTTTTGG
Radish_Cull1_Cds	AACCCCGCTGCAAACCCAGGGATTGATTGACCGTCACTGTTCTTACCAGTGGTTTTCTGG
Beet_Cull1_Cds	AATCCAGATGCCAGTCCTGGTCTTGATTGACTGTGACTGTTCTGACAACTGGGTTCTGG
Spinach_Cull1_Cds	AATACAGATGCCAGTCCTGGTCTTGATTGACTGTGACAGTTTTGACCACTGGGTTCTGG
Leek_Cull1_Cds	AATCCTAAAGCAAATCTGGAATTGACTTGACTGTTACAGTCTTAACAACCTGGCTTCTGG
Squash_Cull1_Cds	AATCCACAAGCTAGTCCTGGAATCGACTTGACCGTTACCGTTTTGACCACTGGTTTTTGG
WaterMelon_Cull1_Cds	AATCCACAAGCTAGTCCTGGAATCGACTTGACTGTCACTGTTTTGACTACTGGCTTTTGG
CuCumber_Cull1_Cds	AATCCACAAGCGAGTCCTGGCATCGACCTGACTGTTACTGTTTTAACTACTGGATTTTGG
Melon_Cull1_Cds	AATCCACAAGCTAGTCCTGGAATCGACCTAACTGTTACTGTTTTGACTACTGGATTTTGG
Tomato_Cull1_Cds	AATCCAATAGCAAATCCAGGAATTGACTTGACGGTGACTGTCTTGACTACTGGCTTCTGG
Eggplant_Cull1_Cds	AATCCAACAGCAAATCCAGGAATTGACTTGACGGTGACTGTCTTGACTACTGGCTTCTGG
Pepper_Cull1_Cds	AATCCAGCAGCAAATCCAGGAATTGACTTGACGGTGACTGTCTTGACTACTGGCTTCTGG
Lettuce_Cull1_Cds	AATCCCAATGTCAGCCCTGGAATTGACTTGACTGTCACTGTGTTGACTACCGCTTCTGG
Chicory_Cull1_Cds	AATCCCAATGTTAGCCCTGGCATTGACTTGACCGTGACTGTGTTGACCACTGGTTTTTGG
Endive_Cull1_Cds	AATCCCAATGTTAGCCCTGGCATTGACTTGACCGTGACTGTGTTGACCACGGGATTTTGG
Carrot_Cull1_Cds	AATTCAAACGTAAATCCTGGAATTGACTTGACAGTTACTGTTCTAACCACTGGGTTTTGG
Celery_Cull1_Cds	AATGCCAATGTGAATCCTGGCATTGACTTGACGGTTACTGTTCTGACCACTGGCTTCTGG

Fig. 69-14

Brassica_Cull1_Cds	CCAAGTTACAAATCATTTGACATAAAATCTACCCGCTGAAATGGTCAAGTGTGTTGAAGTT
Radish_Cull1_Cds	CCAAGTTACAAATCATTCGACATAAAATCTACCAAGTGAAATGGTCAAGTGTGTTGAAGTT
Beet_Cull1_Cds	CCAAGTTACAAATCTTCCGATCTTAACCTTCCCGCTGAGATGGTGAGGTGTGTTGAAGTT
Spinach_Cull1_Cds	CCAAGTTACAAATCTTCTGATCTTAACCTTCTGCTGAGATGGTGAGGTGTGTTGAAGTT
Leek_Cull1_Cds	CCCAGTTACAAGTCTTTTGATCTCAATCTTCCTGATGAGATGGTAAATGCGTTGAAATT
Squash_Cull1_Cds	CCAAGCTACAAGTCTTTTGACCTCAACCTGCCGGCGGAGATGGTAAAGTGTGTTGAAGTT
WaterMelon_Cull1_Cds	CCAAGCTACAAGTCTTTTGACCTCAACCTGCCGGCAGAGATGGTAAAGTGTGTTGAAGTT
CuCumber_Cull1_Cds	CCAAGCTACAAGTCTTTTGACCTCAACCTGCCGGCAGAGATGGTAAAGTGTGTTGAAGTT
Melon_Cull1_Cds	CCAAGCTACAAGTCTTTTGACCTCAACCTGCCGGCGGAGATGGTAAAGTGTGTTGAAGTT
Tomato_Cull1_Cds	CCTAGCTACAAGTCTTTTGATCTCAACCTCCCAGCAGAAATGGTTAGGTGCGTTGAAGTA
Eggplant_Cull1_Cds	CCTAGCTACAAGTCTTTTGATCTCAACCTCCCAGCAGAAATGGTTAGGTGTGTTGAAGTA
Pepper_Cull1_Cds	CCTAGCTACAAGTCTTTTGATCTCAACCTCCCAGCAGAAATGGTTAGGTGCGTTGAAGTA
Lettuce_Cull1_Cds	CCCAGCTACAAATCTTTTGACCTAAATCTCCCTGCCGAAATGGTTAAATGCGTTGAAGTT
Chicory_Cull1_Cds	CCTAGTTACAAATCTTTTGACCTAAATCTCCCTGCAGAAATGGTCAAATGCGTTGAAGTT
Endive_Cull1_Cds	CCTAGTTACAAATCTTTTGACCTAAATCTTCCTGCAGAAATGGTCAAATGCGTTGAAGTT
Carrot_Cull1_Cds	CCAAGTTACAAATCTTTCGATCTCAACCTCCCAGCAGAGATGGTCAAATGTGTTGAAGTT
Celery_Cull1_Cds	CCTAGTTATAAATCCTTTTGATCTCAACCTTCCTGCTGAGATGGTCAAGTGCGTTGAAGTA
Brassica_Cull1_Cds	TTCAAAGGGTTTTATGAAACAAAGACAAAACATAGGAAACTTACCTGGATCTACTACTA
Radish_Cull1_Cds	TTCAAAGGGTTTTATGAGACGAAAACATAAGGAAACTTACATGGATCTACTACTA
Beet_Cull1_Cds	TTTAAGCAGTTCTATTCAACTAAAACAAAGCACAGGAAGCTGACCTGGGTTTACTCATTG
Spinach_Cull1_Cds	TTTAAGCAATTTTATCAAACAAAGACAAAACACAGGAAGCTCACCTGGGTATATTCGTTG
Leek_Cull1_Cds	TTTAAAGAGTTTTACGAGACAAAAACCAAACACAGAAAACCTTACATGGATTTATTCGTTG
Squash_Cull1_Cds	TTCAGGGAATTTTATCAAACAAAAACCAAGCACAGAAAACCTTACGTGGATTTACTCGTTG
WaterMelon_Cull1_Cds	TTCAGAGAGTTCTATCAAACAAAAACAAAGCATAGAAAACCTTACATGGATTTACTCATTG
CuCumber_Cull1_Cds	TTCAGAGAGTTTATCAAACAAAAACCAAGCATCGAAAACCTTACATGGATTTACTCATTG
Melon_Cull1_Cds	TTCAGAGAGTTTATCAAACAAAAACCAAGCATAGAAAACCTTACATGGATTTACTCATTG
Tomato_Cull1_Cds	TTTAAGGAGTTCTATCAAACAAAAACAAAGCACAGGAAACTTACGTGGATATACTCTTTG
Eggplant_Cull1_Cds	TTCAAGGAGTTTTATCAAACAAAAACGAAGCACAGGAAACTTACATGGATATACTCTTTG
Pepper_Cull1_Cds	TTCAAGGAGTTTTATCAAACAAAAACGAAGCACAGGAAACTTACGTGGATATACTCTTTG
Lettuce_Cull1_Cds	TTCAGAGAATTTTATCAAACAAAAACAAAGCACAGGAAGCTTACATGGATATATTCATTG
Chicory_Cull1_Cds	TTCAGAGAATTTTATCAAACAAAAACAAAACACAGAAAACCTCACATGGATATATTCATTG
Endive_Cull1_Cds	TTCAGAGAATTTTATCAAACAAAAACAAAACACAGAAAACCTCACATGGATTTATTCATTG
Carrot_Cull1_Cds	TTTAGAGAATTTTATCAAACAAAAACAAAGCATAGAAAGCTCACATGGATATATCTCTG
Celery_Cull1_Cds	TTTAGAGAATTTTATCAAACAAAAACGAAGCATAGAAAGCTCACATGGATATATCTCTG

Fig. 69-15

Brassica_Cull1_Cds	GGAAGTTGCCACCTCAATGGGAAGTTTGATGTCAAGCCCATTTAGTTAGTTGTGTCTACA
Radish_Cull1_Cds	GGAAGTTGTACCTCAACGGAAAGTTTGATCACAAGCCCATTTAGTTAGTTGTGTCTACT
Beet_Cull1_Cds	GGAAGCTGTAATATTAATGGCAAGTTTGGTCCAAAACTATTGAATTGGTTGTGCGAACT
Spinach_Cull1_Cds	GGAAGTTGTAACATTAATGGCAAGTTTGGTCCGAAAACAATTGAATTGGTTGTGGAAC
Leek_Cull1_Cds	GGCACTTGCAACATCAATGGCAAGTTTCGAAACCAAGACAATAGAGTTGGTTGTTACAACC
Squash_Cull1_Cds	GGTACCTGTAACATCAGCGGAAAAATTCGAACCGAAAACGATGGAGCTGATCGTGACAACC
WaterMelon_Cull1_Cds	GGTACCTGTAACATCAGCGGAAAAATTTGAACCGAAAACGATGGAGCTGATTGTAACAAC
CuCumber_Cull1_Cds	GGTACTTGTAACATCAGTGGAAAAATTTGAACCGAAAACGATGGAGCTGATTGTGACAAC
Melon_Cull1_Cds	GGTACTTGTAACATCAGTGGAAAAATTTGAACCGAAGACGATGGAGCTGATTGTGACAACA
Tomato_Cull1_Cds	GGAAGTTGCAACATAAATGGAAAAATTTGAGCCAAAACTATTGAGCTCGTTGTCACTACT
Eggplant_Cull1_Cds	GGAAGTTGCAACATAAATGGAAAAATTTGAGGCAAGACTATTGAGCTCGTTGTCACTACT
Pepper_Cull1_Cds	GGAAGTTGCAATATAAATGGAAAAATTTGAGCCAAAGACTATTGAGCTCGTTGTCACTACT
Lettuce_Cull1_Cds	GGTACCTGCAATATAAACGGGAAAATTTGAACCCAAAACAATGGAGCTCATAGTCACAACC
Chicory_Cull1_Cds	GGCACCTGCAATATAAACGGAAAAATTCGAACCAAAAACCATGGAGCTAATCGTTACAAC
Endive_Cull1_Cds	GGCACCTGCAATATTAACGGAAAAATTCGAACCAAAAACCATGGAGCTAATCGTTACAAC
Carrot_Cull1_Cds	GGTACTTGTAACATCATTGGAAAAATTTGATCCAAAACCATGGAGCTTATTGTGACAACA
Celery_Cull1_Cds	GGTACTTGTAATATCAATGGAAAAATTTGAACCCAAAACCATTTGAGCTGATTGTGACAACC
Brassica_Cull1_Cds	TACCAGGCTGCTGTGCTTCTGCTGTTCAACACAACAGACAAAATTGAGCTACACTGATATC
Radish_Cull1_Cds	TACCAGGCTGCTGTGCTTCTGCTGTTCAACACAACAGACAAAATTGAGCTACAACGATATC
Beet_Cull1_Cds	TATCAGGCTGCTGTCTTTGATGCTCTTTAACACATCAGACCGACTGAGTTATTCAGAGATA
Spinach_Cull1_Cds	TATCAGGCTGCTGCGCTGATGCTCTTTAACACATCAGATCGACTGAGTTATTCAGAAATA
Leek_Cull1_Cds	TATCAGGCTGCAGTGTTGCTTCTATTCAACTCTGCAGATAAAATTAAGTTATTCTGAGATT
Squash_Cull1_Cds	TATCAGGCTTCTGCCCTGTGCTTTTCAATTCCCTCGGATAAACTAAGTTACTCCGAGATC
WaterMelon_Cull1_Cds	TATCAGGCTTCTGCCCTGTGCTATTCAATTCCCTCAGATAGATTAAAGTTATTCCGAGATC
CuCumber_Cull1_Cds	TATCAGGCTTCTGCCCTGTGCTATTCAATTCTTCGGATAGACTAAGTTACTCGGAAATC
Melon_Cull1_Cds	TATCAGGCTTCTGCCCTGTGCTATTCAATTCTTCGGACAGACTAAGTTACTCCGAAATC
Tomato_Cull1_Cds	TATCAGGCTTCTGCTCTGCTGCTCTTTAATGCATCAGATAGATTGAGTTATCAGGAAATC
Eggplant_Cull1_Cds	TATCAGGCTTCTGCTCTGCTGCTCTTTAATGCATCAGATAGATTGAGTTATCAGGAAATC
Pepper_Cull1_Cds	TATCAGGCTTCTGCTCTGCTGCTCTTTAATGCATCGGATAGATTGAGTTATCAGGAAATC
Lettuce_Cull1_Cds	TACCAGGCATCTGCTTTATTACTGTTCAACTTATCGGATCGATTGAGTTATCAAGAAATC
Chicory_Cull1_Cds	TACCAGGCATCTGCTTTATTACTGTTCAACTCATCAGATCGATTGAGTTATCAAGAAATC
Endive_Cull1_Cds	TACCAGGCATCTGCTTTATTGTTATTCAACTCATCAGATCGATTAAAGTTATCAAGAAATC
Carrot_Cull1_Cds	TACCAGGCCTCTGCTCTGCTGCTATTTAACTCTTCTGATAGACTTAGTTATAATGAAATA
Celery_Cull1_Cds	TACCAGGCCTCTGCTCTCCTGTTATTTAACTCTTCTGATAGGTTGAGTTATCAAGAAATC

Fig. 69-16

Brassica_Cull1_Cds	CTAACTCAGCTGAACCTGAGCCACGAAGATCTAGTGAGGTTGCTTCATTCCCTTGTCATGT
Radish_Cull1_Cds	CTAACTCAACTGAACCTAAGCCACGAAGATTTAGTGAGGTTGCTTCATTCCCTGTCATGT
Beet_Cull1_Cds	GCAACTCAACTAAATTTAGCTGATGAAGATCTGGTTAGAGTGCTTCAATCTTTATCCTGC
Spinach_Cull1_Cds	ACGACCCAACTAAATCTAGCTGACGAAGACTTGGTTAGAGTGCTTCAATCTCTATCTTGC
Leek_Cull1_Cds	GTGCAGCAGCTAAACTTATCTGATGATGATGTAATCAGATTACTTCACTCTCTTTTCATGC
Squash_Cull1_Cds	ATGACTCAATTAACCTTGAGTGACGATGATGTTGTTAGACTGCTCCACTCGTTGTCGTGT
WaterMelon_Cull1_Cds	ATGACACAATTAATTTGAGTGACGATGATGTTGTTAGACTGCTCCACTCATTGTCATGT
CuCumber_Cull1_Cds	ATGACACAATTAATTTGAGTGACGATGATGTAGTTAGACTACTCCACTCGTTGTCATGT
Melon_Cull1_Cds	ATGACACAATTAATTTGAGTGATGATGATGTTGTTAGACTGCTCCACTCATTGTCGTGT
Tomato_Cull1_Cds	ATGACGCAATTAACCTATCAGATGATGATGTTGTTTCGGCTTCTTCATTCCCTTTTCATGT
Eggplant_Cull1_Cds	ATGACGCAATTAACCTATCAGATGATGATGTTGTTTCGGCTTCTTCATTCCCTTTTCATGT
Pepper_Cull1_Cds	ATGACGCAACTAAACCTATCAGATGATGATGTTGTTTCGGCTTCTTCATTCCCTTTTCATGT
Lettuce_Cull1_Cds	ATGACTCAGTTGAACCTTGTCAGATGATGATGTTGTTAGGCTGCTCCATTCTTTGTCATGT
Chicory_Cull1_Cds	ATGACTCAATTAACCTTATCAGATGATGATGTTGTTAGACTACTCCATTCAATATCATGT
Endive_Cull1_Cds	ATGACTCAATTAATTTATCAGATGATGATGTTGTTAGACTACTACATTCAATATCATGT
Carrot_Cull1_Cds	ATGACTCAGTTGAACCTTGTCGGATGATGATGTTGTCAGACTACTTCATTCTCTTTTCGTGT
Celery_Cull1_Cds	ATGACTCAGTTAAATTTGTCGGATGATGATGTTGTTTCGCCTGCTTCATTCCCTTTTCATGT
Brassica_Cull1_Cds	GCTAGATACAAGATTCTTCTCAAGGAGCCAAGCACAAAGACTGTTTCCAGTCTGATTCT
Radish_Cull1_Cds	GCTAGGTACAAGATCCTTCTCAAGGAGCCAAGCACGAAGACTGTTACACAGACTGATTCA
Beet_Cull1_Cds	GCAAAGTATAAGATTCTTTTAAAGGAGCCAAACACGAAAACCGTGTCCTCCGACTGATTGT
Spinach_Cull1_Cds	GCAAAGTATAAGATTCTTCTAAAAGAGCCAAGCACAAAGAAACGTGATCTCAACTGATTGT
Leek_Cull1_Cds	GCTAAATACAAAATTCTCAATAAAGAACCCTGCTACCAAGACTATTACCCCGAATGATCAT
Squash_Cull1_Cds	GCGAAGTATAAAATTCTTAACAAGGAGCCAAATACGAAAACCATCTCTCCGAACGATCAT
WaterMelon_Cull1_Cds	GCCAAGTATAAAATTCTTAATAAGGAGCCGAACACGAAAACCATCTCTCCGAATGATCAT
CuCumber_Cull1_Cds	GCCAAGTATAAAATTCTTAATAAGGAACCAAATACGAAAACCATCTCTCCGAACGATCAT
Melon_Cull1_Cds	GCCAAGTATAAAATTCTTAATAAGGAGCCAAATACGAAAACCATCTCACCGAACGATCAT
Tomato_Cull1_Cds	GCGAAGTACAAGATACTCAACAAGGAGCCAAGCACCAAAACAATTTCTCCGACTGATGTC
Eggplant_Cull1_Cds	GCGAAAATACAAGATTCTCAACAAGGAGCCAAGCACCAAAACAATTTCTCCGACTGATGTC
Pepper_Cull1_Cds	GCGAAGTACAAGATTCTCAACAAGGAGCCAAGCACCAAAACAATTTCTCCGACTGATGTC
Lettuce_Cull1_Cds	GCAAAATACAAAATTCTTTTAAAGGAGCCTAATACCAAAACAATCTCTCCAACCGATTAC
Chicory_Cull1_Cds	GCAAAATATAAAATTTTATTAAAGAACCAAATACAAAAACAATCTCTCCAACCTGATTTC
Endive_Cull1_Cds	GCAAAATATAAAATTTTATTAAAGAACCAAATACCAAAACAATATCTCCAACCGATTTC
Carrot_Cull1_Cds	GCAAAGTACAAGATTCTATCTAAAGAGCCGAACACCAAAACTATATCTCCAACCTGATTGC
Celery_Cull1_Cds	GCCAAGTATAAAATTCTTACTAAAGAGCCGAACAACAAACAATTTCCCTTACGGATTAC

Fig. 69-17

Brassica_Cull1_Cds	TTTGAATTCAACTCCAAATTCACCGACAGAATGCGGAGAATAAAGATCCCTCTCCCACCT
Radish_Cull1_Cds	TTTGAATTCAATGCCAAATTCACGGACAGAATGCGCAGAATCAAGATCCCTCTCCCTCCT
Beet_Cull1_Cds	TTTTCATTTAACTCTAGTTTCAC TGACAGGATGAGGAGGATAAGAATTCCTCTTCTCCG
Spinach_Cull1_Cds	TTTTCATTTAACTCTAATTTTACTGACAGAATGAGGAGGATTAGGATTCCTCTTCTCCCA
Leek_Cull1_Cds	TTTGAGTTCAATTCTAAATTCAC TGATAGAATGAGAAGGATCAAGATTCCTCTCCGCTCT
Squash_Cull1_Cds	TTTGAGTTCAACGCAAAATTCCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGCTCT
WaterMelon_Cull1_Cds	TTTGAGTTCAATGCAAAATTCCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGCTCT
CuCumber_Cull1_Cds	TTTGAGTTCAATGCAAAATTCCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGCTCT
Melon_Cull1_Cds	TTTGAGTTCAATGCAAAATTCCTCCGACAAAATGAGGAGAATAAAGATCCCTCTTCCGCTCT
Tomato_Cull1_Cds	TTTGAGTTCAACTCAAAGTTCAC TGACAAAATGAGGAGGATCAAGATACCTCTCCCTCCT
Eggplant_Cull1_Cds	TTTGAGTTCAACTCAAAGTTCAC TGACAAAATGAGGAGGATCAAGATACCTCTCCACCA
Pepper_Cull1_Cds	TTTGAGTTCAATTTTAAGTTCAC TGACAAAATGAGGAGGATCAAGATACCTCTCCCTCCT
Lettuce_Cull1_Cds	TTTGAATTCAACTCCAAGTTTACAGATAAAATGAGGAGGATCAAGATTCCTCTACCTCCT
Chicory_Cull1_Cds	TTTGAATTCAACTCAAAGTTTACAGATAAAATGAGAAGGATCAAGATTCCTCTACCTCCT
Endive_Cull1_Cds	TTTGAATTCAACTCAAAGTTTACAGATAAAATGAGAAGGATCAAGATTCCTCTACCTCCT
Carrot_Cull1_Cds	TTTCAGTTCAATTCCAAATTTACTGATAAAATGAGGAGGATTAAGATTCCACTTCCCCCA
Celery_Cull1_Cds	TTTGAGTTCAACTCCAAGTTCAC TGACAAAATGAGGAGAATTAAGATTCCACTACCTCCA
Brassica_Cull1_Cds	GTTGATGAGAGGAAGAAAGTTGTGGAAGACGTTGGACAAAGACAGACGCTATGCGATTGAT
Radish_Cull1_Cds	GTTGATGAAAGGAAGAAGGTTGTGGAAGATGTGGACAAAGACAGACGCTATGCGATTGAT
Beet_Cull1_Cds	ATGGATGAGAGGAAAAAGGTTGTTGAGGATGTTGACAAAGATAGAAGATATGCTATTGAT
Spinach_Cull1_Cds	ATGGATGAGAGGAAAAAGGTTGTTGAAGATGTTGACAAAGATAGAAGATATGCTATTGAT
Leek_Cull1_Cds	GTGGATGAGAAGAAAAAGTAATTGAAGATGTTGACAAAGACAGAAGATATGCAATTGAC
Squash_Cull1_Cds	GTGGATGAGAAAAAGAAAGTAATAGAAGATGTTGACAAGGATCGAAGATATGCTATCGAT
WaterMelon_Cull1_Cds	GTGGATGAGAAAAAGAAAGTCATTGAAGATGTTGACAAGGATCGAAGGATGCTATTGAT
CuCumber_Cull1_Cds	GTGGATGAGAAAAAGAAAGTCATTGAAGATGTTGACAAGGATCGAAGGATGCTATTGAC
Melon_Cull1_Cds	GTGGATGAGAAAAAGAAAGTCATTGAAGATGTTGACAAGGATCGAAGGATGCTATTGAC
Tomato_Cull1_Cds	GTTGATGAGAAGAAAAAGTAATTGAAGACGTTGACAAGGATAGGCGGTATGCTATAGAT
Eggplant_Cull1_Cds	GTTGATGAAAAAGAAAAAGTAATTGAAGACGTTGACAAGGATAGGCGGTATGCTATAGAT
Pepper_Cull1_Cds	GTTGATGAGAAGAAAAAGTAATTGAAGATGTTGACAAAGATAGGCGGTACGCTATAGAT
Lettuce_Cull1_Cds	GTGGATGAGAAGAAAAAGTGATTGAGGATGTTGACAAAGACAGACGTTATGCCATTGAT
Chicory_Cull1_Cds	GTTGATGAAAAAGAAAAAGTAATTGAAGATGTTGACAAAGACCGACGTTATGCAATTGAT
Endive_Cull1_Cds	GTTGATGAAAAAGAAAAAGTAATTGAAGATGTTGACAAAGATAGAAGGATGCAATTGAT
Carrot_Cull1_Cds	GTGGATGAGAAGAAAAAGTAATTGAAGATGTTGATAAAGACAGGCGATATGCTATAGAT
Celery_Cull1_Cds	GTTGATGAGAAGAAAAAGTAATTGAAGATGTTGACAAGGACCGCGATATGCCATTGAT

Fig. 69-18

Brassica_Cull1_Cds	GCTGCCATTGTGAGGATCATGAAGAGCAGGAAAGTATTGGGACATCAACAACCTGTTTCT
Radish_Cull1_Cds	GCTGCCATTGTTAGGATCATGAAGAGCAGGAAAGTGTGGGACATCAACAACCTCGTCTCT
Beet_Cull1_Cds	GCCTCAATTGTACGCATAATGAAAAGTAGGAAGGTTTTGGGTACCAGCAATTAATCACA
Spinach_Cull1_Cds	GCCTCAATTGTACGCATAATGAAAAGTAGGAAGGCTTTGGGATATCAACAATTAATCACG
Leek_Cull1_Cds	GCATCCATAGTTCGAATAATGAAAAGTAGAAAAGTTCCTGGTCATCAGCAGCTTGTTTTG
Squash_Cull1_Cds	GCCTCGATCGTGCGTATCATGAAGAGTAGGAAAGTTCGGGTACCAGCAGTTAGTGATG
WaterMelon_Cull1_Cds	GCCTCAATCGTGCGTATCATGAAGAGTCGGAAAGTTCGGGTATCAGCAGCTAGTGATG
CuCumber_Cull1_Cds	GCCTCAATCGTGCGTATCATGAAGAGTCGGAAAGTTCCTGGTCATCAGCAACTAGTGATG
Melon_Cull1_Cds	GCCTCAATCGTGCGTATCATGAAGAGTCGAAAAGTTCCTGGTCATCAGCAACTAGTGATG
Tomato_Cull1_Cds	GCTTCAATTGTGCGTATTATGAAGAGCCGTAAAGTATTGGGTACCAGCAACTAGTCATG
Eggplant_Cull1_Cds	GCCTCAATTGTGCGTATTATGAAGAGTCGTAAAGTATTGGGTACCAGCAACTGGTCATG
Pepper_Cull1_Cds	GCTTCAATTGTGCGTATTATGAAGAGTCGTAAAGTATTGGGTACCAGCAACTGGTCATG
Lettuce_Cull1_Cds	GCTTCCATTGTAAGGATAATGAAGAGCAGAAAGGTGCTTGGATACCAGCAGTTGTTATG
Chicory_Cull1_Cds	GCTTCAATTGTACGGATAATGAAAAGCAGAAAAGTTCCTGGATACCAACAATTGGTCATG
Endive_Cull1_Cds	GCTTCAATTGTACGAATAATGAAAAGCAGAAAAGTTCCTGGATACCAACAATTGGTTATG
Carrot_Cull1_Cds	GCTTCAATTGTCCGTATCATGAAGAGCCGCAAAGTTTTGGGTATCAGCAGCTAGTAATG
Celery_Cull1_Cds	GCATCTATTGTCCGCATTATGAAGAGCCGTAAAGTTTTGGGTACCAACAATTGGTTATG
Brassica_Cull1_Cds	GAGTGCGTTGAGCAACTTAGCCGAATGTTCAAGCCTGATATCAAGGCAATCAAGAAGCGC
Radish_Cull1_Cds	GAGTGCGTTGAGCAACTTAGCCGAATGTTCAAGCCTGATATCAAGCGATCAAGAAGCGT
Beet_Cull1_Cds	GAGTGTGTGGAGCAGCTAAGCCGCATGTTCAAGCCTGATTTCAAGGCAATTAAGAAGAGG
Spinach_Cull1_Cds	GAGTGTGTGGAGCAGCTAAGCCGCATGTTCAAGCCTGATTTCAAAGCAATTAAGAAGAGG
Leek_Cull1_Cds	GAATGTGTTGAGCAATTAGGCCGCATGTTTAAAGCCTGACTTTAAGGCCATCAAGAAAAGG
Squash_Cull1_Cds	GAGTGCGTCGAGCAACTGGGTCGTATGTTCAAGCCTGATTTCAAGGCGATAAAGAAGAGA
WaterMelon_Cull1_Cds	GAGTGCGTCGAGCAATTGGGTCGTATGTTCAAGCCCGACTTCAAAGCGATAAAGAAGAGA
CuCumber_Cull1_Cds	GAGTGCGTCGAGCAATTGGGCCGTATGTTCAAGCCCGATTTCAAGGCGATAAAGAAGAGA
Melon_Cull1_Cds	GAGTGCGTCGAGCAATTGGGTCGTATGTTCAAGCCCGATTTCAAGGCGATAAAGAAGAGA
Tomato_Cull1_Cds	GAGTGCGTTGAGCAGTTGGGGCGCATGTTCAAGCCTGATGTCAAAGCTATCAAGAAGAGA
Eggplant_Cull1_Cds	GAGTGCGTTGAGCAGTTGGGACGCATGTTCAAGCCTGATGTCAAAGCTATCAAGAAGAGA
Pepper_Cull1_Cds	GAGTGTGTTGAGCAGTTGGGACGCATGTTCAAGCCTGATGTCAAAGCTATCAAGAAGAGA
Lettuce_Cull1_Cds	GAGTGTGTTGAACAGTTGGGACGCATGTTTAAAGCCTGATGTAAAAGCAATCAAGAAGCGG
Chicory_Cull1_Cds	GAATGTGTTGAACAATTAGGCCGTATGTTTAAAGCCTGATGTAAAAGCAATCAAGAACCGT
Endive_Cull1_Cds	GAGTGTGTTGAACAATTAGGCCGTATGTTTAAAGCCTGATGTAAAAGCAATCAAGAAGCGT
Carrot_Cull1_Cds	GAGTGCGTTGAACAATTGGGTCGCATGTTTAAAGCCTGATGTCAAAGCAATTAAGAAGAGA
Celery_Cull1_Cds	GAATGTGTTGAGCAATTGGGACGCATGTTTAAAGCCTGATGTCAAAGCAATTAAGAAGAGA

Fig. 69-19

Brassica_Cull1_Cds	ATGGAGGATTTGATAACGAGAGATTATCTGGAGAGGGACAAGGAGAACGCTAACATGTTT
Radish_Cull1_Cds	ATGGAGGATCTAATTACGAGGGATTATTTGGAGAGGGACAAGGAGAACCCTAACATGTTT
Beet_Cull1_Cds	ATCGAGGACTTAATAACCCGAGATTATATTGAAAGAGACAAGGAGAACCCGAGCTATTTC
Spinach_Cull1_Cds	ATCGAGGACTTGATAACCAGAGATTATATTGAAAGAGACAAGGAAAACCCCTCAGCTATTTC
Leek_Cull1_Cds	ATTGAAGATCTGATCGCTAGAGATTATTTGGAGAGGGACAAGGACAATCCAAACCTCTTT
Squash_Cull1_Cds	ATCGAAGATCTGATCACTCGTGACTATTTAGAGAGAGACAAAGACAACCCCCACTTGTTT
WaterMelon_Cull1_Cds	ATCGAAGATCTGATCACTCGGGACTATTTAGAGAGAGACAAAGACAACCCCCACTTGTTT
CuCumber_Cull1_Cds	ATTGAAGACCTGATCACTCGGGATTATCTAGAGAGAGACAAAGACAACCCCCACTTGTTT
Melon_Cull1_Cds	ATTGAAGACCTGATCACTCGGGACTATCTAGAGAGAGACAAAGACAACCCCCACTTGTTT
Tomato_Cull1_Cds	ATCGAAGATTTGATAACTAGAGATTACCTAGAGAGGGACAAGATAATCCAAACCTGTTC
Eggplant_Cull1_Cds	ATTGAAGATCTGATAACTAGAGATTACCTAGAGAGGGACAAGATAATCCCAAACCTGTTC
Pepper_Cull1_Cds	ATTGAAGATTTGATAACTAGAGATTACCTAGAGAGGGACAAGATAATCCGAACCTGTTC
Lettuce_Cull1_Cds	ATTGAAGATCTGATAACTCGTGATTATCTTGAAAGAGACAAAGAGAACCCCAACTGTTC
Chicory_Cull1_Cds	ATTGAAGATCTCATAACTCGTGATTATCTTGAAAGAGACAAAGAAAATCCAAATTTGTTT
Endive_Cull1_Cds	ATTGAAGATTTGATAACGCGTGATTATCTTGAAAGAGACAAAGAAAATCCAAATTTGTTT
Carrot_Cull1_Cds	ATCGAAGATTTAATAACTCGGGATTATCTGGAAGAGACAAGGACAATGCCAACCTGTTC
Celery_Cull1_Cds	ATCGAAGATTTAATAACGCGTGATTATCTGGAAGAGACAAGGATAATGCCAACCTTTTC

Brassica_Cull1_Cds	AGGTACTTGGCTTAG
Radish_Cull1_Cds	AGGTACTTGGCTTAG
Beet_Cull1_Cds	CGATACTTGGCTTGA
Spinach_Cull1_Cds	CGGTACTTGGCTTGA
Leek_Cull1_Cds	AAATATTTGGCCTAA
Squash_Cull1_Cds	AGGTACTTGGCTTGA
WaterMelon_Cull1_Cds	AGGTACTTGGCTTGA
CuCumber_Cull1_Cds	AGGTACTTGGCTTGA
Melon_Cull1_Cds	AGGTACTTGGCTTGA
Tomato_Cull1_Cds	AAGTACTTGGCATGA
Eggplant_Cull1_Cds	AAGTACTTGGCATGA
Pepper_Cull1_Cds	AAGTACTTGGCATGA
Lettuce_Cull1_Cds	CGATACTTGGCATGA
Chicory_Cull1_Cds	CGGTACTTGGCATGA
Endive_Cull1_Cds	CGGTACTTGGCATGA
Carrot_Cull1_Cds	AGGTATCTGGCATGA
Celery_Cull1_Cds	AGATATTTGGCATGA
Endive_Cull1_Cds	CGGTACTTGGCATGA
Carrot_Cull1_Cds	AGGTATCTGGCATGA
Celery_Cull1_Cds	AGATATTTGGCATGA

Fig. 70-1

beet_cull1	--MNDRKVIELEQGWEFMGKGITKLKRILEGLPEPPFNSEDYMMLYTT [I] YNMCTQKPPHD
spinach_cull1	--MNDRKVIELEQGWEFMGKGITKLKRILEGLPEPPFNSEDYMMLYTT [I] YNMCTQKPPHD
arabidopsis_cull1	---MERKTIDLEQGWDYMQTGITKLKRILEGLNEPAFDSEQYMMLYTT [I] YNMCTQKPPHD
brassica_cull1	---MERKTIDLDQGWDYMQTGITKLKRILEGLPEPQFDSEQYMMLYTT [I] YNMCTQKPPHD
radish_cull1	---MERKTIDLEQGWDYMQTGITKLKRILEGLPEPQFDSEQYMMLYTT [I] YNMCTQKPPHD
leek_cull1	MSLHERKTIDLEQGWAFMQKGITKLKNILDELNEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
eggplant_cull1	--MNQRSTIDLEHGWDYMQKGITKLKNILEGLPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
tomato_cull1	--MNQRSTIDLEHGWDYMQKGITKLKNILEGLPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
pepper_cull1	--MNQRSTINLEHGWDYMQKGITKLKNILEGLPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
cucumber_cull1	MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
melon_cull1	MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
watermelon_cull1	MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
squash_cull1	MTMGERKTIDLEQGWEFMQKGITKLKNILEGLPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
celery_cull1	--MNERKTIDLDNGWEFMQKGITKLKILEGQPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
lettuce_cull1	--MNERKTIDLEQGWDYMQKGITKLKNILEGLPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
endive_cull1	--MNERKTIDLEQGWDYMQKGITKLKNILEGLPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
chicory_cull1	--MNERKTIDLEQGWDYMQKGITKLKNILEGLPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD
carrot_cull1	--MMIERKTIDLEQGWDYMQKGITKLKNILEGFPEPQFSSEDYMMLYTT [I] YNMCTQKPPHD

beet_cull1	YSQQLYDNYKQAFVDYINSTVLP SLREKHDEFMLRELVKRWANHKVMVRWLSRFFHYLDR
spinach_cull1	YSQQLYDNYKEAFVDYIHSTVLP SLGDKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDR
arabidopsis_cull1	YSQQLYDKYREAFEEYINSTVLPALREKHDEFMLRELVKRWSNHKVMVRWLSRFFYYLDR
brassica_cull1	YSQQLYDKYREAFEEYIHSTVLPALREKHDEYMLRELVKRWSNHKVMVRWLSRFFYYLDR
radish_cull1	YSQQLYDKYREAFEEYIDSTVLPALKEKHDEYMLRELVKRWSNHKVMVRWLSRFFYYLDR
leek_cull1	YSQELYDKYRESFEEYITTTVLP SLREKHDEYMLRELVRWSNHKIMVRWLSRFFHYLDR
eggplant_cull1	YSQQLYDKYREAFEEYITTTVLP SLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDR
tomato_cull1	YSQQLYDKYREAFEEYITTTVLP SLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDR
pepper_cull1	YSQQLYDKYREAFEEYITTTVLP SLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDR
cucumber_cull1	YSQQLYDKYRESFEEYITSMVLP SLREKHDEFMLRELVKRWTNHKVMVRWLSRFFHYLDR
melon_cull1	YSQQLYDKYRESFEEYITSMVLP SLREKHDEFMLRELVKRWTNHKVMVRWLSRFFHYLDR
watermelon_cull1	YSQQLYDKYRESFEEYITSMVLP SLREKHDEFMLRELVKRWTNHKVMVRWLSRFFHYLDR
squash_cull1	YSQQLYDKYRESFEEYITSMVLP SLREKHDEFMLRELVKRWTNHKVMVRWLSRFFHYLDR
celery_cull1	YSQQLYDKYREAFEEYITSTVLP SLREKHDEFMLRELVRWTNHKVMVRWLSRFFHYLDR
lettuce_cull1	YSQQLYDKYRESFEEYITSTVLP SLREKHDEFMLRELVRWSNHKVMVRWLSRFFHYLDR
endive_cull1	YSQQLYDKYRESFEEYITSTVLP SLREKHDEFMLRELVRWSNHKVMVRWLSRFFHYLDR
chicory_cull1	YSQQLYDKYRESFEEYITSTVLP SLREKHDEFMLRELVRWSNHKVMVRWLSRFFHYLDR
carrot_cull1	YSQQLYEKYREAIEEYITSTVLP SLREKHDEFMLRELVKRWSNHKVMVRWLSRFFHYLDR

beet_cull1	YFIARRSLPSLNEVGTLTCFRDLVYQEISGKAKDAVIALIDIEREGGQIDRSLKKNVLDIY
spinach_cull1	YFIARRSLPSLNDVGTLTCFRDLVYQEISGKAKDAVIALIDEEREGGQIDRALLKKNVLDIY
arabidopsis_cull1	YFIARRSLPPLNEVGTLTCFRDLVYNELHSKVQAVIALVDKEREGEQIDRALLKKNVLDIY
brassica_cull1	YFIARRSLPPLNEVGTLTCFRDLVYNELHSKVQDAVIALVDKEREGEQIDRALLKKNVLDIY
radish_cull1	YFIARRSLPPLNEVGTLTCFRDRVYKELHSKVQDAVIALVDKEREGEQIDRALLKKNVLDIY
leek_cull1	YFIARRSLPALNEVGTLTCFRDLVYNEVHGKVQDAVISLIDQEREGEQIDRALLKKNVLGIF
eggplant_cull1	YFIARRSLPGLNEVGTLTCFRDLVYQELNGKVRDAVISLIDQEREGEQIDRALLKKNVLDIF
tomato_cull1	YFIARRSLPGLNEVGTLTCFRDQVYQELNGKVRDAVISLIDQEREGEQIDRALLKKNVLDIF

Fig. 70-2

pepper_cull1	YFIARRSLPGLNEVGLTCFRDLVYQELNGKVRDAVISLIDQEREGEQIDRALLKNVLDIF
cucumber_cull1	YFIARRSLPPLNEVGLTCFRELKYKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIF
melon_cull1	YFIARRSLPPLNEVGLTCFRELKYKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIF
watermelon_cull1	YFIARRSLPPLNEVGLTCFRELKYKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIF
squash_cull1	YFIARRSLPPLNEVGLTCFRELKYKELNSKVRDAVISLIDQEREGEQIDRALLKNVLDIF
celery_cull1	YFIARRSLPALHEVGLTCFRDLVYQELNVKVRDAVISLIDQEREGEQIDRALLKNVLDIF
lettuce_cull1	YFIARRSLPPLNEVGLACFRDLVYQEVNGKVRDAVISLIDQEREGEQIDRALLKNVLDIF
endive_cull1	YFIARRSLPPLNEVGLACFRDLVYQEVNGKVRDAVISLIDQEREGEQIDRALLKNVLDIF
chicory_cull1	YFIARRSLPPLNEVGLACFRDLVYQEVNGKVRDAVISLIDQEREGEQIDRALLKNVLDIF
carrot_cull1	YFIARRSLPPLHEVGLTCFRDLVYQELNGKVRDAVISLINQEREGEQIDRALLKNVLDIF
beet_cull1	VEIGMGQMDHYEKDFEAHMLDDTAAYYSRKASSWILEDSCEPYMLKSEECLKKEKERVAN
spinach_cull1	VEIGMTQMDYYEKDFEAHMLDDTAAYYSRKASSWILEDSCEPYMLKSEECLKKEKDRVAH
arabidopsis_cull1	VEIGMGQMERYEEDFESFMLQDTSSYYSRKASSWIQEDSCPDYMLKSEECLKKERERVAH
brassica_cull1	VEIGMGQMERYEEDFESFMLLDSASYYSRKASSWIQEDSCPDYMLKSEECLKKERERVAH
radish_cull1	VEIGMGQMERYEEDFESFMLLDSASYYSRKASNWIQEDSCPDYMLKSEECLKKERERVAH
leek_cull1	VEIGLGSMECYENDFETSMNLATAAYYSRKASNWILEDSCPDYMLKAEELCKHEKDRVAH
eggplant_cull1	VEIGMGMDYYENDFEAAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
tomato_cull1	VEIGMGLMDYYENDFEAAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
pepper_cull1	VEIGMGMDYYENDFEAAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
cucumber_cull1	VEIGMGQMDYYENDFEAAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
melon_cull1	VEIGMGQMDYYENDFEAAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
watermelon_cull1	VEIGMGQMDYYENDFEAAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
squash_cull1	VEIGMGQMDYYENDFEAAMLKDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
celery_cull1	VEIGMSQMDQYENDFEEAMLTDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
lettuce_cull1	VEIGMGQMEYYENDFEASMLNDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
endive_cull1	VEIGMGQMEYYENDFEASMLNDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
chicory_cull1	VEIGMGQMEYYENDFEASMLNDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSH
carrot_cull1	VEVGMSQMDYYENDFEADMLKDTAAYYSRKASNWILEDSCPDYMLKAEELCKREKDRVSN
beet_cull1	YLHSSSEPKLLEKVQNELLVYESQLLEKENSGCRALLKDDKVDDL SRMYRLYSKVTKGL
spinach_cull1	YLHSSSEPKLLEKVQNELLVYENQLLEKENSGCRALLKDDKVDDL SRMYRLYSKVTKGL
arabidopsis_cull1	YLHSSSEPKLVEKVQHHELLVVFASQLLEKEHSGCRALLRDDKVDDL SRMYRLYHKILRGL
brassica_cull1	YLHSSSEPKLVEKVQHHELLVVYANQLLEKEHSGCRALLRDDKVDDL SRMYRLYHKIVKGL
radish_cull1	YLHSSSEPKLVEKVQHHELLVVYANQLLEKEHSGCRALLRDDKVDDL SRMYRLYHKIAKGL
leek_cull1	YLHSSSEQKLEKVQHHELLFVYASQLLEKEHSGCHALLRDDKVGDLSRMYRLF CRITRGL
eggplant_cull1	YLHSSSETKLEKVQHHELLSVYANQLLEKEHSGCHALLRDDKVDDL SRMYRLF SKIPRGL
tomato_cull1	YLHSSSETKLEKVQHHELLSVYATQLLEKEHSGCHALLRDDKVDDL SRMYRLF SKISRGL
pepper_cull1	YLHLSSETKLEKVQHHELLSVYATQLLEKEHSGCHALLRDDKVDDL SRMYRLF SKIPRGL
cucumber_cull1	YLHSSSEPKLLEKVQHHELLSVYATQLLEKEHSGCHALLRDDKVDDL SRMFRLF SKIPKGL
melon_cull1	YLHSSSEPKLLEKVQHHELLSVYATQLLEKEHSGCHALLRDDKVDDL SRMFRLF SKIPKGL
watermelon_cull1	YLHSSSEPKLLEKVQHHELLSVYATQLLEKEHSGCHALLRDDKVDDL SRMFRLF SKIPKGL
squash_cull1	YLHSSSEPKLLEKVQHHELLSVYATQLLEKEHSGCHALLRDDKVDDL SRMFRLF SKIPKGL
celery_cull1	YLHFSSEPKLLEKVQHHELLSVYATQLLEKEHSGCHALLRDDKVDDL SRMYRLF SKIPKGL
lettuce_cull1	YLHSSSEPKLLEKVQNELL SVYATQLLEKEHSGCHALLRDDKVDDL SRMYRLF SKIPKGL
endive_cull1	YLHSSSEPKLLEKVQTELLSVYATQLLEKEHSGCHALLRDDKVDDL SRMYRLF SKIQKGL

Fig. 70-3

chicory_cull1	YLHSSSEPKLLEKVQTELLSVYATQLEKEHSGCHALLRDDKVDLDRMYRLFSKIQKGL
carrot_cull1	YLHSSSEPKLLEKVQHELLSHYATQLEKEHSGCHALLRDDKVADLDRMYRLFSKIPRGL
beet_cull1	EPIGSIFKQHITDEGTALVQQAEDAAISKAENT--G-GSHEQVVRKVIELHDKFMTYVT
spinach_cull1	EPIGSIFKQHITDEGTALVQQAEDAAISKAENA--GGGSHEQVVRKVIELHDKFMTYVT
arabidopsis_cull1	EPVANIFKQHVTAEGNALVQQAEDTATNQVAN---TASVQEQLIRKVIELHDKYMVYVT
brassica_cull1	EPVANIFKQHVTAEGNALVQQAEDTATNHAAN---TASVQEQLIRKVIELHDKYMVYVV
radish_cull1	EPVANIFKQHVTAEGNALVQQAEDTATNQAAAN---TASVQEQLIRKVIELHDKYMVYVV
leek_cull1	DPVSQIFKQHVTAEGTALVKHAEDAASNKKAEEKDIVGLQEQLVVRKVIELHDKYLAYVT
eggplant_cull1	EPVANIFKQHVTAEGTALVKQAEDAASNKKAEKRDVVGLQEQLVVRKVIELHDKYLAYVN
tomato_cull1	DPVANIFKQHVTAEGTALVKQAEDAASNKKAEKRDVVGLQEQLVVRKVIELHDKYLAYVN
pepper_cull1	DPVANIFKQHVTAEGTALVKQAEDAASNKKAEKRDVVGLQEQLVVRKVIELHDKYMAVYN
cucumber_cull1	DPVSNIFKQHVTAEGTALVKQAEDAASNKKAEEKDIVGLQEQLVVRKVIELHDKYLAYVN
melon_cull1	DPVSNIFKQHVTAEGTALVKQAEDAASNKKAEEKDIVGLQEQLVVRKVIELHDKYLAYVN
watermelon_cull1	DPVSNIFKQHVTAEGTALVKQAEDAASNKKAEEKDIVGLQEQLVVRKVIELHDKYLAYVN
squash_cull1	DPVSNIFKQHVTAEGTALVKQAEDAASNKKAEEKDIVGLQEQLVVRKVIELHDKYLAYVN
celery_cull1	DPVSYIFKQHVTEGMALVKQAEDAASNKKAEKRDVVSQEQVVRKIIELHDKYLAYVN
lettuce_cull1	DPVSSMFKQHVTAEGTTLVKQAEDAASTKKAEKRDVVGLQEQLVVRKVIELHDKYLAYVN
endive_cull1	DPVSSMFKQHVTAEGTTLVKQAEDAASTKKAEKRDVVGLQEQLVVRKVIELHDKYLAYVN
chicory_cull1	DPVSSMFKQHVTAEGTTLVKQAEDAASTKKAEKRDVVGLQEQLVVRKVIELHDKYLAYVN
carrot_cull1	DPVSNIFKQHVTAEGTALVKQAEDAASNKKAEKRDVVGLQEQLVVRKIIELHDKYLYTVN
beet_cull1	DCFNSHTIFHKALKEAFEVFLNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEDSLE
spinach_cull1	DCFNSHTIFHKALKEAFEVFLNKGVAGSSSAELLASFCDNILKKGSEKLSDEAIEDSLE
arabidopsis_cull1	ECFQNHTLFHKALKEAFEIFCNKTVAGSSSAELLATFCDNILKKGSEKLSDEAIEDTLE
brassica_cull1	ECFQNHTLFHKALKEAFEIFCNKTVAGSSSAELLATFCDNILKKGSEKLSDEAIEDTLE
radish_cull1	ECFQNHTLFHKALKEAFEIFCNKTVAGSSSAELLATFCDNILKKGSEKLSDEAIEDTLE
leek_cull1	DCFQNHSLFHKALKEAFEVFCNKGVAGSSSAELLAFCDNILKKGSEKLSDEAIEDTLE
eggplant_cull1	NCFQNHTLFHKALKEAFEFLFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEETLE
tomato_cull1	NCFQNHTLFHKALKEAFEFLFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEETLE
pepper_cull1	NCFQNHTLFHKALKEAFEFLFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEETLE
cucumber_cull1	DCFQNHTLFHKALKEAFEVFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEETLE
melon_cull1	DCFQNHTLFHKALKEAFEVFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEETLE
watermelon_cull1	DCFQNHTLFHKALKEAFEVFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEETLE
squash_cull1	DCFQNHTLFHKALKEAFEVFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEETLE
celery_cull1	DCFNTHTLFHKALKEAFEIFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEETLE
lettuce_cull1	DCFMNHTLFHKALKEAFEIFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEDTLE
endive_cull1	DCFMNHTLFHKALKEAFEIFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEDTLE
chicory_cull1	DCFMNHTLFHKALKEAFEIFCNKGVAGSSSAELLATFCDNILKKGSEKLSDEAIEDTLE
carrot_cull1	DCFNTHTLFHKALKEAFEIFCNKGVSAGSSSAELLATFCDNILKKGSEKLSDEAIEETLE
beet_cull1	KVVKLLAYVSDKDLFAEFYRKKLSRRLLFDKSANDDHERSILTKLKQCGGQFTSKMEGM
spinach_cull1	KVVKLLAYVSDKDLFAEFYRKKLSRRLLFDKSANDDHERSILTKLKQCGGQFTSKMEGM
arabidopsis_cull1	KVVKLLAYISDKDLFAEFYRKKLARRLLFDRSANDDHERSILTKLKQCGGQFTSKMEGM
brassica_cull1	KVVKLLAYISDKDLFAEFYRKKLARRLLFDRSANDDHERSILTKLKQCGGQFTSKMEGM

Fig. 70-4

radish_cull1	KVVKLLAYISDKDLFAEFYRKKLARLLFDRSANDDHERSILTKLKQQCGGQFTSKMEGM
leek_cull1	KVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
eggplant_cull1	KVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
tomato_cull1	KVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
pepper_cull1	KVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
cucumber_cull1	KVVKLLAYICDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
melon_cull1	KVVKLLAYICDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
watermelon_cull1	KVVKLLAYICDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
squash_cull1	KVVKLLAYICDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
celery_cull1	KVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
lettuce_cull1	KVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
endive_cull1	KVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
chicory_cull1	KVVKLLAYISDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
carrot_cull1	KVVRLLAYISDKDLFAEFYRKKLARLLFDKSANDDHERSILTKLKQQCGGQFTSKMEGM
beet_cull1	VTDLTLARENQTNFEEYLSQNPDASPGDLTLTVTLTTGFWPSYKSSDLNLPAMVRCVEV
spinach_cull1	VTDLTLARENQTNFEEYLGQNTDASPGDLTLTVTLTTGFWPSYKSSDLNLPAMVRCVEV
arabidopsis_cull1	VTDLTLARENQNSFEDYLGSNPAANPGIDLTVTVLTTGFWPSYKSFIDLNPSEMICKVEV
brassica_cull1	VTDLTLARENQNSFEEYLGNNPAANPGIDLTVTVLTTGFWPSYKSFIDLNPAMVKCVEV
radish_cull1	VTDLTLARENQTSFEEYLGNNPAANPGIDLTVTVLTTGFWPSYKSFIDLNPSEMICKVEV
leek_cull1	VTDLTLARENQSSFDYLSNPKANSIDLTVTVLTTGFWPSYKSFIDLNPDEMVKCVEI
eggplant_cull1	VTDLTLARENQASFEEYLSNNPTANPGIDLTVTVLTTGFWPSYKSFIDLNPAMVRCVEV
tomato_cull1	VTDLTLARENQASFEEYLSNNPIANPGIDLTVTVLTTGFWPSYKSFIDLNPAMVRCVEV
pepper_cull1	VTDLTLARENQASFEEYLSNNPAANPGIDLTVTVLTTGFWPSYKSFIDLNPAMVRCVEV
cucumber_cull1	VTDLTLARENQTSFEEYLSNNPQASPGIDLTVTVLTTGFWPSYKSFIDLNPAMVKCVEV
melon_cull1	VTDLTLARENQTSFEEYLSNNPQASPGIDLTVTVLTTGFWPSYKSFIDLNPAMVKCVEV
watermelon_cull1	VTDLTLARENQTSFEEYLSNNPQASPGIDLTVTVLTTGFWPSYKSFIDLNPAMVKCVEV
squash_cull1	VTDLTLARENQTSFEEYLSNNPQASPGIDLTVTVLTTGFWPSYKSFIDLNPAMVKCVEV
celery_cull1	VTDLTLAKENQSSFEEYLGNNANVNPIDLTVTVLTTGFWPSYKSFIDLNPAMVKCVEV
lettuce_cull1	VTDLTLAKENQSHFEEYLNNNPNVSPGIDLTVTVLTTGFWPSYKSFIDLNPAMVKCVEV
endive_cull1	VTDLTLAKENQSHFEEYLNNNPNVSPGIDLTVTVLTTGFWPSYKSFIDLNPAMVKCVEV
chicory_cull1	VTDLTLAKENQSHFEEYLNNNPNVSPGIDLTVTVLTTGFWPSYKSFIDLNPAMVKCVEV
carrot_cull1	VTDLTLAKENQSNFEEYLNNNPNVNPIDLTVTVLTTGFWPSYKSFIDLNPAMVKCVEV
beet_cull1	FKQFYSTKTKHRKLTWVYSLGSCNINGKFGPKTIELVVGTYQAAALMLFNTSDRLSYSEI
spinach_cull1	FKQFYQTKTKHRKLTWVYSLGSCNINGKFGPKTIELVVGTYQAAALMLFNTSDRLSYSEI
arabidopsis_cull1	FKGFYETKTKHRKLTWVYSLGTCHINGKFDQKAIELIVSTYQAAVLLLFNTTDKLSYTEI
brassica_cull1	FKGFYETKTKHRKLTWVYSLGTCHLNGKFDVKPIELVVSTYQAAVLLLFNTTDKLSYTDI
radish_cull1	FKGFYETKTKHRKLTWVYSLGTCHLNGKFDHKPIELVVSTYQAAVLLLFNTTDKLSYNDI
leek_cull1	FKEFYETKTKHRKLTWVYSLGTCNINGKFETKTIELVVTYQAAVLLLFNSADKLSYSEI
eggplant_cull1	FKEFYQTKTKHRKLTWVYSLGTCNINGKFEAKTIELVVTYQASALLLFNASDRLSYQEI
tomato_cull1	FKEFYQTKTKHRKLTWVYSLGTCNINGKFEPKTIELVVTYQASALLLFNASDRLSYQEI
pepper_cull1	FKEFYQTKTKHRKLTWVYSLGTCNINGKFEPKTIELVVTYQASALLLFNASDRLSYQEI
cucumber_cull1	FREFYQTKTKHRKLTWVYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSSDRLSYSEI
melon_cull1	FREFYQTKTKHRKLTWVYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSSDRLSYSEI
watermelon_cull1	FREFYQTKTKHRKLTWVYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSSDRLSYSEI

Fig. 70-5

squash_cull1	FREFYQTKTKHRKLTWIYSLGTCNISGKFEPKTMELIVTTYQASALLLFNSSDKLSYSEI
celery_cull1	FREFYQTKTKHRKLTWIYSLGTCNINGKFEPKTIELIVTTYQASALLLFNTSDRLSYQEI
lettuce_cull1	FREFYQTKTKHRKLTWIYSLGTCNINGKFEPKTMELIVTTYQASALLLFNLSDRLSYQEI
endive_cull1	FREFYQTKTKHRKLTWIYSLGTCNINGKFEPKTMELIVTTYQASALLLFNSSDRLSYQEI
chicory_cull1	FREFYQTKTKHRKLTWIYSLGTCNINGKFEPKTMELIVTTYQASALLLFNSSDRLSYQEI
carrot_cull1	FREFYQTKTKHRKLTWIYSLGTCNIIGKFDPKTMELIVTTYQASALLLFNSSDRLSYNEI
beet_cull1	ATQLNLADEDLVRVLQSLSCAKYKILLKEPNTKTIVSPTDCFSFNSSFTDRMRIRIPLPP
spinach_cull1	TTQLNLADEDLVRVLQSLSCAKYKILLKEPSTRNVISTDCFSFNSSFTDRMRIRIPLPP
arabidopsis_cull1	LAQLNLSHEDLVRLLHLSLSCAKYKILLKEPNTKTIVSQNDAFEFNKFTDRMRRIKIPLPP
brassica_cull1	LTQLNLSHEDLVRLLHLSLSCARYKILLKEPSTKTIVSQSDSFEFNSKFTDRMRRIKIPLPP
radish_cull1	LTQLNLSHEDLVRLLHLSLSCARYKILLKEPSTKTIVTQTDSEFNKFTDRMRRIKIPLPP
leek_cull1	VQQLNLSDDDVRLLHLSLSCAKYKILNKEPATKTITPNDHFEFNKFTDRMRRIKIPLPP
eggplant_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPSTKTISPNDHFEFNKFTDKMRRIKIPLPP
tomato_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPSTKTISPNDHFEFNKFTDKMRRIKIPLPP
pepper_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPSTKTISPNDHFEFNKFTDKMRRIKIPLPP
cucumber_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNKFTDKMRRIKIPLPP
melon_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNKFTDKMRRIKIPLPP
watermelon_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNKFTDKMRRIKIPLPP
squash_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNKFTDKMRRIKIPLPP
celery_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNKFTDKMRRIKIPLPP
lettuce_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNKFTDKMRRIKIPLPP
endive_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNKFTDKMRRIKIPLPP
chicory_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNKFTDKMRRIKIPLPP
carrot_cull1	MTQLNLSDDDVRLLHLSLSCAKYKILNKEPNTKTISPNDHFEFNKFTDKMRRIKIPLPP
beet_cull1	MDERKKVVEDVDKDRRYAIDASIVRIMKSRKVLGYQQQLITECQEQLSRMFKPDFKAIKKR
spinach_cull1	MDERKKVVEDVDKDRRYAIDASIVRIMKSRKALGYQQQLITECQEQLSRMFKPDFKAIKKR
arabidopsis_cull1	VDERKKVVEDVDKDRRYAIDAAIVRIMKSRKVLGHQQQLVSECQEQLSRMFKPDIDKAIKKR
brassica_cull1	VDERKKVVEDVDKDRRYAIDAAIVRIMKSRKVLGHQQQLVSECQEQLSRMFKPDIDKAIKKR
radish_cull1	VDERKKVVEDVDKDRRYAIDAAIVRIMKSRKVLGHQQQLVSECQEQLSRMFKPDIDKAIKKR
leek_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQQLVSECQEQLGRMFKPDFKAIKKR
eggplant_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQQLVMCEQEQLGRMFKPDVKAIKKR
tomato_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQQLVMCEQEQLGRMFKPDVKAIKKR
pepper_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQQLVMCEQEQLGRMFKPDVKAIKKR
cucumber_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQQLVMCEQEQLGRMFKPDFKAIKKR
melon_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQQLVMCEQEQLGRMFKPDFKAIKKR
watermelon_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQQLVMCEQEQLGRMFKPDFKAIKKR
squash_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGHQQQLVMCEQEQLGRMFKPDFKAIKKR
celery_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQQLVMCEQEQLGRMFKPDVKAIKKR
lettuce_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQQLVMCEQEQLGRMFKPDVKAIKKR
endive_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQQLVMCEQEQLGRMFKPDVKAIKKR
chicory_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQQLVMCEQEQLGRMFKPDVKAIKKR
carrot_cull1	VDEKKKVIEDVDKDRRYAIDASIVRIMKSRKVLGYQQQLVMCEQEQLGRMFKPDVKAIKKR

Fig. 70-6

beet_cull	IEDLITRDYIERDKENPQLFRYLA
spinach_cull	IEDLITRDYIERDKENPQLFRYLA
arabidopsis_cull	MEDLITRDYLERDKENPNMFRYLA
brassica_cull	MEDLITRDYLERDKENANMFRYLA
radish_cull	MEDLITRDYLERDKENPNMFRYLA
leek_cull	IEDLIARDYLERDKDNPNFLFKYLA
eggplant_cull	IEDLITRDYLERDKDNPNFLFKYLA
tomato_cull	IEDLITRDYLERDKDNPNFLFKYLA
pepper_cull	IEDLITRDYLERDKDNPNFLFKYLA
cucumber_cull	IEDLITRDYLERDKDNPHLFRYLA
melon_cull	IEDLITRDYLERDKDNPHLFRYLA
watermelon_cull	IEDLITRDYLERDKDNPHLFRYLA
squash_cull	IEDLITRDYLERDKDNPHLFRYLA
celery_cull	IEDLITRDYLERDKDNANLFRYLA
lettuce_cull	IEDLITRDYLERDKENPNLFRYLA
endive_cull	IEDLITRDYLERDKENPNLFRYLA
chicory_cull	IEDLITRDYLERDKENPNLFRYLA
carrot_cull	IEDLITRDYLERDKDNANLFRYLA

ABSTRACT

The present invention relates to a modified *Cullin1* gene which leads to a plant type that
5 enables efficient cultivation and/or is suitable for situations that require smaller portions, or
reduces the labour, time and expenses involved with storing, handling and transporting of
redundant plant leaves. The invention also relates to plants comprising the modified *Cullin1* gene.
The modified *Cullin1* gene provides plants with a compact growth phenotype, i.e. comprising
shorter internode length and/or a smaller leaf area when compared to plants not comprising the
10 modified *Cullin1* gene. The invention further relates to the use of the modified *Cullin1* gene for the
identification and development of a plant showing a compact growth phenotype, i.e. comprising
shorter internodes and/or a smaller leaf area.

SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE 	KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE L/2SB78/TN/376
Nederlands aanvraag nr. 2015409	Indieningsdatum 08-09-2015
	Ingeroepen voorrangsdatum
Aanvrager (Naam) Rijk Zwaan Zaadteelt en Zaadhandel B.V.	
Datum van het verzoek voor een onderzoek van internationaal type 13-02-2016	Door de instantie voor Internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr. SN 65745
I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven) Volgens de internationale classificatie (IPC) C07K14/415	
II. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK Onderzochte minimumdocumentatie	
Classificatiesysteem IPC	Classificatiesymbolen C07K
Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen 	
III. ☐	GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES (opmerkingen op aanvullingsblad)
IV. ☐	GEBREK AAN EENHEID VAN UITVINDING (opmerkingen op aanvullingsblad)

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2015409

A. CLASSIFICATIE VAN HET ONDERWERP
INV. C07K14/415
ADD.

Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

B. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK

Onderzochte minimum documentatie (plaatscode gevolgd door classificatiesymbolen)

C07K

Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden)

EPO-Internal, BIOSIS, EMBASE, WPI Data, EMBL

C. VAN BELANG GEACHTE DOCUMENTEN

Categorie *	Geslechte documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
X	DATABASE GenBank [Online] 23 maart 2015 (2015-03-23), XP002755975, Database accession no. XM_004143037 * samenvatting *	1-6,9-24
X	DATABASE GenBank [Online] 19 november 2014 (2014-11-19), XP002755976, Database accession no. XM_004229178 * samenvatting * * tabel 6 *	1-6,9-24
	-/--	

☒ Verdere documenten worden vermeld in het vervolg van vak C.

☐ Leden van dezelfde octroofamilie zijn vermeld in een bijlage

*** Speciale categorieën van aangehaalde documenten**

"A" niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft

"C" in de octrooiaanvraag vermeld

"E" eerdere octrooi(aanvraag), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven

"L" om andere redenen vermeldde literatuur

"O" niet-schriftelijke stand van de techniek

"P" tussen de voorzetsdatum en de indieningsdatum gepubliceerde literatuur

"T" na de indieningsdatum of de voorzetsdatum gepubliceerde literatuur die niet bezwaarlijk is voor de octrooiaanvraag, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding

"X" de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur

"Y" de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geslechte literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht

"Z" lid van dezelfde octroofamilie of overeenkomstige octrooipublicatie

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid

31 maart 2016

Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type

Naam en adres van de instantie

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De bevoegde ambtenaar

Barnas, Christoph

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2015409

C (Verzoek) VAN BELANG GEACHTE DOCUMENTEN

Categorie *	Geachte documenten, eventueel met aanduiding van specifiek van belang zijnde passages	Van belang voor conclusie nr.
A	HERNANDEZ RICARDO ET AL: "Growth and morphological response of cucumber seedlings to supplemental red and blue photon flux ratios under varied solar daily light integrals", juni 2014 (2014-06), SCIENTIA HORTICULTURAE (AMSTERDAM), VOL. 173, PAGE(S) 92-99, XP028849394, ISSN: 0304-4238(print) * bladzijde 95, linker kolom, alinea 3 - bladzijde 96, rechter kolom, alinea 3 * *****	1-24

WRITTEN OPINION

File No. SN65745	Filing date (day/month/year) 08.09.2015	Priority date (day/month/year)	Application No. NL2015409
International Patent Classification (IPC) INV. C07K14415			
Applicant Rijk Zwaan Zaaiteelt en Zaadhandel B.V.			

This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the application
- ☐ Box No. VIII Certain observations on the application

	Examiner Barnas, Christoph
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WRITTEN OPINION

Application number
NL2015409

Box No. I Basis of this opinion

1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☒ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☒ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing:
 - ☒ contained in the application as filed.
 - ☒ filed together with the application in electronic form.
 - ☐ furnished subsequently for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty	Yes: Claims	1-24
	No: Claims	
Inventive step	Yes: Claims	7, 8
	No: Claims	1-6, 9-24
Industrial applicability	Yes: Claims	1-24
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Inventive Step

1. Claims 1-6 refer to modified Cullin1 genes of different crops comprising a modification which leads to any change or any substitution in the wild type Cullin1 amino acid sequence. Claims 2, 4, 5 and 6 specify the location of the change of the amino acid sequence.

1.1. Said claims embrace all types of changes or substitutions of the amino acid sequence at the indicated locations. The present application does, however, not provide any effect for all of the the modifications or substitutions embraced by said claims. No effect is shown for any amino acid change in any SNP or anywhere within positions 30-60 or 40-55 or in any location of the binding region indicated in claim 5. Also no effect is shown for any type of modification at position 147 of the nucleotide sequence which leads to any type of substitution on position 49 of the amino sequence.

1.2. The numerous possible modification embraced by claims 1-6 represent, therefore, arbitrary modifications of the indicated Cullin1 genes which do not result in any effect. Such arbitrary modifications do, therefore, not relate to any inventive activity. Thus, claims 1-6 are not inventive. Consequently, the subject matter of claims 9-24 that is connected with said claims is also not inventive.

2. The present application shows that a modified cucumber Cullin1 gene with a change of the nucleotide sequence at position 147 of SEQ ID No. 1 which leads to an amino acid change at position 49 of the cucumber amino acid sequence of SEQ ID No. 18 from isoleucine to methionine results in smaller leaf area and a reduced internode length. Said amino acid change is the result of a change from adenine to guanine at position 147 of SEQ ID No.1. In the Cullin1 genes SEQ ID NOs. 2-17 of other crops a nucleic acid change from adenine, cytosine or thymine to guanine at a position equivalent to position 147 in SEQ ID No.1 results in an amino acid change

from isoleucine to methionine at the position equivalent to position 49 in SEQ ID No. 18. In the prior art there is no hint that would prompt the skilled person to introduce such a change the nucleotide sequences of Cullin1 genes in order to achieve said modified plant phenotype. Claims 7 and 8 are, therefore, inventive.