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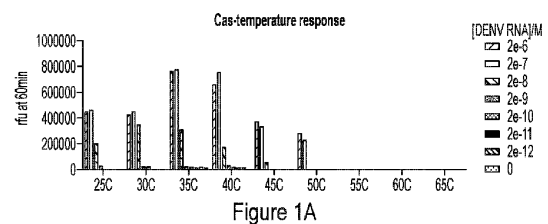
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(54)【発明の名称】 改善された検出アッセイ

(57)【要約】

本開示は、C a s タンパク質コラテラル切断活性を利用する改善された検出（例えば、診断）アッセイを提供する。



【特許請求の範囲】**【請求項 1】**

検出方法であって、

C R I S P R - C a s 複合体であって：

少なくとも 60～65℃を超える温度で熱安定性であるコラテラル切断活性を有する C a s タンパク質と

標的配列を補完するように選択または設計されたガイド RNA

を含む前記 C R I S P R - C a s 複合体；と

前記標的配列の核酸を潜在的に含む試料と、を接触するステップを含む、前記検出方法。

【請求項 2】

前記接触するステップが、前記 C R I S P R - C a s 複合体及び試料を、前記 C a s タンパク質コラテラル活性による切断を受けやすいレポーターと接触させることを含む、請求項 1 に記載の方法。

【請求項 3】

前記接触するステップが、前記温度を超えてある期間にわたってインキュベートすることを含む、請求項 1 または請求項 2 に記載の方法。

【請求項 4】

前記試料中に存在する核酸を増幅するステップをさらに含む、先行請求項のいずれか 1 項に記載の方法。

【請求項 5】

前記増幅するステップが熱安定性核酸ポリメラーゼを利用する、請求項 4 に記載の方法。

【請求項 6】

前記増幅及び接触するステップが、単一の容器内で実行される、請求項 4 または請求項 5 に記載の方法。

【請求項 7】

前記 C a s タンパク質が C a s 12 タンパク質である、請求項 1 に記載の方法。

【請求項 8】

前記 C a s タンパク質が、配列番号 15 の配列と少なくとも 80% 同一であるアミノ酸配列を有する、請求項 7 に記載の方法。

【請求項 9】

前記 C a s タンパク質が、配列番号 3～21、33～47、51～56、68～178、及び 274～283 のいずれか 1 つと少なくとも 80% の配列同一性を有するアミノ酸配列を有する、請求項 7 に記載の方法。

【請求項 10】

前記 C a s タンパク質が、配列番号 1～283 のいずれか 1 つと 80% の配列同一性を有するアミノ酸配列を有する、請求項 1 に記載の方法。

【請求項 11】

コラテラル切断活性を有する C a s タンパク質を利用する検出アッセイを実施する方法における、熱安定性コラテラル切断活性を有する C a s タンパク質を利用することを含む、改善。

【請求項 12】

前記 C a s タンパク質が C a s 12 タンパク質である、請求項 11 に記載の改善。

【請求項 13】

前記 C a s タンパク質が、配列番号 15 の配列と少なくとも 80% 同一であるアミノ酸配列を有する、請求項 12 に記載の改善。

【請求項 14】

前記 C a s タンパク質が、配列番号 3～21、33～47、51～56、68～178、及び 274～283 のいずれか 1 つと少なくとも 80% の配列同一性を有するアミノ酸配列を有する、請求項 12 に記載の改善。

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【請求項 15】

検出アッセイを実施する方法が単一の反応容器内で行われる、請求項 11 に記載の改善。

【請求項 16】

前記熱安定性コラテラル切断活性が約 60℃の温度以上で熱安定性である、請求項 11 に記載の改善。

【請求項 17】

前記熱安定性コラテラル切断活性が約 65℃の温度以上で熱安定性である、請求項 11 に記載の改善。

【請求項 18】

前記 Cas タンパク質が、配列番号 1～283 のいずれか 1 つと少なくとも 80% の配列同一性を有するアミノ酸配列を有する、請求項 11 に記載の改善。

【発明の詳細な説明】

【技術分野】

【0001】

関連出願に対する相互参照

本出願は、米国仮特許出願番号 62/966,527 (2020 年 1 月 27 日出願) ; 62/967,536 (2020 年 1 月 29 日出願) ; 62/970,159 (2020 年 2 月 4 日出願) ; 63/038,710 (2020 年 6 月 12 日出願) ; 63/139,267 (2021 年 1 月 19 日出願) のそれぞれに優先権を主張し、そのそれぞれの内容全体が参照により本明細書に組み込まれる。

【背景技術】

【0002】

種々のクラスター化調節性インタースペースドショートパリンドロームリピート (clustered regularly interspaced short palindromic repeat) - CRISPR 関連 (「Cas」) タンパク質は、目的の特定の核酸を検出する検出 (例えば、診断) システムで有用なコラテラル切断活性を有することが発見された。例えば、Sashital Genome Med 2018: 10, 32 による概説を参照のこと。

【先行技術文献】

【非特許文献】

【0003】

【非特許文献 1】 Sashital Genome Med 2018: 10, 32

【発明の概要】

【課題を解決するための手段】

【0004】

本開示は、Cas タンパク質コラテラル活性を利用する改善された検出 (例えば、診断) 技術を提供する。

とりわけ、本開示は、特定のコラテラル活性のアッセイにおける特定の Cas 酵素の使用にともなう問題の原因を特定する。例えば、本開示は、特定のそのようなアッセイが、高温での一定期間のインキュベーションを含むステップを含み、様々な Cas 酵素が、そのような条件下で十分なレベルの活性 (例えば、コラテラル活性) を維持するのに十分に安定ではあり得ないことを実証する。多くの実施形態では、そのようなステップは、核酸伸長及び／または増幅ステップであってもよいし、またはそれを含んでもよい。

【0005】

あるいはまたはさらに、本開示は、様々なコラテラル活性アッセイの特に望ましい実施形態が、単一の反応容器 (すなわち、いわゆる「ワンポット」) アッセイで実施され得る実施形態であるという洞察を提供する。本開示は、Cas 酵素であって、その活性 (例えば、コラテラル切断活性) が、任意のかつ全ての高温ステップ (複数可) (例えば、1 つ以上の核酸伸長及び／または増幅ステップ (複数可)) であってもよいし、またはそれらを

含んでもよい)を通して十分な活性を維持するのに十分に安定ではないC a s酵素は、このようなワンポットアッセイでは役に立たない場合があるということを認識する。本開示はさらに、特定のC a sタンパク質(複数可)(例えば、C a s 1 3及びC a s 1 2)が、関連する温度(複数可)、例えば、核酸伸長及び／または増幅反応が通常実行される温度(例えば、約60～65℃以上)で、十分に安定ではないことを実証する。

【0006】

本開示は、様々なC a sタンパク質(例えば、C a s 9)の熱安定性バリエーションが既に記載されているか、及び／またはそうでなければ公開されているという認識を包含する(例えば、Mougiakos et al. Nat Commun. 8:1647, 2017を参照のこと)。当業者は、熱安定性を達成するのに必須であり得るか、及び／または達成するのに十分であり得る配列変化及び／またはエレメントを評価するために、そのような熱安定性バリエーションに関連する非熱安定性ホモログ(例えば、オルソログ)と比較し得、そしてさらに他のホモログ(例えば、オルソログ)のそのような配列変化及び／またはエレメントを特定し得、及び／またはそれらをその中に導入し得る。さらに、当業者は、天然に存在する熱安定性C a sタンパク質の潜在的な供給源を周知している(例えば、海の通気孔などの高温条件下で生き残るか、またはそうでなければ好熱性である微生物において)。したがって、本開示を読めば、当業者は、本明細書に記載されているように使用するための適切な熱安定性C a sタンパク質を容易に特定及び／または開発し得る。

【0007】

いくつかの実施形態では、有用な熱安定性C a sタンパク質は、C a s 1 2またはC a s 1 3ホモログ(例えば、オルソログ)である。いくつかの実施形態では、有用な熱安定性C a sタンパク質とは、配列番号1～283のいずれか1つに対して80%、85%、90%、99%または100%の配列同一性を有するアミノ酸配列を含むC a s酵素である。

【0008】

あるいは、またはさらに、いくつかの実施形態では、有用な熱安定性C a sタンパク質は、約50℃を超える温度で；いくつかの実施形態では、約55℃、約56℃、約57℃、約58℃、約59℃、約60℃、約61℃、約62℃、約63℃、約64℃、約65℃、約66℃、約67℃、約68℃、約69℃、約70℃、約71℃、約72℃、約73℃、約74℃、約75℃、約76℃、約77℃、約78℃、約79℃、約80℃、約81℃、約82℃、約83℃、約84℃、約85℃、約86℃、約87℃、約88℃、約89℃、約90℃、約91℃、約92℃、約93℃、約94℃、約95℃、約96℃、約97℃、約98℃、約99℃、約100℃またはそれらの組み合わせからなる群より選択される温度を超える温度で、機能する(例えば、そのコラテラル切断活性が十分に機能する)。多くの実施形態では、有用な熱安定性C a sタンパク質は、約60℃を超える温度で機能する(例えば、そのコラテラル切断活性は十分に機能する)。

【0009】

いくつかの実施形態では、有用な熱安定性C a sタンパク質は、核酸伸長及び／または増幅反応(複数可)が行われる温度範囲内で機能する(例えば、そのコラテラル切断活性が十分に機能する)。当業者は、さまざまなそのような反応及びそれらが実施される温度範囲を周知しており、いくつかの実施形態では、そのような温度範囲は、約60℃、約61℃、約62℃、約63℃、約64℃、65℃、約66℃、約67℃、約68℃、約69℃、約70℃、約71℃、約72℃、約73℃、約74℃、約75℃、約76℃、約77℃、約78℃、約79℃、約80℃、約81℃、約82℃、約83℃、約84℃、約85℃、約86℃、約87℃、約88℃、約89℃、約90℃、約91℃、約92℃、約93℃、約94℃、約95℃、約96℃、約97℃、約98℃、約99℃、約100℃またはそれらの組み合わせからなる群より選択される温度以上であり得る。いくつかの実施形態では、温度範囲は、約60℃～約90℃であり得る。いくつかの実施形態では、温度範囲は、約60℃～約80℃であり得る。いくつかの実施形態では、温度範囲は、約60℃～約75℃であり得る。いくつかの実施形態では、温度範囲は、約65℃～約

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90℃であり得る。いくつかの実施形態では、温度範囲は、約60℃～約80℃であり得る。いくつかの実施形態では、温度範囲は、約60℃～約75℃であり得る。

【0010】

したがって、本明細書に記載されるように、いくつかの実施形態では、有用な熱安定性Casタンパク質は、Cas12またはCas13ホモログ（例えば、オルソログ）、例えば、約50℃を超える温度で、及びいくつかの実施形態では、約60℃を超える、例えば、約60～65℃内及び／またはそれを超える温度で熱安定性である配列番号1～283のいずれか1つに対して80%、85%、90%、99%または100%の配列同一性を有するアミノ酸配列を含むCas酵素である。当業者は、本開示を読めば、有用な熱安定性Casタンパク質がCas12（例えば、配列番号3～21、33～47、51～56、68～178、及び274～283、またはそれらのバリエーション、例えば、それに対して少なくとも90%、95%、99%以上のアミノ酸配列同一性を有する）、またはCas13（例えば、配列番号1～2、22～32、48～50、57～67、179～273、またはそれらのバリエーション、例えば、それに対して少なくとも90%、95%、99%以上のアミノ酸配列同一性を有する）であり、その活性（例えば、その標的結合及びコラテラル切断活性）が、例えば、本明細書に記載のアッセイ（例えば、いくつかの実施形態では、ワンポットアッセイ）で実施するために、60～65℃の範囲内の温度で十分に熱安定性であることを特に理解するであろう。例えば、いくつかの実施形態では、十分な熱安定性活性は、本明細書に記載の適切な参照熱安定性Casタンパク質（例えば、配列番号15）と合理的に匹敵している活性である（例えば、約25%内）。

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【0011】

いくつかの実施形態では、本開示は、以下のステップを含む検出方法を記載する：少なくとも60～65℃を超える温度で熱安定性であるコラテラル切断活性を有するCasタンパク質と、標的配列に相補的であるように選択または操作されたガイドRNAとを含むCRISPR-Cas複合体と、標的配列の核酸を潜在的に含む試料とを、接触するステップ。

【0012】

いくつかの実施形態では、この接触するステップは、CRISPR-Cas複合体及び試料を、Casタンパク質コラテラル活性による切断を受けやすいレポーターと接触させることを含む。いくつかの実施形態では、この接触するステップは、温度を超える期間にわたってインキュベートすることを含む。いくつかの実施形態では、検出方法は、試料中に存在する核酸を増幅するステップをさらに含む。いくつかの実施形態では、増幅するステップは、熱安定性核酸ポリメラーゼを利用する。いくつかの実施形態では、増幅及び接触するステップは、単一の容器内で実行される。

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【0013】

いくつかの実施形態では、Casタンパク質は、Cas12タンパク質である。いくつかの実施形態では、Casタンパク質は、配列番号15の配列と少なくとも80%同一であるアミノ酸配列を有する。いくつかの実施形態では、Casタンパク質は、配列番号3～21、33～47、51～56、68～178、及び274～283のいずれか1つと少なくとも80%の配列同一性を有するアミノ酸配列を有する。いくつかの実施形態では、Casタンパク質は、配列番号1～283のいずれか1つと80%の配列同一性を有するアミノ酸配列を有する。

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【0014】

いくつかの実施形態における、コラテラル切断活性を有するCasタンパク質を利用する検出アッセイを実施する方法での、熱安定性コラテラル切断活性を有するCasタンパク質を利用することを含む改善。いくつかの実施形態では、Casタンパク質は、Cas12タンパク質である。いくつかの実施形態では、Casタンパク質は、配列番号15の配列と少なくとも80%同一であるアミノ酸配列を有する。いくつかの実施形態では、Casタンパク質は、配列番号3～21、33～47、51～56、68～178、及び274～283のいずれか1つと少なくとも80%の配列同一性を有するアミノ酸配列を有

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する。いくつかの実施形態では、検出アッセイを実施する方法は、単一の反応容器内で実施される。いくつかの実施形態では、熱安定性コラテラル切断活性は、約 60℃の温度以上で熱安定性である。いくつかの実施形態では、熱安定性コラテラル切断活性は、約 65℃の温度以上で熱安定性である。いくつかの実施形態では、Cas タンパク質は、配列番号 1～283 のいずれか 1 つと少なくとも 80% の配列同一性を有するアミノ酸配列を有する。

【図面の簡単な説明】

【0015】

【図 1】図 1 A 及び図 1 B は、特定の Cas 13 タンパク質（複数可）は、関連する温度（複数可）、例えば、核酸伸長及び／または増幅反応が通常実行される温度（例えば、約 60～65℃以上）では、安定が十分でないという本開示によって提供される洞察を実証する。

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【0016】

【図 2】特定の Cas 12 タンパク質（複数可）は、関連する温度（複数可）、例えば、核酸伸長及び／または増幅反応が通常実行される温度（例えば、約 60～65℃以上）では、安定が十分でないという本開示によって提供される洞察を実証する。

【0017】

【図 3-1】図 3 A～3 C は、Tcc Cas 13 コラテラル活性の熱安定性を確認し、さらに実証する。

【図 3-2】図 3 A～3 C は、Tcc Cas 13 コラテラル活性の熱安定性を確認し、さらに実証する。

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【0018】

【図 4】熱安定性 Cas 酵素候補（例えば、Cas 12 及び Cas 13 酵素）の発見及びスクリーニングの例示的な方法を示す。

【0019】

【図 5】エンドポイントアッセイによる Cas 12 a 候補酵素の例示的な評価を示す。

【0020】

【図 6】速度論的アッセイによる Cas 12 a 候補酵素の例示的な評価を示す。

【0021】

【図 7】エンドポイント及び速度論的アッセイによる 58℃での候補酵素の例示的な評価を示す。

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【0022】

【図 8】エンドポイント及び速度論的アッセイによる 60℃での候補酵素の例示的な評価を示す。

【0023】

【図 9】エンドポイント及び速度論的アッセイによる 62℃での候補酵素の例示的な評価を示す。

【0024】

【図 10】精製された 4 つの候補酵素の例示的な評価を示しており、さまざまな温度（例えば、約 35℃～約 65℃）で活性が測定された。

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【0025】

【図 11】58℃と 70℃の両方で鑄型対照を使用しない場合と比較した、3 つの異なるガイドおよび標的のセットを使用した酵素候補のサブセットの例示的な特性評価を示す。

【0026】

【図 12】52℃及び 58℃の両方で複数のガイド／標的の対を有する Cas 12 候補酵素の例示的な特性評価を示す。

【0027】

【図 13】52℃で活性を示す Cas 12 a 候補酵素である RS 62 の速度論的アッセイを実証する。

【0028】

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【図 1 4】37℃及び52℃の両方でのエンドポイントアッセイによる Cas 13 候補酵素の特性評価を示す。

【0029】

【図 1 5】増幅には熱安定性無機ピロホスファターゼ (TIPP) を必要とする、熱安定性 Cas 12 a 酵素である RS 9 の例を示す。ORF 1 a b 増幅のリアルタイム検出は、ORF 1 a b の開始濃度の範囲 (4.5 コピー/μL ~ 4,500 コピー/μL、TIPP の有無) にまたがって完了した。

【0030】

【図 1 6】熱安定性 Cas 12 a 酵素の例である RS 9 がその標的に特異的であり、増幅に TIPP を必要とすることを実証する。増幅は 4,500 コピー/ORF 1 a b 鋳型 (μL) の開始濃度で、また ORF 1 a b に固有のプライマー及びガイド、または ORF 1 a b ガイドを使用した非標的化プライマーで実施した。各反応条件は、TIPP の有無のもとでも実施した。

【0031】

【図 1 7】コラテラル切断活性を呈する、熱安定性 Cas 12 a 酵素である RS 9 の例を実証している。

【0032】

【図 1 8 - 1】公知の Cas 12 a、Lba Cas 12 a と比較した RS 9 コラテラル切断活性を実証する。

【図 1 8 - 2】公知の Cas 12 a、Lba Cas 12 a と比較した RS 9 コラテラル切断活性を実証する。

【0033】

【図 1 9】例示的な熱安定性 Cas 13 a 酵素である Tcc Cas 13 a の特性評価を実証する。Tcc Cas 13 a 活性の最適温度は、ある温度範囲にまたがる Cas 反応を使用して決定した。温度プロファイルは、Tcc Cas 13 a が約 62℃で最高の活性を示すことを示唆している。

【0034】

【図 2 0】Tcc Cas 13 a は RNA によって活性化され得るが、ssDNA の濃度が最も高い場合でも ssDNA によって活性化できないことが実証されている。

【0035】

【図 2 1】Tcc Cas 13 a の活性化には、Lwa Cas 13 ssDNA の活性化で観察されたものと同様に、RNA よりも高濃度の ssDNA が必要であることが示される。Tcc Cas 13 a は、対照と比較して、どの濃度 (10 nM、100 nM、または 1,000 nM) でも ssDNA * によって活性化されなかった。

【0036】

【図 2 2】Tcc Cas 13 a が「UU」部位と比較して「NN」部位でのコラテラル活性の増加を示しているのに対し、Lwa Cas 13 a は「UU」部位と比較して「NN」部位のコラテラル活性の優先度を示していないことが実証される。

【0037】

【図 2 3】候補の熱安定性 Cas 酵素、Pal 1、Pal 2 低 MW、Pal 2 高 MW、及び Pal 3 の特性評価の例を実証する。

【0038】

【図 2 4】56℃での Pal 1 及び Pal 2 の活性の例を実証する。

【0039】

【図 2 5】37℃、56℃、及び 70℃での Pal 1 の例示的な活性をさまざまな例示的なガイドで実証する。

【0040】

【図 2 6】対照と比較した 56℃及び 70℃での Pal 1 の例示的な活性を実証する。これらのデータは、Pal 1 の活性が標的 DNA に特異的であることを示唆する。

【0041】

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【図 27】 P a l 1 の例示的な温度プロファイルを実証する。

【0042】

【図 28】 37℃、56℃、及び70℃での P a l 2 高 MW の例示的な活性をさまざまな例示的なガイドで実証する。

【0043】

【図 29】 対照と比較した56℃での P a l 2 高 MW の例示的な活性を実証する。これらのデータは、P a l 2 高 MW の活性が標的 DNA に特異的であることを示唆する。

【0044】

【図 30】 P a l 2 高 MW の例示的な温度プロファイルを実証する。

【発明を実施するための形態】

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【0045】

特定の実施形態の詳細な説明

コラテラル活性アッセイ

当業者は、C a s タンパク質コラテラル活性を使用して開発されてきており、かつ開発中である有用な検出（例えば、診断）アッセイの急増している過剰を周知である。例えば、S a s h i t a l G e n o m e M e d 2018:10,32を参照のこと。さらに、当業者は、C a s タンパク質のコラテラル活性に基づく「C R I S P R / C a s バイオセンシングシステムの詳細な分類（detailed classification of C R I S P R / C a s biosensing systems）」が最近公開されたことを周知している。L i e t a l T r e n d s B i o t e c h n o l . 37:730, July 2019による概説を参照のこと。

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【0046】

特に興味深いフォーマットとしては、「S H E R L O C K」及び／または「H U D S O N」システムと呼ばれるシステムを含む、C a s 13ベース（例えば、C a s 13a-ベースまたはC a s 13b-ベースなど）のシステムが挙げられ（例えば、G o o t e n b e r g e t a l , S c i e n c e 356:438, 2017; G o o t e n b e r g e t a l , S c i e n c e 360:339, 2018; M y h r v o l d e t a l . , S c i e n c e 360:444, 2018を参照のこと；米国特許第10266887号も参照のこと）及びC a s 12ベース（例えば、C a s 12a-ベースまたはC a s 12b-ベースなど）のシステム（「H O L M E S」または「D E T E C T R」システムとしての言及を含む）（例えば、C h e n g e t a l . C N 特許出願CN107488710A; P C T / C N 18 / 82769及び米国16 / 631, 157; L i e t a l . C e l l D i s c . 4:20, 2018; C h e n e t a l . S c i e n c e 360:436, 2018; L i , L . e t a l . b i o R x i v 2018年7月26日オンライン公開. <http://dx.doi.org/10.1101/362889>；米国特許第10253365号を参照のこと）が挙げられる。C a s 13aとC a s 13bの両方の酵素とも、S H E R L O C K及び／またはH U D S O Nシステムで；同様に、C a s 12aとC a s 12bの両方で使用されている。

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【0047】

当技術分野で公知であり、本明細書で引用された参考文献に記載されているように、C a s タンパク質コラテラル切断活性を利用する典型的な検出アッセイは、コラテラル活性を有するC a s タンパク質及び目的の標的配列に相補的なガイドRNAを含む、適切なC R I S P R - C a s 複合体と、標的配列を含み得る試料とを接触することを含む。標的配列が認識されると、C a s タンパク質のコラテラル活性が活性化され、その結果、無関係の核酸（酵素に応じてDNAもしくはRNA、またはその両方）が切断される。関連する切断可能な核酸のレポーターが提供され、適切に構成され（例えば、標識され）、その結果、活性化されたコラテラル活性の結果としてのその切断が検出可能である（例えば、蛍光が検出可能になるように、蛍光色素をクエンチャーから分離するなど）。

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【0048】

多くのアッセイでは、標的配列が生成され及び／または増幅される（例えば、RNAが

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らDNAにコピーされ及び／または 例えば、プライマー伸長、DNA複製（例えば、ポリメラーゼ連鎖反応による）及び／または転写によって増幅される）。例えば、上記のLi Review (Li et al Trends Biotechnol , 37: 730, July 2019) の図3及び4を参照のこと。

【0049】

したがって、多くの実施形態では、コラテラル活性アッセイは、（１）標的コピー及び／または増幅；（２）標的結合；ならびに（３）シグナル放出及び／または検出のステップを含む。

【0050】

通常、本明細書に記載されているコラテラル活性アッセイは、インビトロアッセイである。いくつかの実施形態では、それらは無細胞アッセイであってもよい（例えば、インタクトな細胞、またはいくつかの実施形態では、細胞断片を実質的に含まない場合がある）。

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【0051】

いくつかの実施形態では、本明細書に記載のコラテラル活性アッセイは、生物学的（例えば、血液、唾液、涙、尿など）または環境（例えば、土壌、水など）の一次試料であるかまたはそれらから調製される試料に対して行う。

熱安定性Cas酵素

【0052】

本明細書に記載されるように、本開示は、コラテラル活性を有する特定のCasタンパク質が関連する温度で（例えば、核酸の伸長及び／または増幅が行われる温度で）安定性が不十分であるという点で、上記のようにCasタンパク質コラテラル活性を利用する特定の検出（例えば、診断アッセイ）を用いて問題の原因を特定する。追加して、本開示はさらに驚くべきことに、いくつかのタンパク質について、温度上昇による活性の喪失が不可逆的であり得ることを実証している。この現実によって、熱安定性コラテラル活性を有するCasタンパク質が本明細書に記載のアッセイでの使用に特に望ましいという、本開示によって提供される洞察の重要性が高まる。図1と図2は、これらの調査結果を実証する。

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【0053】

したがって、本開示は、Casタンパク質コラテラル活性を利用する改善された検出（例えば、診断）アッセイを提供し、改善されたアッセイは、本明細書に記載されるように、熱安定性Casタンパク質（例えば、そのコラテラル活性が熱安定性である）を利用する。

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【0054】

いくつかの実施形態では、核酸検出及び標的結合のステップは、単一の容器内で実行される。いくつかの実施形態では、標的結合シグナル放出というステップは、単一の容器内で実行される。いくつかの実施形態では、（１）標的コピー及び／または増幅；（２）標的結合；ならびに（３）シグナル放出及び／または検出のステップというステップは単一の容器で実行される。いくつかの実施形態では、全てのステップは、単一の容器内で実行される—すなわち、改善されたアッセイがワンポットアッセイであるという条件で。

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【0055】

いくつかの実施形態では、本明細書に記載されるような改善されたコラテラル活性アッセイは、インビトロアッセイである。いくつかの実施形態では、それらは無細胞アッセイであってもよい（例えば、インタクトな細胞も、またはいくつかの実施形態では、細胞断片も実質的に含まない場合がある）。

【0056】

いくつかの実施形態では、本明細書に記載の改善されたコラテラル活性アッセイは、生物学的（例えば、血液、唾液、涙、尿など）または環境（例えば、土壌、水など）の一次試料であるかまたはそれらから調製される試料に対して行う。

【0057】

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いくつかの実施形態では、熱安定性コラテラル切断活性を有する Cas 酵素は、実証可能なコラテラル切断活性を有さないか、または実証可能なコラテラル切断活性を有するが、本明細書に記載されるような関連温度を超えるそのような活性を失う Cas 酵素のホモログ（例えば、オルソログ）である。

【0058】

いくつかの実施形態では、本明細書に記載されるような熱安定性コラテラル切断活性を有する Cas 酵素は、Cas 12（例えば、Cas 12a または Cas 12b）酵素である。いくつかの実施形態では、本明細書に記載されるような熱安定性コラテラル切断活性を有する Cas 酵素は、Cas 13（例えば、Cas 13a または Cas 13b）酵素である。

【0059】

いくつかの実施形態では、本明細書に記載されるような熱安定性コラテラル切断活性を有する Cas 酵素は、配列番号 1～283 のいずれか 1 つに対して 80 %、85 %、90 %、99 % または 100 % の配列同一性を有するアミノ酸配列を含む Cas 酵素である。いくつかの実施形態では、本明細書に記載されるような改善されたコラテラル活性アッセイは、配列番号 1～283 のいずれか 1 つに対して 80 %、85 %、90 %、99 % または 100 % の配列同一性を有するアミノ酸配列を含む Cas 酵素を使用して実施される。

【0060】

標的核酸

当業者は、本明細書で提供される技術が、例えば、感染性因子（例えば、ウイルス、微生物、寄生虫など）由来の核酸、特定の生理学的状態または状態（例えば、がんまたは炎症性もしくは代謝性疾患、障害または状態などの疾患、障害または状態の存在または状態など）の指標である核酸、出生前の核酸などを含む広範囲の核酸の検出を達成するために広く適用可能であることを直ちに理解するであろう。

【0061】

いくつかの実施形態では、標的核酸は、本明細書に記載されるような Cas 酵素及び cRNA を含むアッセイによって検出される。いくつかの実施形態では、cRNA の構造は、Cas / cRNA 複合体の活性に影響し得る。いくつかの実施形態では、Cas / cRNA 複合体の構造は、Cas コラテラル活性の熱安定性に寄与する。

【0062】

通常、提供された技術は、試料中の 1 つ以上の標的核酸の存在及び／またはレベルを評価するために 1 つ以上の試料に適用される。いくつかの実施形態では、試料は生物学的試料である。いくつかの実施形態では、試料は環境試料である。いくつかの実施形態では、試料は、粗試料（例えば、一次試料または最小限の処理を受けた試料）である。

【0063】

いくつかの実施形態では、試料が処理される（例えば、核酸は、一次試料から部分的または実質的に単離または精製される）。いくつかの実施形態では、最小限の処理のみが実行されている（すなわち、試料は粗試料である）。

【実施例】

【0064】

実施例 1：LwaCas13a の温度プロファイル

LwaCas13a の熱安定性を試験した。簡単に説明すると、標識された RNA 標的を Rnase 阻害剤；T7 RNA ポリメラーゼ、LwaCas13a、MgCl₂ 及び cRNA とインキュベートした。個々の試料をさまざまな温度でインキュベートして、コラテラル活性を測定した。

【0065】

図 1A は、LwaCas13a コラテラル活性の温度プロファイルを示している。理解されたとおり、45℃超で低い活性が観察された；活性は約 55℃で完全に無効にされた。

【0066】

さらに、図1Bは、高温でのLwaCas13aの損失の可逆性を試験した結果を示す。LwaCas13aを65℃で5分間インキュベートし（「熱パルス」）、一方で対照群（「熱パルスなし」）を室温でインキュベートした。次に、両方の酵素の活性を37℃で試験した。熱パルス群は活性を示さない。この現実によって、熱安定性コラテラル活性を有するCasタンパク質が本明細書に記載のアッセイでの使用に特に望ましいという、本開示によって提供される洞察の重要性が高まる。

【0067】

実施例2：AsCas12a及びLbCas12aの温度プロファイル

AsCas12a及びLbCas12aの熱安定性を試験した。簡単に説明すると、標識されたRNA標的をRnase阻害剤；T7 RNAポリメラーゼ、AsCas12aまたはLbCas12a、MgCl₂及びcRNAとインキュベートした。個々の試料をさまざまな温度でインキュベートして、コラテラル活性を測定した。

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【0068】

図2は、AsCas12aとLbCas12aの温度プロファイルを示す。理解されるところとおり、55℃を超える温度では低いAsCas12a活性が観察される。AsCas12aは、60℃で約5分、活性を維持する。AsCas12aは65℃で数分間、10%未満の活性を有する。さらに、LbCas12a活性は、55℃を超える温度で大幅に低下する。

【0069】

実施例3：例示的な熱安定性Cas候補

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本実施例は、本明細書に記載されるように、改善されたコラテラル活性アッセイで使用するための特定の熱安定性Cas13候補を記載する。

【0070】

本実施例では、とりわけ、LAMP増幅を用いたワンポットアッセイにおいて、約62～約68℃の温度範囲内で熱安定性のコラテラル活性を有するCas13が特に望ましいと決定された。

【0071】

熱安定性の可能性のあるCas候補の計算検索を実行し、以下を特定した：

・2つのCas13a候補：

TccCas13a (Thermoclostridium caenicola)

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【0072】

TccCas13aで使用するための例示的な配列には、限定するものではないが、以下が含まれる：

Ag t g t c t t t g c a g g a a a g a a c a c a g a t c t t g a g g g t c a c a
a c t c c c a t g t a g g c g g a g a c t g c a a c c c c t a t a g t g a g t c
g t a t t a a t t t c (配列番号284) (フォワード DR crRNAs)

a g t g t c t t t g c a g g a a a g a a c a c a g a t c t t g a g g g t t g c a
g t c t c c g c c t a c a t g g g a g t t g t g a c c c c t a t a g t g a g t c
g t a t t a a t t t c (配列番号285) (リバース相補体 DR crRNAs)；

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ThpCas13a (Thalassospira profundimaris)

【0073】

ThpCas13aで使用するための例示的な配列には、限定するものではないが、以下が含まれる：

T c t t t g c a g g a a a g a a c a c a g a t c t t g a g g g g t g t a g t t c
c c c t c a a t t t g g g g a t g a a c g t c g a c c c c t a t a g t g a g t c
g t a t t a a t t t c (配列番号286) (フォワード DR crRNAs)；及び
t c t t t g c a g g a a a g a a c a c a g a t c t t g a g g g t c g a c g t t c
a t c c c c a a a t t g a g g g g a a c t a c a c c c c c t a t a g t g a g t c
g t a t t a a t t t c (配列番号287) (リバース相補体 DR crRNAs)；

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- ・ 4つのCas12b候補：
- ・ AacCas12b (Alicyclobacillus acidoterrestris)
- ・ AkCas12b (Alicyclobacillus kakegawensis)
- ・ BhCas12b (Bacillus hisashii)
- ・ LsCas12b (Laceyella sediminis)

【0074】

AacCas12bで使用するための例示的な配列には、限定するものではないが、以下が含まれる：

ttgtgagcggataaacaacagggtgccacttctcagatttgaggagctcaacgggctttgccaccctggaaagtggccattggcacaccggttgaaaaattctgtcctctagaccctatatagtgagtcgtatttaatttc (配列番号288) (crRNA)

【0075】

AkCas12bで使用するための例示的な配列には、限定するものではないが、以下が含まれる：

Ttccggctcgtatgttgtgtggaaattgtgagcggagtgccacttctcagaccgctcggccctatatagtgagtcgtatttaatttc (配列番号289) (crRNA)；及び

cgagcgggtcatcttgaaagccaacgggggtgttttgctcttggaagagcacattggcaccttcccggtgtcctcgccgtcctatagacgacccctatatagtgagtcgtatttaatttc (配列番号290) (tracrRNA)

【0076】

BhCas12bで使用するための例示的な配列には、限定するものではないが、以下が含まれる：

aatgtgtgagcggataaacaacagggtgctaattgccctccccctatatagtgagtcgtatttaatttc (配列番号291) (crRNA)；及び

gagacatcgtccagcaataggagtttctcacacccttgacgacattatagctagacgggttggtcctgaccaaagacagaacccctatagtgagtcgtatttaatttc (配列番号292) (tracrRNA)

【0077】

LsCas12bで使用するための例示的な配列には、限定するものではないが、以下が含まれる：

Atggtcatagctgttttcctgtgttttatccgctcagtgctaatcacattttaatttcattaccctatatagtgagtcgtatttaatttc (配列番号293) (crRNA)；及び

Gataaataaatgtaattcctgtgggttgaaatggatttttttccattccttagcacacgcacagtaattcttttgcccttttagggcaaaccttatagtgagtcgtatttaatttc (配列番号294) (tracrRNA)。

【0078】

熱安定性コラテラル活性を有するCasタンパク質の例示的な配列には、表1に記載されている配列が挙げられる：

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【表 1 - 1】

表 1 : 熱安定性コラテラル活性を有する Cas タンパク質の例示的な配列

配列 番号	Cas 酵素	推定配列
1	TccCas13a (<i>Thermoclostridium caenicola</i>)	MKITKRKWGEHHPPPLYFYRDEDESGRLLAQNDRKQDYDTLFDIAQDTFERSLRNRLKTPEKGDGRFYSNEIVKLVEKLCQGA DVAEIMKSMERNEKLRPKNEKEIKNLKKQLDGTLSYEGKRYTAPEGAMTLNDALFYLVGNPLKQAMAKAELGKIREALIKEENRINRVRYSIKNNKIPLRIQEDGGITPNNDRAAWLLGLMKPAD PAKGITDCYPLLGELEEVDFFDKLSKTLHEKISRCQGRPRSIAMAVDEALKQYLRELWEKSPSRQQDLKYFYFQAVQEYFKDNFPIRTKRMGARLRQELLKDKTSLSRLLLEPKHMANAVRRRLINQSTQ MHILYGKLYAYCCGEDGRLLVNSETLQRIQVHEAVKKQAMTAVLWSISRLRYFYQFEDGDILSNKNPIKDFRDKFLRDTNKYTH EDVEACKEKLQDFFPLKELQEKIKEDAKGLQETDNKQADTTDFKAIGHIVRDDRKLCLNQLLAECVSCIGELRHHIFHYKNVTLIQALKRIADKVKPEDLSVLRAIYLLDRRNLLKAKAFKRISSMNPLLYREDLLSRIFKKEGTAFFLYSAKIQMTPSFQRVYERGKNLRRE FECERMKAEEASNGQNGQDGDRLKWFRQLAAGDSADTHFNWAVEAYAESAADVENNVEFDTDVDAQRALRNLLLLIYRHHFLPEVQKDETLVTGKIHKVLERNRQLSEGQGNQGKAHGYSVIEELYHEGMPLSDLMKQLQRRISETERESRELAQEKTDYAQRFILEFAEAFNDFLEAHYGEEYLEIMSPRKDAEAAKKWVKESKTVD LKTSIDEKEPEGHLLVLYPVLRLDERELGELQQQMIRYRTSLASWQGESNFSEEIRIAGQIEELTELVKLTEPEPQFAEEVWGKRAKEAFEDFIEGNMKNYEAFYLQSDNNTPVYRRNMSRLLRSGLMGVYQKVLASHKQALKRDYLLWSEKHWNVVDENGADISSAEQAQCLLQRLHRKYAESPSRFTEEDCKLYEKVLRRLLEDYNQAVKNLSFSSLYEICVLNLEILSRWVGQVQDWERDMYFLLAWVRQ GKLDGIKEEDVRDIFSEGNIIRNLVDTLKGENMNAFESVYFPENKGSKYLGVVRNDVAHLDLMRKNGWRLEAGKTCVSMEDYINRLRFLLSYDQKRMNAVTKTLQQIFDRHKVKIRFTVEKGGMLKIEDVTADKIVHLKGSRLSGIEIPSHGERFIDTLKALMVYPRG*

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【表 1 - 2】

2	ThpCas13a (<i>Thalassospira profundimaris</i>)	MRIIKPYGRSHVEGVATEQPRRKLRLNTRPDISRDIPGFAQSHD ALIIAQWISAIDKIATKPKPDQKPTQRQMNLRTTLGDAAWQHL MAKNLLPAAKDPAIREKLHLIWQSKIAPWGASRPQEEKRGKP TPKGGWYERFCGALSPEAITQNVARQIAKDIYDHLVYAAKRK GREPVKQGESSNKP GKFKPDRKLSLIEERAESIAKNALRPGTH APCPWGGQDDQAIYEQAGDVATKIYDDARDYLEDKKRRSGNR NTSSVQYLPRDLAVKILYAQYGRVFGPDTTIKAALDEQQSLFA LHTAIKDCYHRLVNDARKRHILRILPRNMAALFRLVRAQYDN RDINALIRLGKVIHYHAGEQKGDEHHGIRDYWPSQQDIQNSRF WGSDGQADIKRHEAFSRIWRHIIALASRTLHDWADPDSQKFT GDDDDILMRAGAIESNVWDAGRYERKCDVLFGAQASLFCGA EDFEKATLKQAITGTGNLRNATFHFKGKARFENELQRLADDV PVDVQSAIAALWQKDAEGRTRQIAETLQAVLAGHFLSERQNR HILATLMAAMAQPGDVPLPRLRRVLARHDSICQRGRILPLPPC PDRAKLEESPALTCQYTVLKMLYDGPFWLAQQNSTILNHY IDSTIARTNKA AQDMNGRKLAPA EKDLITARAADIPRLSVDEK MVDFLGRLTAATATEMRVQRGYQSDGEKAQKQAGYIGEFEC DVIARAFSDFLGQSGFDFVLKLKADTPKPDAAQCDVAALIAPG DVPALTPQAWQQVLYFILHLVPVDDASRL LHQTRKWQALEK KGKDKEVKKEKDKEVKKEDEKPDIALDQSVLMYLDMHDA KFTGGAALHGIEKFAEFFVEKADFRVFPQSLQDQDRSIPRR GLREIVRFGHLPLLQHMSGTVKITHDNVVAWQTARTPDATGT SPIARRQKQREELHALAVERPARFRNADLHNYMHALVDVIKH RQLSAQVTLSDQVRLHRLMMGVLGRLVDYAGLWERDLYFVL LALLYHHGVTPDDVLKGQGKRKLADGQVVEALKPKNRKAA APVGVFDDLDHYGIYQDDRQSIRNGLSHFNMLRGGTAPDL SH WVNQTRRLVAHDRKCLKNAVAKSVIEMLA REGFDLDWTIEPD SGKHILRHGKIRTRQAQHFQKSRIRIEKKSAKPKNDTVKIREN LHGDAMVERVARLFAARAQKYRDITTEKRLDHLFLKPKG*
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【表 1 - 3】

3	AacCas12b (Alicyclobacillus acidoterrestris)	MAVKSIVKLRLLDDMPEIRAGLWKLHKEVNAGVRYYTEWLS LLRQENLYRRSPNGDGEQECDKTAEECKAELLERLRARQVEN GHRGPAGSDDELLQLARQLYELLVPQAIGAKGDAQQIARKFL SPLADKDAVGGLGIAKAGNKPRWVRMREAGEPGWEEKEKA ETRKSADRTADVLRALADFGLKPLMRVYTDSEMSSVEWKPL RKGQAVRTWDRDMFQQAIERMMSWESWNQRVGQEYAKLV EQKNRFEQKNFVGQEHVHLVNQLQQDMKEASPGLESKEQT AHYVTGRALRGSDKVFEKWGKLAPDAPFDLYDAEIKNVQRR NTRRFGSHDLFAKLAPEYQALWREDASFLTRYAVYNSILRK LNHAKMFATFTLPDATAHPIWTRFDKLGGNLHQYTFLNEFG ERRHAIRFHKLLKVENGVAAREVDDVTVPISMSEQLDNLLPRDP NEPIALYFRDYGAEQHFTGEFGGAKIQCRDQLAHMHRRRGA RDVYLVNSVRVQSQSEARGERRPPYAAVFRLVGDNHRADFVHF DKLSDYLAEHPDDGKLGSEGLLSGLRVMSVDLGLRTSASISVF RVARKDELKPNKGRVPFFFPIKGNDNLVAVHERSQLKLPG TESKDLRAIREERQRTLRLQLRTQLAYLRLLVRCGSEDVGRER SWAKLIEQPVDAANHMTDPDWREAFENELQKLKSLHGICSDKE WMDAVYESVRRVWRHMGKQVRDWRKDVRSGERP KIRGYA KDVVGGNSIEQIEYLERQYKFLKSWSFVGKVSGQVIRAEKGS FAITLREHIDHAKEDRLKKLADRIIMEALGYVYALDERGK GK WVAKYPPCQLILLEELSEYQFNNDRPPSENQMLMQWSHRGVF QELINQAQVHDLLVGTMYAAFSSRFDARTGAPGIRCRRV PAR CTQEHNPFPFWWL NKFVVEHTLDACPLRADDLIPTGEGEIFV SPFSAEEGDFHQIHADLNAAQNLQQRLWSDFDISQIRLRCDWG EVDGELVLIPRLTGKRTADSYSNKVFTNTGVTTYERER GKK RRKVFAQEKLSEEEAELLVEADEAREKSVVLMRDPSGIINRGN WTRQKEFWSMVNQRIEGLVKQIRSRVPLQDSACENTGDI
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【表 1 - 4】

4	AkCas12b (Alicyclobacillus kakegawensis)	MAVKSIVKLRLSECPDILAGMWQLHRATNAGVRYYTEWVS LMRQEILYSRGPDGGQCCYMTAEDCQRELLRRLNRQLHNG RQDQPGTDADLLAISRRLYEILVLQSIGKRGDAQQIASSFLSPL VDPNSKGGGRGEAKSGRKPAWQKMRDQGDPRWVAAREKYEQ RKAVDPSKEILNSLDALGLRPLFAVFTETYSRSGVDWKPLGKSQ GVRTWDRDMFQQALERLMSWESWNRRVGEERYARLFQQKMK FEQEHFAEQSHLVKLARALEADMRAASQGFEAKRGTAHQITR RALRGADRVFEIWKSIPEEALFSQYDEVIRQVQAEKRRDFGSH DLFAKLAEPKYQPLWRADETFLTRYALYNGVLRDLEKARQFA TFTLPDACVNPIWTRFESSQGSNLHKYEFLFDHLGPGRHAVRF QRLLVVESEGAKERDSVVVPVAPSGQLDKLVLREEEKSSVAL HLHDTARPDGFMAEWAGAKLQYERSTLARKARRDKQGMRS WRRQPSMLMSAAQMLEDAKQAGDVYLNISVRVKSPSEVRGQ RRPPYAALFRIDDKQRRVTNYNKLSAYLEEHPDKQIPGAPGL LSGLRVMSVDLGLRTSASISVFRVAKKEEVEALGDGRPPHYYP IHGTDDLVAVHERSHLIQMPGETETKQLRKLREERQAVLRPLF AQLALLRLLVRCGAADERIRTRSWQRLTKQGREFTKRLTPSW REALELELTRLEAYCGRVPDDEWSRIVDRTVIALWRRMGKQV RDWRKQVKSGAKVKVKGQYQLDVVGGNSLAQIDYLEQQYKF LRRWSFFARASGLVVRADRESHFAVALRQHIEENAKRDRLKKL ADRILMEALGYVYEASGPREGQWTAQHPPCQLIILEELSAYRF SDDRPPSENSKLMAGWHRGILEELVNQAQVHDLVGVTVYAA FSSRFDARTGAPGVRCRRVPARFVGATVDDSLPLWLTEFLDK HRLDKNLLRPDDVIPTGEGEFLVSPCGEEAARVRQVHADINAA QNLQRRLWQNFIDITELRLRCDVKMGEGTVLVPRVNNARAK QLFGKKVLVSQDGVTFERSQTGGKPHSEKQTDLTDKLELIA EADDEARAKSVVLFDRDPSGHIGKGHWIRQREFWSLVKQRIESHT AERIRVRGVGSSLD
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【表 1 - 5】

5	BhCas12b (<i>Bacillus hisashii</i>)	MATRSFILKIEPNEEVKKGLWKTHEVLNHGIAYYMNILKLIRQ EAIYEHHEQDPKNPKKVSKEIQAE LWDFVLKMQKCNSFTHE VDKDEVFNILRELYEELVPSSVEKKGEANQLSNKFLYPLVDPN SQSGKGTASSGRKPRWYNLKIAGDPSWEEKKKWEEDKKKD PLAKILGKLAEYGLIPLFIPYTDSEPIVKEIKWMEKSRNQSVR RLDKDMFIQALERFLSWESWNLKVKEEYKVEKEYKTLEERI KEDIQALKALEQYEKERQEQLLRDTLNTNEYRLSKRGLRGWR EIIQKWLKMDENEPSEKYLEVFKDYQRKHPREAGDYSVYEFL SKKENHFIWRNHPEYPYLYATFCEIDKKKKDAKQQATFTLAD PINHPLWVRFEERSGSNLNKYRILTEQLHTEKLKKKLTQVQDR LIYPTESGGWEEKGKVDIVLLPSRQFYNQIFLDIEEKGKHAFTY KDESIKFPLKGTGGARVQFDRDHLRRYPHKVESGNVGRIFYN MTVNIEPTESPVSKSLKIHRDDFPKVVNFKPKELTEWIKDSKG KKLKSIGLESLEIGLRVMSIDLGQRQAAAASIFEVVDQKPDIEGK LFFPIKGTELYAVHRASFNIKLPGETLVKSREVLKAREDNLKL MNQKLNFLRNVLHFQQFEDITEREKRVTKWISRQENS DVPLV YQDELIQIRELMYKPYKDWVAFLLKQLHKLREVEIGKEVKHWR KSLSDGRKGLYGISLKNIDEIDRTRKFLLRWSLRPTEPGEVRR EPGQRFADQLNHLNALKEDRLKKMANTIMHALGYCYDVRR KKWQAKNPACQIILFEDLSNYPYEERSRFENSKLMKWSRREI PRQVALQGEIYGLQVGEVGAQFSSRFHAKTGSPGIRCSVVTKE KLQDNRRFFKNLQREGRLTLDKIAVLKEGDLYPDKGGGEKFISLS KDRKCVTTHADINAAQNQLQKRFWTRTHGFYKVYCKAYQVD GQTVYIPESKDQKQKIIEFGEYFILKDGVEYEWVNAGKLIK KGSSKQSSSELVDSILKDSFDLASELKGEKLMLYRDPGSGNVF PSDKWMAAGVFFGKLERILISKLTNQYSISTIEDDSSKQSM
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【表 1 - 6】

6	LsCas12b (Laceyella sediminis)	MSIRSFKLKIKTSGVNAEELRRGLWRTHQLINDGIAYYMNW LVLLRQEDLFIENEETNEIEKRSKEEIQGELLERVHKQQQRNQ WSGEVDDQTLLQTLRHLYEEIVPSVIGKSGNASLKARFFLGPL VDPNNKTTKDVSKSGPTPKWKKMKDAGDPNWVQEYEKYMA ERQTLVRLEEMGLIPLFPMYTDEVGDIHWLPQASGYTRTWDR DMFQQAIERLLSWESWNRRVRERRAQFEKKTHDFASRFSESD VQWMNKLREYEAQQEKSLEENAFAPNEPYALTKKALRGWER VYHSWMRLDSAASEEAYWQEVATCQTAMRGEFGDPAIYQFL AQKENHDIWRGYPERVIDFAELNHLQRELRRAKEDATFTLPDS VDHPLWVRYEAPGGTNIHGYDLVQDTKRNLTLILDKFILPDEN GSWHEVKKVPFSLAKSKQFHRQVWLQEEQKQKKREVVFYDY STNLPHLGTLAGAKLQWDRNFLNKRTQQQIEETGEIGKVFFNI SVDVRPAVEVKNGRLQNGLGKALTVLTHPDGTKIVTGWKA QLEKWVGESGRVSSLGLDSLSEGLRVMSIDLGQRTSATVSVFE ITKEAPDNPYKFFYQLEGTELFVHQRSFLLALPGENPPQKIKQ MREIRWKERNRIKQQVDQLSAILRLHKKVNEDERIQAIDKLLQ KVASWQLNEEIATAWNQALSQLYSKAKENDLQWNQAIKNAH HQLEPVVGKQISLWRKDLSTGRQGIAGLSLWSIEELEATKKLL TRWSKRSREPGVVKRIERFETFAKQIQHHINQVKENRLKQLAN LIVMTALGYKYDQEQKKWIEVYPACQVVLFFENLRSYRFSYER SRRENKKLMEWSHR SIPKL VQM QGELFGLQVADVYAAYSSR YHGRTGAPGIRCHALTEADLRNETNIIHELIEAGFIKEEHRPYL QQGDLVPWSGGELFATLQKPYDNPRILTLHADINAAQNIQKRF WHPSMWFRVNCESVMEGEIVTYVPKNKT VHKKQ GKTF RFVK VEGSDVYEWAKWSKNRNKNTFSSITERKPPSSMILFRDPSGTF FKEQEWVEQKTFWGKVQSMIQA YMKKTIVQRMEE
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【表 1 - 7】

7	Cas12	MFKKKLFDDDEEFISLAQNQEESNALNAFKGFTTHFKDFQENRK NMYSEDKESTAIAIYRIIHENLPVFITNNIRFEKIINELDRSNIHSIE KELKEELANNKLKDIFNIEYFQNTLTQNDITRYNTIIGGKVKAD GKKVQGLNEYINLNFQHNKDKKLPLLKPLYKQILSEENSASFI VPAFEKDNEVLQSIFDFWNKCIIDAKGPISGKKYNLLSKIQSL QNLDKLNQLEEMYFENENLSTISNDVYGQWNLIRDALGNF YNSIDAKKNKKDYYSWKEIQDALVYYKQTNDEYKDIDQKAF LIYFKEMKVNDEENTNNIINLINERYKRIEPLLKEDRDNRK DLHQDKGKVAIIEFLDSLKLLQNTIKLLYVDDSLDNMNYDF YNQLTDYYETLRPLNTLYNRVRNYMTRKPFSEEKFLTFNSPT LLDGWDLNKEEANLGVILRKDNKYLLGIMNKGDNKIFKKYD EPPGDDYYEKMVYKLLPGPNRMLRKVFFSNKNIEYYKPNQDI QNLYNKGEFKKGESLNKESLHKLIDFYKNSISKNGDWSVFN KFKKTTAYDDISQFYKDVENQGYKLFFKTIKTSYIDQLVNEGK LYLFQIYNKDFSENKKRKDESNPNLHTIYFKNLFSEDNLKNVV YKLNKGAEVFYRKKSIEYPEEIRRKGGHHYNELKDKFDYPIIKD KRYSEDKFLFHPITLNLFLAKSDEKVNEMVKNYIAATNEKIHII GIDRGERNLLYLSLIDSNGNIVKQQSLNIIELPKYQKQIDYHAK LNEKEKQRLAARQNWDVIENIKELKEGYLSQVIHQIARLMVD YKAILVMEDLNFGFKRGRFKVEKQVYQKFEKMLIDKLSYLVF KEKNLCEPGGSLRAYQLSAPFKSFKALGKQSGMIFYVPAQYTS KIDPTTGFYNFLNIDVSNLARSKETFSKFDKIVYNKKEDYFEFY CKMINFESANQLTKKSQNKANAEKQWILCSTHHRFKVE RKNNQINYCKINVNEELKLLNSKGINYEKSNDLKSEILNIDES KFFKELGYLLKILVSLRYNNGKKGSEEQDFILSPVKNASGKFF CTLDNNNTLPLDADANGAYNIALKGLMIVQVRVKAGGKLDLSI SKDDWINFLIMNKKLPK
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【表 1 - 8】

8	Cas12	MSNQSVFKDFTNLYELSKTLRFELKPVGKTLRMLLEDKVFKT DELIQKKYEQTKPFINKLHQEFVKESLEGRSLEGLESYQDILKE WQKDKKDKIAQKNLGIKEKELYKQVTQLFNAKAKEWSEPYA HLGLKKKDIGILFEEGVFKILKEKYNNDKDAKITNKVTGEIFFE DFWKGFVGYFQKFFETRKNFYKDDGTSTAIATRIVAQNLRKF CDNIGLFEKIKDQIDSSEVEQSFGISMEKVFSLDFYNQCLLQGG IDKYNEILGGKTLNENGEKFKGINELINKYRQDNKGDKSSFLKIL DKQILSEKESFIDEIKNDKELEETLKNLHETAKVVKTKIFGTLFE DFIGNNTKYDLAKIYISKEAFNTISHKWTGGTDLFAENLFNAL KDEQILKSSAKKKDGSYVFPDFIEFLHIKTALENVPKDINFWKE RYYVNKEGENKEFFLGNGEIWQQFLQIFNFEFNELFQKEIHDNQ TGKKMHIGYKVYKEEISKLEDFKVDKDSTVIIKHFADSVLWI YQMAKYFALEKKRTWRDEYDLDTFYTDPKNGYLAFYENAYE EIVQIYNKLRLNYLTKKPYSTEKWKLNFNQNSTLASGWDKNKEA DNFTVILRKDGKYFLGLMRKGANKLFDKRYGSEFSQGLEKGK YEKMNYKYFPSPSKMIPKTSTQVHEVKKHFKNSSEPPFFLEESS SLGKFIKQLKITKEVFDLNNFEYKKSYSYLTNGESPDESQRVK ADSKKTGQVKLFQKEFLNLSQNELLYKKSLSFAWVDFCKEYLD CFPSTGDGFLQFKKYIQDTEKEYESIDQFYKDIERGGYKISFQNIS EEYISCKNQNSELYLFKIHNKDWNLDGKPKTGMKNLHTMY FESLFSSENIAQNFPMKLNGQAEIFYRPKTDINKLEMKKDSKG KNVVDHKRYEEDKIFFHLPMTLNRGKSLFNFNVLNNFLADN PEINIIGVDRGEKHLAYYSVINQNQEILDGGTTLNVVKGGNGKD IDYHKKLEDKAEKREQARKDWQDVEGIKDLKKGYISQVVRK LADLAIEHNAIIVFEDLNMRFKQIRGGIEKSVYQQLEKALIEKL SFLVRKNEKNPEEAGYLLKAYQLSAPFETFQRIGKQTGIIFYTQ ASYTSKIDPLTGWRPNLYLKYSNAKKAKADISKFSEIEFINNRF EFTYDLQEFRSQKDKKKEYPKKTLWTLCSSVERYRWNRKLN DNKGGYEHYSDLTSDFKKLFFKYNININEDILGQIENMDTDDR KNNARFFSGFMFFWNLICQIRNTNSDVISGESDNDFILSPVEPFF DSRKASQFGSDLPENGDDNGAFNIARKGIMILKKISQYVEENE NCDKLKWGDLYISHTDWDNFI
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【表 1 - 9】

9	Cas12	MTNYTDFIGLYPVQKTLRFELRPQGKTA EKMR ESGLLEQDRE KAKNYIVMKALIDDYHRRFINELLEKASFDWQPLFEALNNVK V NKDDKSKKELEKEQLHMRKELIGLFEKDERFKYLFSEKLFSE LLNKEISERNDPDEMEAMRSFDRFSGYFIGFHENRRNIYSNED KHNSLAYRVVAENFPKFADNCRKYSLIKENMQEAVVEFKKEI ASVVDIDVDQMFDISYFNKVL TQKGIDDYNTMLGGVSEEGSV KIRGLNEFLNLYYQKVTDNKRIKMAPLYKQILCESKTKSFIPY MFENDEEVISSINQYYDSVKYDILQRSVYLLSNYKEYDASKIFI DQKSISSISIVLFGSWETLGGLMQIYKADQIGDPGLEKTRKKVD KWLSSSYFTLKEVF EAIGE QDPFRVYVEKLSVLKNIEEFDKSC LLEGTHFSGDELLTQDIKGFLDLLMEVQHLMKPFNAKEDLDK DAAFYSEYNEIYEALSEIIPLYNKVRNYATKKKYSTYKIKMNF GNPTLAAGWDLNKERDNTAVILLRGNNYYLGIMNPKKKTKF EELPSGEDNDCYRKMVYKLLPGPNKMLPKVFFSKKGIGTFNPS KEILEGYETGKHKLGDSFDIDYCHSLIDFFKENIPKYGDWGTY EFKFSPT EEYS DISQFYKEVSEQGYKITFQNISRKAIDDLVNNG ALFLYQIYNKDFSEHSGKGNLHTMYWKA AFSEENLRNVVIK INGEAELFYRDKSDISKTEHSAGTILVNRTDRKDNPIPN SIYYEL FKYKTGQIKSVSDEAKQYLDDLVTHEAKYPITKDRRYTEDRM FFHIPITL NFGSSGNTNINKAVIDHVLNSKDVHII GIDRGERNLL YVSVIDRKGNIKQ RSLNVIDGIDYHEKLDQREKENISARKSWS NVEKIKDLKEGYLSYVIH
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【表 1 - 1 0】

10	Cas12	MKDFYQFTNLYALSKTLRFSLIPTPATKQMLEDKVFEDETI QKKYEATKPYFDRHLHREFALEALQDQKLDFKNYLELYRKYK ADKKASGKLLINIEKDLRKEVVKLFDKQGEKWAKQYPGLKN KNIGVLFKEAVFTVILKERYGNEKETQILDESSGQLVSIFDSWK GFIGYFKKFHETRKNFYKDDGTSTALATRIIDQNLKRFCNILI FESTKEKVDVFSEVEISFGKPLSEVFTLEFYNTCFLQNGIDFYTKI LGGETLQNGEKVKGLNECINLHKQKTGEKLPFFKSLDKQILSE KDKFFIDEISNETQLLEVLSFVASAESKTDTIKTLVDDFVKDQ DKYDLNIIYFSNDGLNTITRKWTTETQVFEEALYTALKAHV VSSAKKNEGGYSFPDFIPFAHLKTALESIKIDGTIWRDNFNAIE NFEEKSIWAQFLAIYNFELSNLFETEIKNPEIGNCPTIGYNVYKQ DFEELLKSFVYDPNAKVTIKNFADNVLSIYQMAKYFAVEKKR GWNTDYELDVFYTDPQNGYLQYYENAYEEIVQVYNKLRNYL TKKPYSEEKWKLNFDSTPIKYTTTIAIFNNTTNERYYLGLLK KGVAKPREFEPINNNIISSEGEFRMIIQQLKFQTLGKGYVRDF GVKYSEDKDGVKHLQQLIKKQYLSKYPCLKKIADGVYNDKK AFDADIKDVLLTYNLDFQPISEEFILNKNRLGEIYLFIEHNKD WNLKDGKNKSGSKNLHTMYFESLFVDKTTFKLNNEGAEVYF RPATNEGKLGTKKDRNGKIIINHCRYATDKILFHCPIGLNKDA GKSYTFNAKINNMLANNPDINIIGVDRGEKHLAYYSVITQKGK ILDRGSLNKVEGGDKQEIDYAKKLEETAKNREQARKDWQAV EGIKDLKRGYISQVVRKLADLAIEHNAAIVFEDLNMRFKQIRGG IEKSVYQQLKALIDKLSFLVMKGEADPEKAGHLLKAYQLVA PFESFQSMGKQTGIIFYTQANYTSKIDPITGWRPNLYLKYTSAE KAKADILKFSKIEFVNNRFELTYDIKNFVLDKKVVLSNKTWT VCSSVERFRWNRRLSNQGNIEHYENLTENLSSLFKDFGFEIE QNIIRQVEQLATKGNEQFFRSFIFYVNLIFQIRNTDAKAKDQNK EDFILSPVEPFFDSRTPEKFGENLPENGDDNGAFNIARKGIIMLN KISAYKQEVGNVDKIIWKDLFISAAEWDNFTQE
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【表 1 - 1 1】

11	Cas12	MDSYEQFTKLYPIQKTIRFELKPQGRTKEHFDNSNFLEKDRER DDNYKILKEVIDDYHREFIDECLSNQILNWDDLKKFSEEYRRS KEKNNNRDSESEQKRMSTTSETRAINKNLEAEQKRMARGEIV SAFKKDDRFRKHLFSEKLFSILLKNQIYEKGTLEEIEAFDCFNKFS GYFKSFHENRKNMYSDEDKETAISYRIINENFPKLLDNFEKYQ YVCREYPEQIREAESTLAEAGCYIKMDEIFSIDNFNNVMMQGG KESGISRYNLAIGGIVQGTGEKPKGLNEFLNLAYQNEPNGRKK IRMEPLYKQILSKEESFSYRLEAFTDDSQLLSAIRSFFDIVEKDK NGNIFDRAVNLMSSFSNYDTSKIYIRKAYLNQVSKEIFGYRGK SDSKPAKTADESLNKSGGWEKLGQMLRDYKADSIGDRNLEK TCKKVDKWLDSDFTLSLILGAISLAGSNETFEAYVSEICVAR RNIDKEKEKEKNINVEKISGDTESIQIHKALLDSVQEFFHLLSPF QLHPNTPHDWTIFYAEFNDIYDKLSAITPLYNQARNHLTKKNL DTSKIKLNFNNPTLANGWDVNKEYENTA VILIRDGKY YLGIM NPKNKRKIKFDEGSGAGPFYQKMVYKLLPGPYRMLPKVFFAK KNIDYYNPSQEIREGYKAGKHKKGKEFDKGFCHKLIDFFKESI QKNENWKVDFDKFSPTESYDDISEFYQEVEKQGYRMYFVNIPS DTIDRYVEGGDMFLFQIYNKDFAKGAKGNKDMHTLYWNAVF SEENLQKGVMLKSGEAEFYRKKSDIKDPPHREGEILVNRTYI DRTHVSGVMGEQNTVKE SRIPVPDEIHKNLFDYYNHGRELTK EEKEYCDKVG SFKAYYGIVKDRRYLENKMYFHVPLTLNFKAI GEKRINKMAIEKFLT DENACIIGIDRGERNLLYYSIIDRNGKIID QKSLNVIDGFDYHEKLSQRQTEREVARQSWNSIGKIKDLKEG YLAKAVHEISKMAIKYNAIVVLEDLHFGFKKGRLKVEKQIYQ KFEEMLINKLNYLVFKDVSDSSDAGGV LNAYQLTAPLESFSKL GKQSGILFYVPAAFTSVIDPTTGFDLNFSSSITSTQKKKEFLQR FESIVYSARDGGIFAFTFDYRNFSKIATDHRNMWTVYTHGERI RYVRDEKCYKTTDPTKRIKEALSGIEYDDGSDIRDKITQSGDN NLINTVYHSFMDTIKMRNKDGRIDYHISPVKNRNNGEFRSDYK HRDFPVDADANGAYHIALKGELLMRMIGKTYDSNSDKMPKL EHKDWFEFMQTRGDQ
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【表 1 - 1 2】

12	Cas12	MKKEKEFKSFGDFTNL YEISKTLRFELKPVENTQTMLDEADV GKDKVIKDKYTKTKPFIDKLHREFVDESLKDVSLGSLKKYSEV LENWKKNKDKDIVKELKKEEERLRKEVVEFFDNTAKKWAN EKYKELGLKKKDIGILFEESVFDLLKEYGEEQDSFLKEEKGD FLKNEKGEKVSIFDEWKGFGVGYFTKFQETRKNFYKNDGTETA LATRIIDQNLKRFCNIDDFKKIKNKIDFSEVEKNFNKTADVFS LDFYNQCLLQKGIDSYNEFIGGKTLENGKKLKGVNELVNEYR QKNKNEKVSFLKLLDKQILSEKEKLSFGIENDEQLLVVLSNFY ETAEEKTKILRTLFGDFVEHNENYDLDKTYISKVAFNTISHKW TNETHKFEELLYGAMKEDKPIGLNYDKKEDSYKFPDFIALGYL KKCLNNLDCDTKFWKEKYYENNADKKDKDKGFLTGGQNAW DQFLQIFIFEFNQLFNSEAFDNKGKEIKIGYDNFRKDFEEIINQK DFKNDENLKIAIKNFADSVLWIYQMAKYFAIEKKRGWDDDFE LSEFYTNPSNGYSLFYDRA YEEIVQKYNDLRNYLTKKPYKED KWKLNFENPTLANGFDKNKESDNSTVILRKKRKYYLGLMKK GNNKIFEDRNKA EFIRNIESGAYEKMAYKYL PDVAKMIPKCST QLNEAKNHFRNSADDLEIKKSFSNPLKITKRIFDLNNIQYDKTN VSKKISGDNKG I KIFQKEYYKISGDFDVYKSALNDWIDFCKDF LSKYDSTKDFDFSILRKT KDYKSLDEFYVDVAKITYKISFTPV ESYIDQKNKNGELYLFEIYNQDFAKGKMGAKNLHTLYFENVF SPENISKNFPIKLNGNAELFFRPKSIESKKEKRN FVREIVNKKRY SEDKIFFHCPITLNRETGSIYRFNNYVNNFLSENNINIIGVDRGE KHLAYYSVIDKNGVKIGGGSFNEINKVDYAKKLEERAGEREQ SRKDWQVVEGIKDLKKGYISQVVRELADLAIKHNAIIVLEDLN MRFKQIRGGIEKSIYQQLEKALIDKLSFLVEKGEKDPNQAGHIL KAYQLAAPFTSFKDMGKQTGIVFYTQASYTSKTCPNCGFRKN NNKFYFENNIGKAQDALKKLKTFEYDSENKCFGLSYCLSDFA NKEEVEKNKNKKRNNAPYSDIEKKDCFELSTKDAVRYRWHD KNTERGKTFEGESVYEEKEEKEIGQTKRGLVKEYDISKCLIGL FEKTGLDYKQNL LDKINSGKFDGTFYKNLFNYLNL LFEIRNSIS GTEIDYISCPECQFH TDKSKTIKNGDDNGSYNIARKGMILDKI KQFKKENGSLDKMGWGELFIDLEEWDFKFAQKKNNNIIDK
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【表 1 - 1 3】

13	Cas12	MKSFDSFTNLYSLSKTLKFEMRPVGNTQKMLDNAGVFEKDKL IQKKYGKTKPYFDRHLHREFIEEALTGVELIGLDENFRTLVDWQ KDKKNNVAMKAYENSLQRLRTEIGKIFNLKAEDWVKNKYPIL GLKNKNTDILFEEAVFGILKARYGEEKDTFIEVEEIDKTGKSKI NQISIFDSWKGFTGYFKKFFETRKNFYKNDGTSTAIATRIIDQN LKRFDNLSIVESVRQKVDLAETESFSISLSQFFSIDFYNKCLL QDGIDYYNKIIGGETLKNGEKLI GLNELINQYRQNNKDQKIPFF KLLDKQILSEKILFLDEIKNDTELIEALSQFAKTAEEKTKIVKKL FADFVENNSKYDLAQIYISQEAFTISNKWTSETETFAKYLFEA MKSGKLAKYEKKDNSYKFPDFIALSQMKSALLSISLEGHFWK EKYYKISKFQEKTNWEQFLAIFLYEFNSLFSKINTKDGETKQ VGYYLFAKDLHNLILSEQIDIPKDSKVTIKDFADSVLTIYQMAK YFAVEKKRAWLAEYELDSFYTQPD TGYLQFYDNAYEDIVQV YNKLRNYLTKKPYSEEKWKLN FENSTLANGW DKNKESDNSA VILQKGGKYYLGLITKGHNKIFDDR FQEKFIVGIEGGKYEKIVY KFFPDQAKMFPKVCFSAGLEFFR PSEEILRIYNNAEFKKGETY SIDSMQKLIDFYKDCLTKYEGWACYTFRHLKPT E EYQNNIGEF FRDVAEDGYRIDFQGISDQYIHEKNEKGELHLFEIHNKDWNL D KARDGKSKTTQKNLHTLYFESLFSNDNVVQNFPIKLNGQAEIF YRPKTEKDKLESKKDKKGNKVIDHKRYSENKIFFHVPLTLNRT KNDSYRFNAQINNFLANNKDINIIGVDRGEKHLVYYSVITQAS DILESGSLNELNGVNYAEKLGKKAENREQARRDWQDVQGIK DLKKGYSQVVRKLADLAIKHNAIILEDLNMRFKQVRGGIEKS IYQQLEKALIDKLSFLVDKGEKNPEQAGHLLKAYQLSAPFETF QKMGKQTGIIFYTQASYTSKSDPVTGWRPHLYLKYFSAKKAK DDIAKFTKIEFVNDRFELTYDIKDFQQAKEYPNKTVWKVCSN VERFRWDKNLNQNKGGYTHYTNITENIQELFTKYGIDITKDLL TQISTIDEKQNTSFFRDFIFYFNLICQIRNTDDSEIAKKNGKDDFI LSPVEPFFDSRKDNNGNKL PENGDDNGAYNIARKGIVILNKISQ YSEKNENCEKMKWGDLYVSNIDWDNFVTQANARH
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【表 1 - 1 4】

14	Cas12	MNTQKKEFNPKSFKDFTNLYSLNKT LRFS LTPNKKTA EILEFN KQKEVKCFSNDRKIAGAYQEIKKYLNKLHQEFIQEAMKFFAFS EEELKGFEKEYLNLLNFTDKDNFKKKNKIRNEYEQERKILTIKI ATYFSKFKSEKYQSFNLANITGKKVFSILEQKYKEDKKTLKIIH IFKYKPTKDEKKEGEAVNFSTYLTGFNENRKNFYKSEDKAGQ FATRTIDNLAQFIKNKKLFEDKYQKNYSKIGILDEQIKIFNLDY FNNLFLQEG LDEYNGILGNNKGEENKSNEGINQKINIFKQKEK ARLKKEKENFNKSD FPLFKELYKQIGSIRKENDVYVEIKTDKE LVEELNNFPKNVENY LKDIQS FYKTF FEKLQNEEYELDKIYLP KSVGTYFSYIAFS DWNKLAFIYNKRYKNEKIKIVEGGDVNVQ YRSLEVLKNRIDE LKDEDNLNFNKFFIDKLKFNEAKKENNWQ NFWFCIEYYINSQFIGGEKNILNKEKNEYEILPFGSLKELKEYF EAVKKYKEKMVDTESGLTDDEEKEIKETLKNYLDRIKEIERIA KYFDLKKSFEEIKQEDLDSNFYGEYQKVVDKTNELKIYQYYSE FRNYLTQNN SVEEKIKLNFNSGLLLDGWDLNKEKVKFSIHFQE NGKY YLGIINKEKDKTILDKDKHPEIFTKNSDFRKMEYKLFPS SKMLPKISFSETAKKGDEDVGWSEEIQKIKDEF AEFQEYKKKS KDNWKDEFNRGKLNKLIDYYKQVLEKHSEGYMNTYNFELKD SSKYKNLGEFNDDIARQNYKVKFVGIDKNYIDEKVANGELFLF QIYNKDFS EDKKEGSTNNLETIYFKELFSKENLENPVFKLSGGA EMFFRNKIEKKKEKKKLDKDGKPMISKKGEKVVDKRRFSENK ILFHLPIEINYGKGKMPNFNKKINEYISKNPENIKIIGIDRGEKHL LYYSIIDQNGNNIESMSLNAVDEFGNFVNPEKLEEYEIDNNGK KERRWKYIVNDKEIKVTNYQRKLDELEKERQKSRQSWQNINK IKNLKKGYSFVVKKIVDLAIENNAIIILEDLNFGFKSFRQKIEK NVYQQFEKALIDKLGFVVDKQKQNQRFAPQLSAPFESFQKIGK QTGIVYYVL ANNTSKVCPSCQWIKNFYLYEKKNTIFNLQKN QKLKVFFEQEKNRFRFEYQMSKEYISVYSDVDRQRYDKTKNQ NKG GYLEYKNSNQKEIIDKDGV IQKQSITLQLKELFKENHIDLE KEILKQLDNKKEKNSGYTG VYNKFIYLFNLILQIRNAISFREKD YIQCP SCHFDTRKENY LKINDGDGNGAYNIALRGLYLLKGKN GIINNLEKIKLIFSNN DYFQWAKKLKNKK
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【表 1 - 1 5】

15	Cas12	MEEKMLKSYDYFTKLYSLQKTLRFELKPIGKTLEHIKNSGIIES DETL EEQYAIVKNIIDKLHRKHIDEALSLVDFTKHLDTLKTQFQ LYLKRGKTDKEKEELEKLSADLRKLIVSYLKGNVKEKTQHNL NPIKERFEILFGKELFTNEEFFLLAENEKEKKAIAQAFKGFTTYFK GFQENRKNMYSEEGNSTSIAYRIINENLPLFIENIARFQKVMSTI EKTTIKKLEQNLKTELKKNLPGIFTIEYFNNVLTQEGISRYNTI IGGKTTHEGVKIQGLNEIINLYNQQSKDVKLPIKLPLHKQILSEE YSTSFKIKAFENDNEVLKAIDTFWNEHIEKSIHPVTGNKFNILS KIENLCDQLQKYKDKDLEKLFIERKNLSTVSHQVYGQWNIIRD ALRMHLEMNNKNIKEKDIDKYLDNDAFSWKEIKDSIKIYKEH VEDAKELNENGIIKYFSAMSINEEDDEKEYSISLIKNINEKYNN VKSILQEDRTGKSDLHQDKEKVGIIKEFLDSLKQLQWFLRLLY VTVPLDEKDYEYFNELEVYYEALLPLNSLYNKVRNYMTRKPY SVEKFKNFNSPTLLDGWDKNKETANLSIILRKNKGYYLGIMN KENNTIFEYYPGTKSNDYYEKMIYKLLPGPNKMLPKVFFSKK GLEYYNPPKEILNIYEKGEFKKDKSGNFKKESLHTLIDFYKEAI AKNEDWEVFNFKFKNTKEYEDISQFYRDVEEQGYLITFEKVD ANYVDKLVKEGKLYLFQIYNKDFSENKKSKGNPNLHTIYWKG LYDSENKKNVVKLNGEAEVYRKKSIDYPEEIYNHGHHEE LLGKFNYPIIKDRRYTQDKFLFHPITMNFISKEEKRVNQLACE YLSATKEDVHIIGIDRGERHLLYLSLIDKEGNIKKQLSLNTIKNE NYDKEIDYRVKLDEKEKKRDEARKNWDVIENIKELKEGYMS QVIHIIAKMMVEEKAILIMEDLNIGFKRGRFKVEKQVYQKFEK MLIDKLNLYVFKNKNPLEPGGSLNAYQLTSKFDSFKKLKGQS GFIFYVPSAYTSKIDPTTGFIYNFQVDVPNLEKGKEFFSKFEKII YNTKEDYFEFHCKYGKFVSEPKNKDNDRKTKESLTYYNAIKD TVWVVCSTNHERYKIVRNKAGYYESHVPDVTKNLKDIFSQAN INYNEGKDIKPIIIESNNAKLLKSIAEQLKLILAMRYNNGKHGD DEKDYILSPVKNKQGKFFCTLDGNQTLPINADANGAYNIALK GLLLIEKIKKQGGKIKDLYISNLEWFMFMMSR
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【表 1 - 1 6】

16	Cas12	MNNYDEFTKLYPIQKTIRFELKPQGRTEHLETFNFFEEEDRDR AEKYKILKEAIDEYHKKFIDEHLTNMSLDWNSLKQISEKYYKS REEKDKKVFLSEQKRMQRQIVSEFKKDDRFDLFSKKLFSSELL KEEYKKGNGHQEIDALKSFDKFSGYFIGLHENRKNMYSBGDEI TAISNRIVNENFPKFLDNLQKYQEARKKYPEWIIKAESALVAH NIKMDEVFSLEYFNKVLNQEGIQRYNLALGGYVTKSGEKMM GLNDALNLAHQSEKSSKGRIHMTPLFKQILSEKESFSYIPDVFT EDSQLLPSIGGFFAQIENDKDGNIFDRALELISSYAEYDTERIYI RQADINRVSNVIFGEWGTGGLMREYKADSINDINLERTCKK VDKWLDSEKFAISDVLEAIKRTGNNDAFNEYISKMRTAREKI DAARKEMKFISEKISGDEESIHIIKTLLDSVQQFLHFFNLFKARQ DIPLDGAFYADEFDEVHSLKFAIVPLYNKVRNYLTKNLNTKKI KLNFKNPTLANGWDQNKVYDYASLIFLRDGNYYLGIINPKRK KNIKFEQSGNGPFRKRMVYKQIPGNKNLPRVFLTSTKGKKE YKPSKEIIEGYEADKHIRGDKFDLDFCHKLIDFFKESIEKHKW SKFNFYFSPTESYGDISEFYLDVEKQGYRMHFENISAETIDEYV EKGDLFLFQIYNKDFVKAATGKKDMHTIYWNAAFSPENLQDV VVKLNGEAEFYRDKSDIKEIVHREGEILVNRTYNGRTPVPDK IHKKLTDYHNGRTKDLGEAKEYLDKVRVYFKAHYDITKDRRYL NDKIYFHVPLTLNFKANGKKNLNMVIEKFLSDEKAHIIGIDR GERNLLYYSIIDRSGKIIDQQSLNVIDGFDYREKLNQREIEMKD ARQSWNAIGKIKDLKEGYLSKAVHEITKMAIQYNAIVVMEEL NYGFKRGRFKVEKQIYQKFENMLIDKMNYLVFKDAPDESPGG VLNAYQLTNPLESFAKLGKQTGILFYVPAAYTSKIDPTTGfVN LFNTSSKTNAQERKEFLQKFESISYSKDGGAFAFDYRKFGT SKTDHKNVWTAYTNGERMRYIKEKKRNELFDPSKEIKEALTS SGIKYDGGQNILPDILRSNNGLIYTMYSFIAAIQMRVYDGKE DYIISPIKNSKGEFFRTDPKRRELPIADANGAYNIALRGELTM RAIAEKFPDSEKMAKLELKHKDWFEFMQTRGD
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【表 1 - 1 7】

17	Cas12	MASSHFISLDNSFSKFTNLYSLSKTLRFELVPTENTTVMLENNN VFKKDQIIQVKYEKTKPFIDRLHREFIKEALSNYAVSGLQEYFE ILRAGGKKANLDSAKKQLRKHVVDQFNATASLWVSRHKDVG FKGEGIELLFKEAVFKLLKEKYGTMNALIEDNHGKQISIFDS WKGFTGYFDKFQQTRRNLYKDDGKEGRVATRIIDQNLTRFCD NIFVYEKIKDKVSFIDVEKSFGKTCSEVFIPDYYNTCLLQDGIDS YNEFIGGKPLENGEKVQGLNELINLYRQTTGDKVPYFKKLEK QILGEKDEVFIDEITDEDFVPRVLAIFYRTVDAKYKLFLKLLDDF VTNQDVYELSQIYISKKGLQEKLRYWLTPSAREVYDEELFEVL KKAKKVNNKDKQKVSGYVPDFVEVLYIKQALENIDAKLIWSD RYYSDGENEGIIDKGFSSWKQFLVILNHEYRQLLSFEDHVIIDK ELDFDKEVKQLTDTVEIVSQDKNARTVTYRGGYDVYKAKLA ELGQSFEKDTCTKKVIKNFADSVLSMYHFAMMFAVWDDTYP LDVFYTNNEFGYLLYYEDAYKNIVQEYNKLRNYLTKKPYSTE KWKLNFENPTLAAGFDKNKESDNSTVILRQGDKYFLGVMKK GFNKIFDNSQISQGTGNSPEAYFEKMVYKYTKDVVTGIPKSSTQ VKEVQEHRNSDEDDFFLEECSSVGNFIVPLKITKEIFDLNNKVY AKEDISQAMYRWALNTDEEKNYVKSQKSYLSLGGSPELYCK SVTLWIGFCLNFLKSYPAAAYFDYSQLRQASDYESVDECYQEL NNAGYTILFQNVSEKYVRVKNKNGELYLFQIKNKDWNEGSTG KKNLHTLYFESLFSKENAKQGPFKLSGNAELFFRPGSIEQTYE RRNFPREIPLKRRYSKDGIFFFHIPVQVNRTKVGSPNQFNKEVND FLAGNPINIIIGVDRGEKHLVYYSVISQNGEKIDGGSFNEINGQ DYHDKLEKRAKEREQQRRDWETVEGIKDLKKGYISQVVKKL ADLAIEHNAIIVMEDLNMRFKQIRGGIEKSVYQQLEKALIDKLS FLVNKGEVDPQKAGHLLKAYQLTAPIDAFKDMGKQTGIMFYT QAAYTSKIDPVTGWRPHLYLYKYSSVEKAKDDISRFTKIAAYKND RFEFTYNITDFRTQKEWPLKTEWTVCSVERFRWNKKLANGK GDYEHYPNVTDDFKKLFDVSGINYLQENIKSQVVDNIDENTNV EFFREFIKLFALVCQIRNTNSEEAGNLNDFILSPVEPFFDSRSAE DFGKGLPSNGDENGAYNIARKGMIILNTLSTFKNDHGSCEGLS WGDLYISDTQWDDFAQSFGH
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【表 1 - 1 8】

18	Cas12	MDAKEFTGQYPLSKTLRFELRPIGRTWDNLEASGYLAEDRHR AECYPRAKELLDDNHRAFLNRVLPQIDMDWHPIAEAFCKVHK NPGNKELAQDYNLQLSKRRKEISAYLQDADGYKGLFAKPALD EAMKIAKENGNESDIEVLEAFNGFSVYFTGYHESRENIYSDED MVSVA YRITEDNFPRFVSNALIFDKLNESHPII SEVSGNLGVD DIGKYFDVSNYNNFLSQAGIDDYNNHIIGGHTTEDGLIQAFNVV LNLRHQKDPGFEEKIQFKQLYKQILSVRTSKSYIPKQFDNSKEM VDCICDYVSKIEKSETVERALKLVNRNISSFDLRGIFVNKKNLRI LSNKLIGDWDAIETALMHSSSENDDKKSVDYSAEFTLDDIFSS VKKFSDASAEDIGNRAEDICRVISETAPFINDLRAVDLDSLND GYEAAVSKIRESLEPYMDLFHELEIFSVGDEFKCAAFYSELEE VSEQLEIIPLFNKARSFCTRKRYSTDKIKVNLKFPTLADGWDL NKERDNKAAILRKDGKYYLAILDMKKDLSSIRTSDEDESSFEK MEYKLLPSPVKMLPKIFVKSAAKEKYGLTDRMLECYDKGM HKSGSAFDLGFCHELIDYYKRCIAEYPGWDVDFDKFRETSYDG SMKEFNEDVAGAGYYMSLRKIPCSEVYRLLDEKSIYLFQIYNK DYSENAHGNNMHTMYWEGLFSPQNLESPVFKLSGGAELFFR KSSIPNDAKTVHPKGSVLVPRNDVNGRRIPDSIYRELTRYFNR GDCRISDEAKSYLDKVKTKKADHDIVKDRRFTVDKMMFHVPI AMNFKAISKPNLNKKVIDGIIDDQDLKIIGIDRGERNLIYVTMV DRKGNILYQDSLNLNGYDYRKALDVREYDNKEARRNWTKV EGIRKMKEGYLSLAVSKLADMIIENNAIIVMEDLNHGFKAGRS KIEKQVYQKFESMLINKLGYMVLKDKSIDQSGGALHGYQLAN HVTTLASVGKQCGVIFYIPAAFTSKIDPTTGADLFALSNVKNV ASMREFFSKMKSVIYDKAEGKFAFTFDYLDYNVKSECGRTLW TVYTVGERFTYSRVNREYVRKVPTDIIYDALQKAGISVEGDLR DRIAESDGDTLKSIFYAFKYALDMRVENREEDYIQSPVKNASG EFFCSKNAGKSLPQDSDANGAYNIALKGILQLRMLSEQYDPN AESIRLPLITNKAWLTFMQSGMKTWKN
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【表 1 - 1 9】

19	Cas12	MVNKKQNERGDFDDLTLNLYEISKTLRFELVPVGETDRMLKEEN VFKVDENIKRKYQQTKLFFDRIHREFAKEALSVEGILSELEEYL AIFIEWRKDKKIHEKTLNQKEKELRKQVVSAFNAMANKWIER YGDVNLKKKNVEFLFEEGIFRVLKERYGEEDGSTITASDTGEV FSIFDSWKGFTGYFAKFFETRKNFYKDDGTATAIATRIVDENL RRFCDNLIVAQRLTENIDFSEVENNFQIKIKEVLFMEFYNKCLL QDDIDFYNKVIGGETLKTGEKLGINELVNLHRHKTGEKLPFL KTLDKQILGRKEQFLDEIESEEEELLEKLKDFQNVATKKIKVIKS LFGDFVENNENYDLEKIYISKKAFTISRKWTGETEQFEKLLFE SMKSDKPAGLKYDKKENNYKFPDFIAVSYIKDALENFSGEQK FWKDRYYIELELDNQVWVKQFLDIFYWEFSSLFKRSFVNKET GEISEVGCDIFEKKFINLIDDFEYNQKSKILIKDFADSVLSVYQM ANYFSLEKKRKWSTEFETDSKFYDDSEIGFRNCFYEDVFEGIV QVYNKLRNYLTKKPFSEEKWKLNFNENPTLAAGWDKNKEKDN STVILRKDEKYFLAIMKKGNNVIFDDRNLKALFSQNLHGKYE KVYKFAKDVTLGIPKSTTQTKSVIAHFKNSEDEYQITNGSAV GDFLEPLVVTKRIFELNNKIYSKNNLGKVLRYSEVSKDKQKEY IKLFQKKYLVGGNKNLYRDAVKEWIDFCKSFIKVYPSYKYF DFSLLKEAVEYNSVDEFYKELNSYGYAISFQDISCDYIEEKNK NGELYLFQIKNKDWNKGSTGMKNLHTLYFESLFSEENIKNNF VTKLNGGAEIFYRPKTSKEKLGRKKIVRNGQEVFVNHKRYN EDKIFFHCSIALNRGKGKLLKFNARINDLLANNPDINVIGVDRG EKHLAYYSIIDQKCKILDSGTLNEVGAKVDYHEKLSNRAKKR EDGRRDWGWGQIEDIKNLKKGYSQVVKLAELIHKYNAILV FEDLNMRFKQIRGGIEKSIYQQLEKALIDKLNFLVKKGEKDSK SAGHLLKAYQLAAPFETFDKMGKQTGVIFYTQASYTSKIDPIT GWRPNLYLKHSNANDSQKKIAKFSRIEFINDRFEFEYDLKKFIE MKEVPENTKWTLCSVCVQRYRWNRKLNANKGGYDSYNDLTK NFKALFESVGIDIKNIKEQIVKMEIKGNEKFFKSIFYWQLLC QIRNTDELKKGDDNDFILSPVEPFFDSRKKNGDDLPGNGDDNG AYNIARKGVIVLNKISEFSKQNGNCEKCGWKELYVSAKDWD DFVQAK
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【表 1 - 2 0】

20	Cas12	MQNKQSFADFTNLYSLSKTLRFELKPIGQTQAMLDENKIFEVD ENRKKAYDKTKPYFDRHLHREFINESLSNAQLKGISEYFETFKQ FRSNQNNKDLKELINKQQKFLRHQIVTLFDENGKHWATTKYA HLKIKKKNLDILFDEQVFYILKERYGSEKETQLVDKETGAVTSI FDNWKGFTGYFTKFFETRKNFYKSDGTSTALATRIIDQNLNRF FDNLETfHKIKDKIDVKEVEIFFKLKADNVFSIDFYNQCLLQNG IDKYNDLGGQTLengeKQKGINEIINKYRQDNKDQKLPFLKK LDKQILSEKDRFINEIESKEEFFQVLTEFYQSATVKVTIIKTLLN DFVHNTDKYKLEKIYLTKEAFNTIANKWTDETQIFEDNLDLVL KNKKITAKQDFIPLAYIKEALEVIEKDRKFFKDRYYNDPQIGFF PDQSYWEQFLAILNFEFMTHFQ RVAKDKITGKKIELGYFVFEK RIKELLDSDPSLNSQSKIIIKEFADEV LHIFQMAKYFALEKKRE WKG DYYQLDDQFYNHIDYGFKDQFYENAYEKIVQPYNKIRN YLTKKPYSVKWKL NFGNPTLANGWDKNKEADNTAVILKKD GNY YLGVMKKGKNKIFSDQNKEKYKAYNSAYYEKL VYKLP DPSKMFPKVCFSKKGLNFFQPSSEEILRIYKNNEFKKGNTFSISS MQKLIAFYIDCLGLYEGWKHYEFKNIKDVRQYKENIGEFYAD VAESGYKLWFEKISEEYITQKNQLGELFLFQIYNKDFAKKTTG RKNLHTIYFEELFSQTNIDNNFPFKLNGQAELFYRPKSLEKIEE KRNFKRSIVNKKRYTQNKIFFHVPITLNR TSENIGRFNVRVNNF LANNSNVNIVGVDRGEKNLAYYSIIKQNGEVLKSGSLNIINGV DYHALLTDRAQRREQERRNWQDVESIKDLKRGYISQVVHEL V SLAIKYNAIIVMEDLNMRFKQIRGGIEKSTYQQLEKALIEKLN F LVNKEETDSNQAGNLLNAYQLTAPFKTFKDMGKQTGIIFYTQ ASYTSKIDPLTGWRPNYILRY SNAKQAKADILMFTNIYFSEKK DRFEFTYDLEKIDDKRKDLPIKTEWTVCSNVERFSWEKSLNNN KGGYVHYPIQDSNGEESITSKLKKLFMDFGIDLTDIKTQIESLD TNKKDNANFFRKFI FYFQLICQIRNTQVNKSDDGND FIFSPVEP FFDSRFADKFRKNLPKNGDENGAYNIARKGLIILHKISDYFVKE GSTDKISWKDLSISQTEWDNFTTDK
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【表 1 - 2 1】

21	Cas12	MDKQKNKLQNFTNLYELSKTLRFELKPVGETQHLLEENKVFG IDGNIKKKYEATKPPFDRLHRKFVKEALVNIALGGLDNYLEVY KKFTNDRKDKENQKELEKQEKLRLKQIKIFFDSQANQWKEY NKINFKKSGLNILFEESIFQLLKEIYGKEDDAFLKNDDNEFIFDK DGNKISIFDSWKGFTGYFKKFFETRKNFYKDDGTSTAIATRIID QNLRRFCDNIFIYNKIKNKLDFSSLEKEQDVVLEEFTTAYYMD CILQDDIDLYNGVLGGETLDDGTTIKGLNEIINKYRQDNKGDK IPFFKKLDKQILSEKDRKFLDEIESEEELAECLKIFINNTAKVK VFDELVNQLCVNDSDFELDKIYISKEAFNTISHKWTNQTHEFE RVLFEEMKPKITGLDYKKAEDKYKFPDFIALKYIISLNTLD KDSEFWKSHYYKTEENQNAILSLEEKVGEQFLQIYKYELQRLH SRNVNVENKDGKMKEKEIGLDYSLTTVKELLKNFKLTDKSKII IKDFADNVLQYYQLAKYFSVEKNREWNYTKLELADFYINPDF GYEIFYGNAYEEIIQIYNKLRNYLTKKPFSEKWKLNFNENPTLA GGWDKNKERGNATVILRKNEKYLLGIMAKGYNDIFTDKNKD KFDGEGYEKMVYKLFPGPNKMMPKVCFSKKGLDFFEPSEKII DIYKDGGKFKQGDTSIDSMQQLIDFYKRALREYNGWKMYDFS KLKDTNDYTTNIGEFYNDVACAGYKVVFDNISEEYIQEKNEN GELYLFEIHNKDWNLKDEKKKTGTKNLHTLYFESLFSDENAL RDFVMKLSGEAELFFRPKTNADKLGYRKDKKGNKVVKNKRY SEDKMFLHLSINLNRGKGQAFWFNRNINNFLANNSDINVIGID RGEKHLAYYSVISQQGEILDNGSLNEIAGVDYYAKLSKRAKER EGQRKDWQAVSDIKNLKKGYISQVVRKLADLAIEHNAIIVLED LNMRFKQIRGGIEKSIYQQLEKALIEKLNFLVNKKEIDSDKAG NLLRAYQLTAPFETFQKMGKQTGIIFYTQASYTSKIDPLTGWR PNLYLKKGNKINKEQIEKFSKIEFTNNRFEITYDLKNFGDKKK KYPQKTKWTLCSVERWRWDRKLNNNKGGYIHYEDLTTEFK SLFEKFEIDIEGDILEQIKTIDENDRNNARLFSGFIYLWGLLSQIR NTDGELDEKIKKLEREDKNEEISEKEKFDVDFILSPVEPFFDSRT PEKFGENLPKNGDDNGAYNIARKGIITLERIKKFYELSDKEREK LKYPDLFITNAEWDDFATKRDS
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【表 1 - 2 2】

22	Cas13	MDNNTTLEKTELGLGITYNHDKVEDKHYPGGFFNLAQNNIDL VAQEFKKRLLVQGKDSINIFSNYFSDQCSITNLERGKVLSEYF PVIFYFDLDENNKSXSIRQHILLDDTINNLRNYYTHYYHKKVII DDALYPLDITILLKVLEIKKKKLKEDKTKQLLKKGLEKEMAI LFNLMKKEQKEKKIKGWNIDKNIKGAVLNRAFSHLLYNDGIS DYRKSKSNTEDENLKDITLSESGILFLLSFFLNKKEQEQLKANIK GYKGKIASIPDEEITLKNNSLRNMATHWTYSHLTYKGLKHRIK TDHEKETLLVNMVDYLSKVPNEIYQNLSEQNKSFLDINEY MRDNEENNDSSSEASRVHPVIRKRYENKFAYFAIRFLDEFAEFP TLRFMVNVGNYIHDNRKKDIGGTSLITNRTIKQQINVFGNLTEI HKKKNDFEKEENKEKILEWELFPNPSYHFQKENIPIDLEKS KETNELAKEYAKEKKKIFGSSRKKQQNTAKKNREAIINLVFDK YKTSRKTVTFEQPTALLSFNELNAFLYAFLVENKTGKELEKII IEKIANQYQILKNCSSTVDKTNDSIPKSIKKIAHPTTDSFYSEGK KIDIEKLERDIKIEIEKTNEKLETIKENETSAKNYKRNERDIQKR KLYRKYVFFTNEIGIEATWITNDILRFLDNKENWKGQYHSELQ KFISQYDNYKKEALGLLESEWNLESEAFFGQKLKRIFQSNFTFE TFYKKYLDNRKDTLETYLSAIENLKTMTDVPPKILKKSWAELF RFFDKKIYLLSTIETKINELITKPINLSRGVFDEKPTFINGKSPNK ENDQHLLFANWFIHAKETIFQDFYNLALETPKEINNLLKKQNYK LERSINNLLKIEDIYIKQMVDFLYQKLFEQSFKGSLQDLYTSKEK REVEKSKAKNEQTPDESFIWKKQVEINALNGRIIAKTKIKDIGK FKNLLTDNKITHLISYDNRIWNFSLDNDGDTTKKLYSLNTELE SYERIRREKLLKQIQEFQFLLKQETEYSAERKHPEKFEKDGNP NFKKYIIEGMLNKITPVNEIEELEILKSKEDVFKIDFNEIVKLNN ESIKKGYLLMIRNKFAMNQLIDKNLFTFSLQLYSKNENENFSE YLDKVCQKIIQEFIEKLLK
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【表 1 - 2 3】

23	Cas13	MNETDYLAKRLEYNYASIEDKHYPGGYFNLAQNNINDLSKAF KEKFGMKPKSCILDFFTQDKAIAEYQLGVEFLQKNLPVIRYLY LPTSHKRFENVPKNQLISEQRNYFKNSLKVLNLRDYNFYT HHFHKPIPVFPETYKLLDDLFLAVANDVKKHRMKTDAASKQLL KKGLIEELAQLEKLKLEDLKKLKREGKKVNLNDKEAITNAILN DSFSHLLPKENTISKYYSAPPTEDIDTENGVTISESGIIFLLGLFL TKKQSEDLRSRVKGFKAKLIVNPENPINKKNNSLKYMATHWV FGYLGFKGLKNRFTTTFTKDTLLAQIVDELSKVPDELYQVLPE ELKNEFLEDMNEYLKEENSESLDKATVIHPVIRKRYENKFAYF ALRFLDEFVDFTLRFQLHLGNYVHDKREKPIEGTKYVTERIV KEKIKAFKLSAAQLKQKYFEEKENHQSIGLQLYPNPSYNFV GNNIPIHLNLNEHFFPKVKIVAGRLKKRNSSYKSDHPPEYKV RTDNKIKPDAILQDLGKPEKLAPVAMLSLNLPAHLVLTKK TPEEIEIIIAQKIAERYNVL TNYKAGDDISKGQITKNLLKAKQK KEVNLDKLQLAIEKEIAVTNDKLQTIALHIKERNDPKQKRKYV FTNKEIGLQVTWLANDLKRFPKGSQRQNW RGQHHSQLQKSL AFYDIQPKEPLSLLEEVWDFKNEAYLWNNGIRRSFDRDFISF YTSYLN NRKETFRFKDQLNGIRSNKKILDKFIKQQHLWNLFH KRLYVIDTIEEQVEKLLVKPMQFPKGVFDHKPTYIKGKSIQENP ECFADWYVAWNQHTDYQKFYSWDRDYKSAYLSGEQEKTEK RFIRVQGSKINKVKQQDVLLAKMASIIFNELYLPEDAHLDLN LSDIYKTQTERKAEIEAALIQSHKTTGDNSANIIKSTSAWTLTV PYCSKNIEPQVKLKLKGKFKKFIASQKVQTLFEYKPQKIWNK TELEEVLELKANSYEVIRRDYLLKSIQEFEKYMIKKLPTLIDTN EHPNFNKYLTTFLLKSLELVSEEDAKWLISKKDFDTPIDELKK QSKIMEKAFLVMIRNKF SHNQLPRKIYYDEIYKNVPNAV SINF NELFLEYTNQTILEFK
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【表 1 - 2 4】

24	Cas13	MESIIGLGLSFNPYKTADKHVFGSFLNLVENNLNAVFAEFKERI SYKAKDENISSLIEKHFDNMSIVDYEEKKISILNGYLPIIDFLDDE LENNLNTRVKNFKKNFIILAEAIEKLRDYYTHFYHDPITFEDNK EPILLELLDEVLLKTILDVKKKYLKTDKTKEILKDSLREEMDLL VIRKTDELREKKKTNPQIQHTDSSQIKNSIFNDAFQGLLYEDKG NNKKTQVSHRAKTRLNPKDIHKQEERDFEPLSTSGLVFLMSL FLSKKEIEDFKSNIKGFKGKVVDENHNSLKYMATHRVYSILA FKGLKYRIKTDTFSKETLMMQMIDELSKVPDCVYQNLSETKQ KDFIEDWNEYFKDNEENTENLENSRVVHPVIRKRYEDKFNYF AIRFLDEFANFKTLKFQVFMGYIHDQRTKTIGTTNITTERTVK EKINVFGKLSKMDNLKKHFFSQLSDDENTDWEFFPNPSYNFLT QADNSPANNIPIYLELKNQQIIKEKDAIKAEVNQTQNRNPNKPS KRDLLNKILKTYEDFHQGDPTAILSLNEIPALLHLFLVKPNKNT GQIENIIRIKIEKQFKAINHPSKNNKGIPKSLFADTNVRVNAIK LKKDLEAELDMLNKKHIAFKENQKASSNYDKLLKEHQFTPKN KRPELRKYVIFYKSEKGEEATWLANDIKRFMPKDFKTKWKGK QHSELQRKLAFYDRHTKQDIKELLSGCEFDHSLLDINAYFQKD NFEDFFSKYLENRIETLEGVLKKLHDFKNEPTPLKGVFKNCFK FLKRQNYVTESPEIHKRILAKPTFLPRGVFDERPTMKKGKNPL KDKNEFAEWFVEYLENKDYQKFYNAEEYMRDADFKNNAVI KKQKLKDFYTLQMVNYLLKEVFGKDEMNLQSELFQTRQER LKLQGIAKKQMKNKETGDSSENTRNQTYIWNKDVPVSFFNGKV TIDKVKLKNIGKYKRYERDERVKTFIGYEVDEKWMMYLPHN WKDRYSVKPINVIDLQIQEYEEIRSHELLKEIQNLEQYIYDHTT DKNILLQDGNPNFKMYVLNGLLIGIKQVNIPDFIVLKQNTNFD KIDFTGIASCSELEKKTHILIAIRNKFAHNQLPNKMIYDLANEFL KIEKNETYANYYLKVLKKMISDLA
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【表 1 - 2 5】

25	Cas13	MEDKTTGAGISYDHTLMEDKHFFGGFLNLAQNNIDALLKAFK ERFNVRYQSKQFAEVCFSKLPDQDYLDRTLFLLETHLPFIKYIG GKEANNRGTFRKNITLFFESIEQLRNFYTHYYHKPILFPEELYE NLDRIFFEVSKEVKTHKVKNQDQTRHLLTKNLANELDIRYKKN VEKLKELKAQGKKVNIHDKEAIKNSVLNNAFNHLYKKEEDV FATEAYKSKYNLEDPSKNGISLSQSGLLFLLSMFLNKKDIEALK SRVKGFKAKIIRDGEENISGLKFMATHWVFSSLSFKNVKHKLS TDFHKETLLIQIVDELSKVPDEVYKTFDKQTQEEFIEDINEYMK VGNKDLSLEESTVIHPVIRKRYDNKFNYFALRFLDEFAGFPTLR FQVHIGNYIHDRRIKNIDGTAFTQTERSVKERIKVFGKLSQMSNL KAEYVSGLMDEPVDTGWEIFPNPSYNIENNIPIYIEMGDHFND EVLQSKMARKKQKPEELKDRNSAKASKESMIQTLQNDKGLM DVITVSPTAQLSLNELPAILYELLVKKTPAKTIEKKLVGKLNQR LKEIKNYNPEKPLPASQISKRLRLNREEGSINTKKIALLQKELN YTQEKLDLLEKNRKEYGKKVDGKILRKYVFGLKEIGNLATDM AMDIKRFMPANVRKEWKGYQHSQQLQSLAFYDKRPEEAFNIL QEVWDINREKSLWDTWILNAFQTSGNFERFFELYHEGRKKYI QQQLENIDRYTDNKKFLQKFINQQFPTNFLEKRLYTLESLEIEK LKILSKPFILPRGTFDEKPTFIMGEKV TENPEL FADWYTYGYQQ HEFQKFYSWPRDYKDLLQNEQKRDPDFAENKKGLSDLKQLEL LQLKQDIIKKIKTQDLYLKLIMDALFIEVFGQEADISLNDLYLT QEERLEKEKLALKQHQRVEGDDSPNVIKDNFIWSKTMPYKHD KIYEPQVRLKDFGKFKHFLDDKVAKILSYDLQETWKNKELEI QINTGQDSYEVIRREELLKEIQLLEKQILETFSHTLDEHPKEFED EKGNPNFKMYMANGVIRKGSSTAKDEADWLEHEKDFDNLS LEIFNSKSEITQLTFLIVLIRNKFGHNQLPIKQFYEHQNEYSITGE TISRLYLNFIIYAKARLKDLM
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【表 1 - 2 6】

26	Cas13	MEEKLGKGV EYNPFKKEDKYYFGGYFNLAENNINEVFKEVK KRLGETNSSSNI ELLNNVFRKEMSLVDYEKWWNAFADYFPIV NYLDRETIKKGEKVVEVPREKRIECFRDMFKGLINTISQLRHY YTHYHHEPIEIDDKILSFLDEVLFNTIITTKNKYLKTDKTKELIK DSLQEELDILCKLKVKYLESKRKRFRDRKDKGAIENAVYNDVF RRFIYKDEKGNESLKDII RTKQIKVHQNSSYLELPISSSGHI FLLS LFLNKKEVESLKS NIRGYKGKSKSEETTPEKNGLLFMTTHRIYS VLAYKGLKKRIKTSVKGDKETLLMQMIDEVSKVPHCIYQNLD QTLQATFIEDWNEYFKDNEENEENLENSRVLHPVIRKRYEDKF NYFAIRFLDEYAEFPSLRFQVNLGNYVHHKATKKFGNSEVTTE RVIKDKITVFGRLSEVNKAKADFFKNETELDPAWELFPNPSYE FPKEKGNNDKDAGKIGIQVKLLNKDIEAVLNESKNTLNNKTR KSDKISKKEIINKIVQINDDTKYNNKNIIYQGNAIAYLSLNDIHS LLYELLVIGTKGDKLERKVVEKIQQQVTEIRNKDTS AKILSKY KDSEESNTIDKKKLVIDLKYEYDKLQDLLKEHKNREEDYIQTK KKKKDSPKRKYILYHNEKGQVAVWLSNDIKRFMPQNFKEKW KGYQHSEFQKSLAYYETNKEMLK IILQDL DLEQFPFDIKSCFY KNTLED FYNRYLSLRISYLENVIDRVECF SNEPKAFKSVLKECF VFLKKQNYTNHSLDEQVKKILANPIFIERGFLDTKPTMIQGVKF SENKGC FADW FVHYKEYEHYQKFYDTNLYPVESIEDKERQKL EATIKKQQKNDVFTLLMIKKIFNDL FNQDFEANLYEMYQSKEE REKNQLVAKETQNRNLNFIWNKPIAIDLFDGKVKIDEVKLKD VGSFRKYENDKRVQTFITYIPEIQWIPYLPNTWEGINLPVNVIE RQIDRYEKVRSEELLKEVQAIEKYIYEQVNDKTELLQNGNQNF KNYLVNGLLKQIQGIDVSNFKFINQQKFETINVKDLDNEASAL EQKVYVLINIRNQFSHNQFPKSAFYQFCQKILSIEEDEL FADYY LRLFKLLRNELLD
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【表 1 - 2 7】

27	Cas13	MNTRVTGMGVSYDHTKKEDKHFFGGFLNLAQDNITAVIK AFC IKFDKNPMSSVQFAESCFTDKSDTDFQNKVRYVRTHLPVIGY LNYGGDRNTFRQKLSTLLKAVDSLRNFYTHYYHSPLALSTELF ELLDTVFASVAVEVKQHKMKDDKTRQLLSKSLAEELDIRYKQ QLERLKEQGNIDLRDEAGIRNGVLNAAFNHLIYKEGEIA KPTLSYSSFYYGADSAENGITISQSGLLFLLSMFLGKKEIEDLKS RIRGFKAKIVRDGEENISGLKFMATHWIFSLSFKGMKQRLST DFHEETLLIQIIDELSKVPDEVYHDFDTATREKFVEDINEYIREG NEDFSLGDSTIIHPVIRKRYENKFNYFAVRFLDEFIKFPSLRFQV HLGNFVHDRRIKDIHGTGFQTERVVKDRIKVFGKLSEISSLKTE YIEKELDLSDTGWEIFPNPSYVFIDNNIPIYISTNKTFFKNGSSEF IKLRRKEKPEEMKMRGEDKKEKRDIA SMIGNAGSLNSKTPLA MLSLNEMPALLYEILVKKTTPEEIELIIEKLD SHFENIKNYDPE KPLPASQISKRLRNNTTDKGKKVINPEKLIHLINKEIDATEAKF ALLAKNRKELKEKFRGKPLRQTIFS NMELGREATWLADDIKR FMPDILRKNWKGYQHNQLQQSLAFFNSRPKEAFTILQDGWDF ADGSSFWNGWIINSFVKNRSFEYFYEA YFEGRKEYFSSLAENI KQHTSNHRNLRRFIDQQMPKGLFENRHYLLENLETEKNKILSK PLVFPRGLFDTKPTFIKGIVDEQPELFAEWYQYGYSTEHV FQ NFYGWERDYNDLLESELEKDNDFSKNSIHYSRTSQLELIK LKQ DLKIKKIKIQDLFLKLIAGHIFENIFKYPASFSLDELYLTQEERL NKEQEALIQSQRKEGDHSDNIIKDNFIGSKTVTYESKQISEPNV KLKDIGKFNRFLDDKVKTLLSYNEDKVWNKNDLDLELSIGE NSYEVIRREKLFFKKIQNFELQTLTDWPWNGTDHP EEFGTDDNK GVNHPNFKMYVVNGILRKHTDWFKEGEDNWLENLNETHFKN LSFQELETSKSISQTAFLIIMIRNQFAHNQLPAVQFFEFIQKKYP EIQGSTTSELYLNFINLAVVELLELLEK
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【表 1 - 2 8】

28	Cas13	METQILGNGISYDHTKTEDKHFFGGFLNTAQNNIDLLIKAYISK FESSPRKLNSVQFPDVCFKKNDSDADFQHKLQFIRKHLPIQY LKYGGNREVLKEKFRLLLQAVDSLRFYTHFYHKPIQLPNELL TLLDTIFGEIGNEVRQNMKDDKTRHLLKKNLSEELDFRYQE QLERLRKLKSEGKKVDLRDTEAIRNGVLNAAFNHLIFKDAEDF KPTVSYSSYYYDSDTAENGISISQSGLLFLLSMFLGRREMEDLK SRVRGFKARIKHHEEQHVSGLKFMATHWVFSEFCFKGIKTRLN ADYHEETLLIQLIDELSKVPDELYRSFDVATRERFIEDINEYIRD GKEDKSLIESKIVHPVIRKRYESKFNYFAIRFLDEFVNFPTLRFQ VHAGNYVHDRRIKSIEGTGFKTERLVKDRIKVFGLSTISSLKA EYLAKAVNITDDTGWELLPHPSYVFIDNNIPIHLTVDPSPFKNGV KEYQEKRLKQKPEEMKNRQGGDKMHKPAISSKIGKSKDINPE SPVALLSMNEIPALLYEILVKKASPEEVEAKIRQKLTAVERIR DYDPKVPLPASQVSKRLRNNTDTLSYNKEKLVELANKEVEQT ERKLALITKNRRECREKVKGKFKRQKVFKNAELGTEATWLAN DIKRFMPEEQKKNWKGYSQHSQQLQQSLAFFESRPGEARSLQA GWDFSDGSSFWNGWVMNSFARDNTFDGFYESYLNRMKYF LRLADNIAQQSSTNKLISNFIKQQMPKGLFDRRLYMLEDLATE KNKILSKPLIFPRGIFDDKPTFKKGVQVSEPEAFADWYSYGY DVKHKFQEFYAWDRDYEELLREELEKDTAFTKNSIHYSRESQI ELLAKKQDLKVKKVRIQDLYLKLMAEFLFENVFGHELALPLD QFYLTQEERLKQEQAIVQSQRPKGDDSPNIVKENFIWSKTIPF KSGRVFEPNVKLKDIGKFRNLLTDEKVDILLSYNNTEIGKQVIE NELIIGAGSYEFIRREQLFKEIQQMKRLSLRSVRGMGVPIRLNL K
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【表 1 - 2 9】

29	Cas13	MENQTQKGKGIYYYYTKNEDKHYFGSFLNLANNNIEQIIEEFR IRLSLKDEKNIKEIINNYFTDKKSYTDWGERGINILKEYLPVIDYL DLAITDKEFEKIDLKQKETAKRKYFRTNFSLLIDTIIDLRNFYTH YFHKPISINPDVAKFLDKNLLNVCLDIKKQKMKTDKTKQALK DGLDKELKKLIELKKAELKEKKIKTWNITENVEGAVYNDAFN HMVYKNNAGVTILKDYHKSILPDDKIDSELKLNFSISGLVFLLS MFLSKKEIEQFKSNLEGFKGKVGIGENGEYEISKFNNSLKYMAT HWIFSYLTFKGLKQRVKNTFDKETLLMQMIDELNKVPHEVYQ TLSKEQQNEFLEDINEYVQDNEENKKSMENTSIVVHPVIRKRYD DKFNYFAIRFLDEFANFPTLKFFVTAGNFVHDKREKQIQGSML TSDRMIKEKINVFGKLTEIAKYKSDYFSNENTLETSEWELFPNP SYLLIQNNIPVHIDLIHNTEEAKQCQIAIDRIKCTTNPAAKRNTR KSKEEIIKIYQKNKNIKYGDPTALLSSNELPALIYELLVNKKSG KELENIIVEKIVNQYKTIAGFEKGQNLNSLITKKLKKSEPNED KINAEKILAINRELEITENKLNIIKNNRAEFRTGAKRKHIFYSKE LGQEATWIAYDLKRFMPEASRKEWKGFHHSSELQKFLAFYDR NKNDAKALLNMFWNFDNDQLIGNDLNSAFREFHFDKFYEKY LIKRDEILEGFKSFISNFKDEPKLLKKGIKDIYRVFDKRYYIHKST NAQKEQLLSKPICLPRGIFDNKPTYIEGVKVESNSALFADWYQ YTYSKHEFQSFYDMPRDYKEQFEKFELNNIKSIQNKKNLNKS DKFIYFRYKQDLKIKQIKSQDLFIKLMVDELFNVVFKNNIELNL KKLYQTSDERFKNQLIADVQKNREKGDTSNKMNNENFIWNM TIPLSLCNGQIEEPKVKLKDIGKFRKLETDDKVIQLLEYDKSKV WKKLEIEDELENMPNSYERIRREKLLKGIQEFEHFLEKEKFD GINHPKHFEQDLNPNFKTYVINGVLRKNSKLNYTEIDKLLDLE HISIKDIETSAKEIHLAYFLIHVRNKFGHNQLPKLEAFELMKKY YKKNNEETYAEYFHKVSSQIVNEFKNSLEKHS
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【表 1 - 3 0】

30	Cas13	MEKTQTGLGIYYDHTKLQDKYFFGGFFNLAQNNIDNVIKTFIL KFFPERKDKDVNAAQFLDICFKDNDADSDFLKKTFLRMHFP VIGFLASNNDKAGFKRKFSLLLKAISELRNFYTHYYHQPIEFPS ELFELLDDIFVETTSEIKKLKKKDDKTQQLLNKNLSEEYDIRYQ QQIERLKELNAQGKKIPLNDETAIRNGVFNAAFNHLYKDGGD LKPSRVYQSSYSEPDPAENGTSLSQSSILFLLSMFLERKETEDL KSRVKGFKAKFIKNGEEKISNLKLTATHWVFSYLCFKGIKQKL STEFHEETLLIQIIDELSKVPDEVYSAFGAKTKQKFVEDINEYM KEGNADLSLEDSKVIHPVIRKRYENKFNYFAIRFLDEYLSSTSL KFQVHVGNYVHDRRIKNINGTDFQTERVVKDSIKVFGRLSKIS NLKADYIKEQLSLPNDSNGWEIFPNPSYVFIDNNVPIHIQTDEA TKNGIKLFDTRRKEQPEELQKRKGKLSKHNIVEIIFKETKGKD KPRVDEPLALLSLNEIPALLYQILEKGATPEDIELIKNKLAERF EKIKNYDPETPAPASQISKRLRNNTTAKGQETLNAEKLILIER EIEDTETKLDAIEEKRRKAKKEYRRNSPQKSIFSNSSELGRIAAW LADDIKRFMPAELRKNWKGYSQSLQQLSLAYFEKRPQEAFL LKEGWDTSDGSSYWNIWVINSFSETEDFEKFYENYLRKRAKY FSELAGNIKQHTHNAKFLRKFIKQMPADLFPKRHYILKDLET EKNKVLSPVFSRGLFDSNPTFIKGVKVTENPELFAEXXNGIA TGTKRNIPSSISMAGKETIMSF
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MEQNLKLGKIDYNPFKTVDKHYHFGFFNLADNNIQEVFDEINI
RYKNGNLKPKVAIERYTTENTSLVEYEKFAVAILTEYFPPIVKEID
QKNKKDSNDKVIEKTRIERITDFRDAFILFIETIEKLRSYYTHYQ
HDDITIDNQLFIHLDKILLNTVLETKKKYLKTDKTKELLKNSLQ
AELKELYHLKINQLEQKKNEVDALIKEQKSKGKKTDPFKYS
KDRDQIINSIYNDAIRPFLYENANKVELSDKKKTAFANEKDASA
SERDFNLPISSSGIIFLLSCFLNRKEIEDLKANIKGYKGKVIKGET
FDLEKNSIRFMATHRIYSVMCYKGLKNKIRTSESATKETLLMQ
MIDELSKIPDIVYKNISTDLQNTFTEDWNEYKDNIIENNENLE
NSKVIHPVIRKRYEDKFNYFAIRFLDEFVDFPSLRFQVHLGNYI
KHSMPKNIGSVTTTREIKNKIFVFGKLNEINQSKNDFFNKNKEE
EQETNWEIFPNPNYHFPMENTSDELKNANKIGIYIDLKDKRKKD
TLNEAIKKREKETSIIYKKDLVHQIIDKNLDMHIGQPVAYLSMN
DIHAIIFSILSQNVFTKDNKLNGGDIEKKIKDQINNQITEITEKDA
SIKILKNHSDNNSNYPNTHKLYDDISNEIEXXXXXXXXXXXXXXXXX
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LMQKHEKRVKEYINTQEDKKYKPAKHILYNSEKGEIATWLA
NDIKRFFPKFEFKENWKGHYHSEFQRNLAYYETNKKKEVKTILN
DLDYRKEIPFIDFSKNTLADFYFEYLLKRRKIYHKNLWVEVNKL
IKGENINKEKLFDCNCFRIYKRKNYVSNVIDEKVNTILSNPIFIER
GFIDEKPTIIPKMPLGNEEHFAAWFVAFKSFKNNEFQNFYDT
NKYPLETKDKTNSSELKKIQTCTYNQKKNDWATWLIVQYIFKD
IFSTDQNVKLSELFQTREQRIQNQVKALDGERNQNFIWNRTI
DLQLNEKIKIPNVKLKDIGNFRKYVNDNRVEAFLRYNDITQW
MAYLPSNWQKEDESKPKPVNVIQLQLDDYEKIRREELLKEVQ
KLEKTIYNNTNVKTVLLQDGNPNFKNYVLNGLLEEIKGINISA
FTVLHEKTNFDKIDFNVLENCSEIEQSATLIILIRNKFAHNQLPS
SDCYQFCISKILTRDTEQTYANYYLKLFMILKDKL

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【表 1 - 3 2】

32	Cas13	MEETTTMGKGVAYDHTLFDKDKHYFAGYLNLA VNNIENVFKT VYKNRFDIKQHNLYKILDSLDGQISEPDYIERVSFLKQYFPVLH YLDLHPDNKRFTKEEDKVKARRRYLINNLRLLIETLSKLRDFY THYYHKPLSIEQNTFSLIDNIFLNVVIDVKRQKKKNDHTRQLL KDSLKEEMDILYQKTKASLKEKQKENTRIKLDSETINNTIFNNS FSHLIYRRKKADNDILSASCKSEYKGEPTENGINVSVDGLLFFL GIFLSRKESNDLRGRIKGFKGTVIKDLPDFPNEKNNSLKFMAT HWVFTYLNKPIKQKLNTNFSRETLLLQIVDELTKIPNEIYRNL CFKKQQEFVEDINEYIKEGDDIDTLNSSTVIHPVIRKRYENKFN YFVLRYLDEFVSFNSLRFQIYLGNYVHHIQRKKLSGTEYETER VIKEKINVFGKLSEVSNIKGDYFIQNNPDNEALGWEIYPNPSYN FTGNNIPIYFDINDQDKEKINEYKSIRNFSEKRILRKKNKKNKQ EIFDLINNTLTTRVFTAEP TAILSLNELPALLYTILCENKTASEIE NLLRRTYLKRLNTIKNYQPGTLPQSKITKNLNKSTNQESLDVS KLIKAMKHEISISNEKLTLIKKNQNEVKDTSHRRKYVFNSKEL GIEATWLANDLKRFPKVKVRENWKG YMHSQLQNSIAYYSQK PKEALSILSSVWNFNDDNYIWNNEGIKKAFNEKEFEKFYCKYLA SRNKTLEKLKENLDNLEYKTDKRKLDKFIKQQNLDCLFHIRTY TIDSTQEQINKLLAKPLVFPRGIFDSKPTFVKNESVTEKPELFAD WYTYTYKEHPLQEFYSFTKDYE CNFKKEKLTVKEFVKNQEQL NPEEQLNLFKLKEDLSIKCIKNQDLFLKLVDNIYNKIFEYNIDI SLKNLYISRKERIAIGLKAKELNQINDSYIWGKTILYQDKQIRE TKVQLKDINKIKRFLEEDKVKQILSYDINKQWEIEELKYELYIK PNSYEVIRREKLFKAIQEFESYILTINNF DGSNHPSILEYNSNPRF KHYYVNGLLLLKKGLATNEEIEWLLAKGQKEFN TFDKSIVEKP EIIQKAFLLVLIRNKFAHSQ LPIKEYYEMIRSYTKNIENLNTTEH FQFTTNTINELKR
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【表 1 - 3 3】

33	cas12b	MATRSFILKIEPNEEVKKGLWKTHEVLNHGIAYYMNILKLIRQ EAIYEHHEQDPKNPKKVSKEIQAE LWDFVLKMQKCNSTHE VDKDVVFNILRELYEELVPSSVEKKGEANQLSNKFLYPLVDPN SQSGKGTASSGRKPRWYNLKIAGDPSWEEKKKWEEDKKKD PLAKILGKLAEYGLIPLFIPFTDSNEPIVKEIKWMEKSRNQSVRR LDKDMFIQALERFLSWESWNLKVKEEYKVEKEHKTLEERIK EDIQAFKSLEQYEKERQEQLLRTLNTNEYRLSKRGLRGWREI IQKWLKMDENEPSEKYLEVFKDYQRKHPREAGDYSVYEFLSK KENHFIWRNHPEYPYLYATFCEIDKKKKDAKQQATFTLADPIN HPLWVRFEERSGSNLNKYRILTEQLHTEKLKKKLTVQLDRLIY PTESGGWEEKGKVDIVLLPSRQFYNQIFLDIEEKGKHAFTYKD ESIKFPLKGTLLGGARVQFDRDHLRRYPHKVESGNVGRIFYNM TVNIEPTESPVSKSLKIHRDDFPKFVNFKPKELTEWIKDSKGGK LKSGIESLEIGLRVMSIDLGQRQAAAASIFEVVDQKPDIEGKLF FPIKGTELYAVHRASFNIKLPGETLVKSREVLRKAREDNLKLM NQKLNFLRNVLHFQQFEDITEREKRVTKWISRQENS DVPLVYQ DELIQIRELMYKPYKDWVAFLLKQLHKLRLVEIGKEVKHWRKS LSDGRKGLYGISLKNIDEIDRTRKFLLRWSLRPTEPGEVRRLEP GQRFAIDQLNHLNALKEDRLKKMANTIIMHALGYCYDVRKK KWQAKNPACQIILFEDLSNYPYEERSRFENSKLMKWSRREIP RQVALQGEIYGLQVGEVGAQFSSRFHAKTGSPGIRCSVVTKEK LQDNRFFKNLQREGRLTLDKIAVLKEGDLYPDKGGEKFISLSK DRKLVTTHADINAQAQLQKRFWTRTHGFYKVYCKAYQVDG QTVYIPESKDQKQKHEEFGEYFILKDGVEWGNAGKLIKIKK GSSKQSSSELVDSILKDSFDLASELKGEKLMLYRDPNGNVFPS DKWMAAGVFFGKLERILISKLTNQYSISTIEDDSSKQSM
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【表 1 - 3 4】

34	cas12b	MATAVDTSTTRAYTLRLSGGNNWRELLWQTHVAVNRGAWV WGDWLLTLRGGLPASLADGDAERRVVLALSWLSVESPASLAP QAHIVAYGSDARDERNRKVTERFRDILRRMGIKQQQEWEWLD ACLPALMASIREDAVWVDRSACFAEAQQCYRGLSSEWARKT LFDLGGEDDYFKPSAKEGASSKAKDFVQKAGRWLSRHWGA GKKSDPRDISTRLGKLAVDPKAIDGHTGRAALEDLLRTLGSR PAQNADAEKLYRQLKRAVGWKGRPSKGAVALKKIRDAERVP NDLWKEIASTLREEAAVQSSQTSDHAAVPDWRSHWPAEITGL PMPYRVDRDYIWEHGVMLDHALRRVSSAHTWIKRAEAERRR FQQDAAKMGSIPEEARNWLDAFRERRSSSSGATGDYLIRERAI NGWDKVVQAWETLGPNSTRDQRIAAARDVQANLDEDEKFG DIQLFAGFGDEHVDDPERCLADDRATCVWRNSSGRADGRILK DYVAATVAEHNQRRFKVPAYRHPDPLRHPVFVDYGKSRWSI NYSALTAAQQRKTTQKLAQAKTDNTRAKLQQQLASTADLR SVTLGVWDGNRIVKISQRWRSKRFRWRDLDLDFGSHPSAAVS RADRLGRVAARQDPGAADVYVAKVFEQQDWNGLQVPRREL NRLADVYVGKGADPDFGKLERLDPRARRLWERLSWFLTTSA TVQPQGPWLDYVAAGLPSGIQYTKSRAGYYLNYDANHGRKG RARLCLARLPGLRVLSLDLGHRYAAACAVWQTLTIEQMTNEC RQAAHPAPSNDDLFIHLRHPHHPKQKSGRKKGRPVTKTTIYRR IGPDKLPDGTDPAPWARLERQFLIKLQGEDRPARYASQKEID EVNQFRNFVGLPIVDRPRVDDLHSDAVRVARLGLRLADAA RIAFAMTAAKKPISGGHEVELTTAQRIEFLQDALLWQSLAAS RRYRDDWAEKLWQSWVVEKLGGPQPAEIADDLPRSQAASL KTARQSLRKVAEKLSQGQSPSAELHRLWAERWQQRQTEWR RHLRWLRRLLILPRRKDHQQEDRPLQRVGGLSVKRIQTIRQLYQ VLKAFRMRPEPSDLRKNIPAGDRSLASFGRRLNHLERLREQR IKQLASRVVEAALGAGRISKPPGRDRRRPQQPVDRPCHAVVIE NLQHYKPEDSRLRRENRLMDWQARNLRKYIVEGCELHGLL FVEVSPAYTSRQDSRTGAPGLRCEDVSRTALQEAARRMHASH SRPSNSSPGGSQTQFEREVCRWINEFKRVEGSSSSLSARQAVL KAFLHHQASIPTSLSTILLPRRGGELFVSADPDSPLACGLQADL NAAANIGLKALTDPDWMGAWWFVLVDRASGQPVEEQVQGC PIWLSCGPLSNSNPATIDPSDSPTAARRSNGTGAKGRARANAY WWSSLSATTLPDHKAWQPTQDYWRDIEQRVVKRLLRLLDGS EWSER
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【表 1 - 3 5】

35	cas12b	MNRIYQGRVSKIEIKDSEGNFRNVPVGSPDTCPLWRHHRIFQD AVNYYLVALGALAGTGSENAFVGLGSKDRVIHDLYSRLFDWS ERFPRDMHGASSLRDSLRRITLPLGLSERASLQDAFDAILSGNEA NARERVLSLLSLIQDLGGDIQKGSKRYFPFFCEPATKATFPRAR VGLLKVEGKDFVPRLLWSSDLEIAPDQVVEQLKFEYFANPNES VQPIEGNEARVRLIEALDNPQLGIELPIELSDLRKRVLHETDIR IPRYFFGGAGAELRKFRDLFLIAAYVTPDPSILRALRNSFKEPS ASKSSKKKDETEEEVENLLRSLGDDPLILARGERGFVFPSTSLP TWVGANAQKPIWRDFDIAAFAEALKSLNQFTAKTEEREKCLK KAEETLHYMLGISDAIPRSSDSETEEQAPSRPGKDPRWPLVAQ LEKELGENLSEGTWQLSRSAMRGLRDIHGLWRKHPGASVVTL QKDVKTYQADEKHKREIGSVQLFLLLCEERYHALWQTETDDE RGDESEENDDPARILSDAIEVHQIRREVERFREPIRLTPAEPVFS RRLFMFSDLTDKLAKVKFGETTEENSEVKSQFVEAAIALKEGE NLKEARVRITFSAPRLHRDELLGGAESRWLQPITAALGFSNPA PSVKFDSAVALMPDHMDGGRIRHLLNFPVNFDSAHLHQSIGK ADLWKSQFNGTKDKNLHLHWAGTARDTTRKNTWWENRTIE NGFTVLSNDLGQRSAGAWALLKVTCSRPDTKHPVRSIGHDGT REWFATVLTATGIHRLPGEDQRLKNGKWATEQSGKKGRNATF SEYEAACVLAKNLGCESVENWLGMSGESYPALNDQLVKIA NRRITRLGTYHRWSCFSPEKFEDPARRANVIGGQLAELSAYQD ENVTVSADILKSGDFEGFRHRAGAAFEALRTELEVHLVNLAN LTAPLRQKVWSWQKRPDSSGYGDLLMVDLDDCHPKIRGQRG LSMARLEQLEGLRRLFLRYNRS�DRSPGIPAKFGREDVGRITSG EPCQALLVKIDRMKEQRVNQTAHLILAQALGVRLCPHRIEENE RKSRDLHGHEYKIPGREPVDFIVIEDLSRYLSSQGRAPSENSRL MKWAHRAVRDKLKMLAEPPFGIPVVETVPAYSSRFHALNGQ AGSRLHELHELEAYQQSLINLAAKTDQNRDRSKAAGELFE QFQALAKLNERRRAEGKKVPRTLYYPKSGGPLFLASRDGDTI HADVNAAINLGLRAIAAPACIDIHRLRATKEKEVYRPRVGNA REKSAFSKDDIIPSGAPSKKFASSSSPNFFYEPEDLKQANGEP LFDRAFMGEYSLVSGVSLWSMVNNAIYIRCVELNRTRLHGKD PDDQIPM
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【表 1 - 3 6】

36	cas12b	MSITRSIKVKLIVPRDASLEARQLREGLWATHLFVNDGCHYYE RLLLEFRQRDVCVGKDDAGKDVIVPAAEWADRLRARLGRNG MVPSHIEAALPIFRELYENMVPSALKAKSGTGQAGRSWHSKL VSPTSRGGEASAARIDVLRPLLPSGDDPAFEPAAARALIEEAGD ELLTSTGRCPAWVTAYRKGPESAWVEKLRIQLREAVEAGDF DPPSDPQILAAGAVPAAPPLGAGIDALRPLLPLGGDPAFEPAA RALVEDIGDELFTSTGRPPTWVTAHPTWVRAHRKDAECLEAA DDFKWVERLRQRLRDDAKAGKFEQPLHERLGALGALPVAKPI GAGRVVSRADLTVFERGAMELAIEHLIGWESAGHRARAQYVE RKKRHDDLQWIEAEAPDALLAVRAYEAARTIHLATLGELGA APQYTLRLREIRPWRKLRWLLQNPDATIDERRRRLATMQTN DPRGYGGEALAWLAAPERRALVEHPAGDVVTRIAVLNIRKSIL DRSRLFPTCTLADPVEHPRFAKFGKPGDKNSAGYALAVDGVR REAIKILVPRQDGLLVPTDLRVPFAPSGQMRDLRASGLDISYE RQDGRGRQAAKLQGGNLMFDRTHFARCGAPGPEALGSVWIK VALDLSSPAASLAMKTATPVRTYLSTAVRGRPESTKYEKAAPP EGFRVLSVHMGLRTAATASMLRFGAPEEGGHEVPVSGLAGET LVAFHERTVTMKLPGEDPDTRTEANRGVAKRELRLGRGIGC LKAIRRASASATPEDRAEALVIIETHVGQGDRHWAPAEAVG RLDPHGDPPDWKTACAALYAAVEADLGVAISSWRKAARAG GATGMLGGKSLWAVDHLSRFRFLRSWDLRARPHDGDPRRP RPGYASKLLHHIDGVKDDRVTADRVQAACGRAWIGGPTV KRGTDQDVRLPGRWEQRGPRADLILLPDLTHFRFRSDRPRAENS RLMRWAHRQLAIYVRMQAEVEGILVADTGAAFTTRFDWGTG APGVRCEPVTADHLRGIKREDYWLARLLREGALKHLRIDPA SLRVDDLVPMDHGKILVALDGVDLPLRLDLDVNASQGLGR RYIEGHGLAYRLPGARVPRGEGEREAAVVHIK GKRLASAMGG TVVVLRASEGPGDITWTAEVYDRPQGARKALGLSLAAFNSIA TAAVDDEGPAPENDDEALEEEAEEALGIATGERIVFFRDPSGA VAGGGWLEASAFWGIANRMVTDRLRELGRLG
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【表 1 - 3 7】

37	cas12b	MSLNRIYQGRVAAVETGTALAKGNVEWMPAAGGDEVWQH HELFQAAINYLVALLALADKNNPVLGPLISQMDNPQSPYHV WGSFRRQGRQRTGLSQAVAPYITPGNNAPTLDEVFRSILAGNP TDRA TLDAALMQLLKACDGAGAIQQEGRSYWPKFCDPDSTA NFAGDPAMLRREQHRLLLPQVLHDPATHDSPALGSFDTYSIA TPDTRTPQLTGPKARARLEQAITLWRVRLPESAADFRLASSL KKIPDDDSRLNLQGYVGSSAKGEVQARLFALLFRHLERSSTF LGLLSATPPPKNAPETPPAGVPLPAASAADPVRIARGKRSFVF RAFTSLPCWHGGDNIHPTWKSFDIAAFKYALTVINQIEEKTKE RQKECAELETDFDYMHGRLAKIPVKYTTGEAEPPPILANDLRI PLLRELLQNIKVD TALTDGEAVSYGLQRRRTIRGFRELRRIRWG HAPAGTVFSSELKEKLAGELRQFQTDNSTTIGSVQLFNELIQNP KYWPIWQAPDVETARQWADAGFADDPLAALVQEAEQEDID ALKAPVKLTPADPEYSRRQYDFNAVSKFGAGSRSANRHEPGQ TERGHNTFTTEIAARNAADGNRWRATHVRIHYSAPRLLRDGL RRPDTDGNEALEAVPWLQPMMEALAPLPTLPQDLTGMPVFL MPDVTLSGERRILLNLPVTLEPAALVEQLGNAGRWNQFFGS REDPFALRWPADGAVKTAKGKTHIPWHQDRDHFTVLGVDLG TRDAGALALLNVTAQKPAKPVHRIIGEADGRTWYASLADAR MIRLPGEDARLFVRGKLVQEPYGERGRNASLLEWEDARNIILR LGQNPDELLGADPRRHSYPEINDKLLVALRRAQARLARLQNR SWRLRDLAESDKALDEIHAERAGEKPSPLPPLARDDAIKSTDE ALLSQRDIIRRSFVQIANLILPLRGRRWEWRPHVEVPDCHILAQ SDPGTDDTKRLVAGQRGISHERIEQIEELRRRCQSLNRALRHKP GERPVLGRPAKGEEIADPCPALLEKINRLRDQRVDQTAHAILA AALGVRLRAPSKDRAERRHRDIHGEYERFRAPADFVVIENLSR YLSSQDRARSENTRLMQWCHRQIVQKLRQLCETYGIPVLAVP AAYSSRFSSRDGSAGFRAVHLTPDHRHRMPWSRILARLKAHE EDGKRLEKTVLDEARAVRGLFDRLDRFNAGHVPKGPWRTLL APLPGGPVFVPLGDATPMQADLNAAINIALRGIAAPDRHDIHH RLRAENKKRILSLRLGTQREKARWPGGAPAVTLSTPNNGASPE DSDALPERVSNLFVDIAGVANFERVTIEGVSQKFATGRGLWAS VKQRAWNRVARLNETVDNRRNEEEDDIPM
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【表 1 - 3 8】

38	cas12b	MPTRTINLKLQISPKTDEGRKIRSALWTHSEINKAVAEIEKLL LLCRGEKYYTTNSKDEEEVPEPQVKTDALMARAVQAKNG KAGTGSDEEVLSALRMLYEATVPSSVLDDKGKPLSGDAQSIG GSYAGPICDPETCRIKDVDRLFESGPFAETASKKFTQLPAWFNE VTKKNFNKDEPEKFKVVGKDKDEKFYEIDLRQADAWYESPE VKDIVSKNKA FNKDKWWKNKRDGVDTWAAEFVKKQFDLRK DVRVSIREELWDRLGLLPLGSLYFKKPVGNKWNRMALFRLAIA HLLSWESWNHQT LAEYTKYTKYKDGLIELAGASRSLEVRFEP LRQYQKERHEELSRTSFVDDDRPFTIGARMIRAWGRVREAWR NKG DGIDERRQILADLQTELKGKFGDPHFLWLAEAGRESLW RDEDVLTTFVEINIAQRDLERHRPYSLMTFADARLHPRWAMY EALGGTNLRNYELTPEGKVKIPLLICEKDKLSEKTF TIPLAPSG QLKSLEIKSLPKKKVKISYASAHQFYAGIPGGSEILFDRLF MEN RASSALANGSCGPAWLKLTVDVESKAPPEWLDKKGRVQTPPT VHHFKTGLANKSKHTDKLEPSLRVLSVDLGLRTFASCSVFELV DEKPAKGLFFETDHPHLWAKHERSFKLTLPGEEAGDDPKVAQ ARREAMDEVYSLRRDMYRLKDILRLKIISAPNERREKLESKIA EMREKQDARAVVTSNFFERLSEKCDLNPPMWEHSCNEIHRDA EKAFSARIGEWKRTRKRPGSWEEWRETRSYHGGKSYWMIE YLEAVRKLLIGWSTHGRDYGEINRQNKRYGT VASKLLKHIN KLKEDRTKAGTDLIIQAARGYIPLPGKGWMEKYRPCRVL FED LARYRFKVDRPRRENSQLMKWGHREIINEATLQGEIYGMVVE TAGAGFSSRFHAKTGAPGVRCRYLKEDDFENGAPKEFLVRQM KNLMKGDRLEPGLLPWDGGELFATVDNGKPIVIHADINAAQ NLQRRFWTRFADAYRVNAVEENDNWVVTDTGVRVLGALEM AVHGEADRKPRTGFTLHGTLQSGAELKAEGKKTDIKDVEEDK DDSSISSEIIE LQDEKERKGRETFFRDPSGGILDPGKWYGSKRFW GRAKGAVTEALLDNQGANNALEEKPGNDEL PF
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【表 1 - 3 9】

39	cas12b	MATRSFILKIEPNEEVKKGLWKTHEVLNHGIAYYMNILKLIRQ EAIYEHHEQDPKNPKKVSKEIQAE LWDFVLKMQKCNSFTHE VDKDEVFNILRELYEELVPSSVEKKGEANQLSNKFLYPLVDPN SQSGKGTASSGRKPRWYNLKIAGDPSWEEKKKWEEDKKKD PLAKILGKLA EYGLIPLFIPYTD SNEPIVKEIKWMEKSRNQSVR RLDKDMFIQALERFLSWESWNLKVKEEYKVEKEYKTLEERI KEDIQALKALEQYEKERQEQLLRDTLNTNEYRLSKRGLRGWR EIIQKWLKMDENEPSEKYLEVFKDYQRKHPREAGDYSVYEFL SKKENHFIWRNHPEYPYLYATFCEIDKKKKDAKQQATFTLAD PINHPLWVRFEERSGSNLNKYRILTEQLHTEKLKKKLT VQLDR LIYPTESGGWEEKGKVDIVLLPSRQFYNQIFLDIEEKGKHAFTY KDESIKFPLKGT LGGARVQFDRDHLRRYPHKVESGNVGRIFYN MTVNIEPTESPVSKSLKIHRDDFPKVVNFKPKELTEWIKDSKG KKLKSGIESLEIGLRVMSIDLGQRQAAAASIFEVVDQKPDIEGK LFFPIKGT ELYAVHRASFNIKLPGETLVKSREVL RKAREDNLKL MNQKLNFLRNVLHFQQFEDITEREKRVTKWISRQENS DVPLV YQDELIQIRELMYKPYKDWVAF LKQLHKRLEVEIGKEVKHWR KSLSDGRKGLYGISLKNIDEIDRTRKFLLRWSLRPTEPGEVRR EPGQRF AIDQLNHLNALKEDRLKKMANTIIMHALGYCYDV RK KKWQAKNPACQIILFEDLSNYPYEERSRFENSKLMKWSRREI PRQVALQGEIYGLQVGEVGAQFSSRFHAKTGSPGIRCSVVTKE KLQDNRF FKNLQREGRLTLDKIAVLKEGDLYPDKGGEKFISLS KDRKCVTTHADINAAQNLQKRFWTRTHGFYKVYCKAYQVD GQTVYIPESKDQKQKIIEFGE GYFILKDG VYEWVNAGKLIK KGSSKQSSSELVDS DILKDSFDLASELKGEKLMLYRDP SGNVF PSDKWMAAGVFFGKLERILISKLTNQYSISTIEDDSSKQSM
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【表 1 - 4 0】

40	cas12b	MYRGFCTVTATSGGWQSTTFLAGAQMADTTTRAYTLKLQGD RLALWRNHVIFNNGVKAWGEWLLCLRGGPLASLADHRDSL VSKGEISRTFKERTAAITPATIRQELKFKAATEKKVREEVASRR KKVTETAVAKELLAARRSELRRILALSWLCPETPVQLVPQAAI VAAADDSREQKVLDGFRQILKRKGVSDVAGWVQDCDATLR ATIRSDAVWVDRTACFCSPRAVRPSEVDAAKHLFRLFGSMS DYFATASASSGPAEPKDFANTCRDWVSSFWGGGEKSNKASIL AALSAIAQIKPTRVVGKRGAALAVIAGVLEQKPVDDSVEALA RAIGWLSGRPSAARLAINAIAASPRVSQKLWDRLVLACEKDC GRQKSKLAFEGSASTIASALEPRLAGLTGMPYASTGRELIGEY ATMLAFAMRRVSQIHTKAKQAEAERRSFAPEQARLALVPSAA RKWLEDYVEARTAASGAVDGYQLRKRALGGWADVVAAWS RCETSEDRIA AVRELQADWEKAGDVQLFEALAADDAICVWQ SANGKTAASILTDYVRAAVADQNATRFKVPAYRHPDPLRSPT FVGFGNSQWSIAYSAQGEARERRKLLDRASGSAKDAERAREG LAREAVLQNVSLDLWAGDKMVPTQFRWQSRRLSDLALHSV PAMKGAKVTRATRFRARIAAGPVLLDGIADDTWNGRLQAP RRQLEDLARILDAKGLPFDDSKWPPKVRSLKHLGWFLTHS AKLTPSGPWLDYVAGGLANGWKWAEGREGACLFREDNKDR KGRAKLILSRLPGLRLLSVDLGLRTSAAA AVWQVVSQRQLTA AKDGAKSVDTDLFCLVRTGDRTQVYRRIGLSAWARLERQFL IRLDGEKAAARPATTNEWESLQSFRAWLGCGIERRPEKLPPVD SLQQSAERLCRLGLRRLSDLARVAYLLTAKERPIMGGRTAPLD EEGTVQAAQDALSILHALGSSSEDFSDARLQGIWRTAIGDTPPL AARLTKKQRQELREALRPAAEKLRGKAALGKELADLWKERS AAWAKHLRWLRDWVIPRFDKRKNGERVRSARGVGGLSLDRI ATIRGVYQIMRAYASRAEPTNLRAGVERLEKAAAKKL RPEFG RRMLAKMERLREN RVKQIASRIVEAALGVGSEDRLHWERGR RRPTAAISDPRFAPCHAVV IENLENYRPDEKRTRRENRLMSW AARAVGKYLAEGCQLHGLYLRQVSPAYTSRQDSRTGCPGLRC NDVRAQELLNPEGWIGRLVARAAEAVKEGKATPRQRLVTL AESARAGIAESA AVRIIAPGGQLFIAADPQSPASNGIHADMNA AANIGLVALLDPDWPAAWWRLPCKAATGYVDESKVGGSEAV PLGRAILEVGAEAGKVYVNAWSDPQDSAVSRREWTDTKRYW RDVEERVVEILLASNRGGRRGKPGAVPF
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【表 1 - 4 1】

41	cas12b	MATKSFEAKIVCKPDEKYTAEQKKQFLWFTHQVFNDGVRKVI PYVFKMKRGELGPEFQAIYYAITSSQDAIGKLEAVINPDWTSG KIGKSDPNKWKELLYQELEKGFRQRLKEEGIKSTKKFRKELE DEKKKLAKKEIGQKDIWADAAAAILRNKNLLLFNRDELLPNLPSE FRRKIYEMTIQLIHGHQELVANWEDEHAEWLIEKDKWEEHP EYMNVRPIFEKFEKEQGKVKGSRIRWLAYLDFLSSKPELANW RGKAKETIPLTKEERAGFRKPGQHF AAFNKNPELQELDR LHK EYQEKFARTQSKRTPHPDGFKHRPTFTLPDAMRHPVWYSFKG ATDPTKGSTYRNLDLENCTLDLKVLTAMEGEGRNPGGMIQYA FEPDERIKGFRYVGTTEKGKRAKGYIYYDPILEKERPAKIQGIK LVFRPPRPDGTAYLIFSCQIEDEKPKIKIWKDKEEESPGEITKRK KTEVYPPELITLAIDFGQRHLGAITICKNNNGRPEPIRFIPAYPK RRKDRESKPVS AWLAKIPGLTFNAVGMHEKEISAGMSRRFQD PKSIRQAGEKEGRKSKGQHIPETETPWAHLREHIANMKEDHY KKAANLIHRTALQNGAQVILIENLRNYRPMLERTNLENRRRMQ WAVRQTAKFLEDTARPLGLIVRQVSSAYTSRFCSSCGHPGAR VSLPGQKNWEKFYAEKYGKERKMIAVAGGQFFCCPACKKIIN ADINASLNMHKVFYQNFIWPGKIDKKDTKNFIWQGKNYNWD QIADDVQSFLDQKAGIKKEDDIPY
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【表 1 - 4 2】

42	cas12b	MAYGSEAPDERNRKVTERFRIILSRMGINQQEQEWLDACRP ALTASIREDAVWIDRSACFAEAQQHYPGLSSEWARETLFDLFG GENDYFALPDPEAAPSSSEAKDFVQKAGGWLSRHWGAGKKS STAISTNLNRLAGVESKAIVGRCGCDALAVLLTTLGGWPAKN ADSGTLYHQLKQAVGWKGRPSRAAKALEKVRDAPEVTDAL WRQTADTLRQEAVAQSSRAAGGSGVPAWMPAWREDMEARL GMPYRGARDYIWEHSVMLDHALRRVSSAHTWIKRAEAKRRR FQQDADKIGSIPAKAREWLDAFRERRFSASGALRGYLIRERAI DGWDRVVQAWASLGPNCTREQRIAAARDVQANLDEDEKFG DIQLFAGVGDEDEGDPQPCPADDDAICVWRDLNGRADSNILK DYVAATVAKHDQQRFKVPAYRHPDPLRHPVYVDYGNSRWSI EYSALKAAHQRRKTTEKL VQAKTDRARAKFQQKPADTPDLR GVTLGVWTGSSIEKVS LHWGKRFWKDLDLDFGRDPSATV SRADRLGRVAASQHPAAVHVAKVFEQQDWNGRLQVPRHEL QRLADLVYGKGGPDFAKLGSLDERRTRRQWEHL SWFLTST TIQPRGPWLDYVAQGLPQGIQYKKGRNGYYLEYAANQGRKR RARLCLARLPGLRVLSLDLGDYAAACAVWETLTREQITQEC HQAGHPGPSQDDLFIHLRHRTGKPQKSGRNKGKPVTKTTIYRR IGPDLLPDGTPHPAPWARLQRQFLIRLQGEDRPARFASQHEIDG SNRFREFLGLPPLADRPRVDDLHRDMVRLARLGLRRLADAAR IAFAMTATKKPISGGREETLATEQRIEFLQDALVRWQALAASS RYRDDWARQAWQEWIVEKLGGPQPAEIADELPRSQQATRVE TARRSLREVA AKLSNPQSSSATELHGLWAARWQERQTKWRQ YLRWLRRLLILPRRKDYQQANRQVHRVGGLSVKRLQTIRQLYQ VLKAFRMRPEPSDLRKNIPAPGDPSLASFGRRILHHRERLRQQ RIKQLASRLVEAALGAGRISKRLGRDRRRPRQSV DAPCHAVVI ENLERYKPEDSRLRRENRLQMLNMQARNLRKYIVEGCELHGLL FVEVWPAYTSRQDTRTGAPGVRCEDVPRSVLEEATRIRALGS APSGSSRGRSETRFEREVCRWIHEFN RVVGSSSGLSPRQSVLK AFLDHQAAIPTWRSTVRLPRRGGELFVSADANSPLANGLQAD LNAAANIGLKAL TDPDWMGAWWFVLVKRDSGQPVPQQVQG SPIWESCTRLSSPATVDSSDSPAGARRSKGRGARGRARATEYR WSPLSAMTMPDNKTWWPTRDYWPEIERQIADRLLREQIDPEN RF
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【表 1 - 4 3】

43	cas12c	MKKTSPLKRSALRTARRQIARGCLPIGNRDISTTRTRVLPLADS VADAVWNQARTAALTLRGFGSGSLFDLLDLHASGLRLFSSN GEREGFLLKQKFDAGKFDRAAAKDVGEDMPKFTAANLRAAL VAIPRGGGPDTDAKALATRLARAVGVKATKLDKPPKLLKDM AKELAMAFPTWKELSTANGEVGAVIDDVARMYGLRWPSLRR GWAFLRLPEVTRELGSPTLAFDPDAPVIDETSATARFAAIVARY LPECGGLTDSAAAKGVQARITTTNANGLSWLFGVGLRGMRD LPVDTVADTLAIDVTRGRDALRALVNDIKALPRLGEFGDRVY VESRATLQGAVDSLANYVGRDLVASADALEHDQPRPPVL DDADWKPAIFDGMGFTPWEVEDMLDARPVEVARLRLALGVL AGTTPAVAGDFARALADVEAFGAWAARTEAVAALINARVKV LKAPESLRLRGVLGGGRWKAVVSIHPDEGEPAQVIPQLDTQL QALLDDGQRAFDVLVADYTPTFAAALEHARSDMRASLADKG REAPSAESIDLLARRKLLDMVARVTRRGSPSLGHAFLAACAV QGLTRPGTATERSLRGHILSGEQALFVHPYARARSIVRLEHAG LLRLDLALLTAMERDAEQRADVREQIVLRFTRQSLLLGGLP GRIRLAKVPWTQEAAAASGVRGAPWLKLHPDDAGTVARSEVI KAFTARFHLSANGLLYRLNRMFLERYDIRCFIGDTLLFAPKA GAWTPPEQYRHGKYAHWLSHPDLPRTEGGAVDVVPAARWL TEASRRADEDGRASAVALLAQFPHEWVAACEFEGAPVYEGVF PCEGKIGGWMKRRGYRLAPPRHFAGELLAAFKDasVSPHGLT FEREMLREGTTVRELSRRVVAAYPIAVPHTHPDAERPWSPLHL MGLDLGEAGLGVCLRHIGTGAETTLPLVRKTRLLAHREEHY RRKVQPRQAFRKGYGDMELAVKAAIGEVCIIIDNLIVRYRA VPVFESAVAQARGSNKMIQRVFAGVVQHYTFVANNGAAQTV RQSHWFGAGRWSYTYGADLLPAARQMTEKQLLKAKAEAVF RPAMGFPGVMASGYRTSLVCACCGEDVLDAVDAAAEGGQV ALTTDAEGSGVLDLGGRLRIKLEAPSPNPIVQKAARRKRRRT PWEALADRTWTLTHKTDRAIDLATLRRGLRRPPASVQGHAT SGWEFHCAACGHIAQADVNAATNLVRRYDDRVRKMEQARA HWDDPSVRAKLASELAERAAARS
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【表 1 - 4 4】

44	cas12c	MLTTKFKLELPAGCPLREDAATFDECRKLYDVVEGCGNGTLT GFLFSVILSGFRIFPDGKTAEIFANRSVYDEDEFRSALVEAVGA PLPRFTVKALIKRLQMEVRARGNKDNRFVAEVMKEYRQTL CGKTLPGVDES YVDRLFEEMARELTSRYRSWNELKGDLLGA CKAVDAALRGFGDFPSLATMVTRAAARRLPKDSTIVFDPQSPC IDVQTIGVDAMPYAAVSTILSYPE SVGEKRRDFVQNHLTPSA AGLSWLFNRGLELFSEESVEELCRLFHVPEDQRTRIVQIQNAA RATPRQSFFLKKGGAPLG YHDFRSAFAGRINSWTANYLNRLE ELQGLLHDLTDELRLPDLVRNGEDFLATTD CRREEVEILCRSFS RERDRAQTAVEHLIGADPLQVVS DVAAIEEYSRIVNRLCAIKE QIVNSLRQAEDDKASRWTALWSEVKDEFQ PWEKLIRLPKLNG MSGGVPPAQDELETILARYSDVGRGASEHFD AVMEWAAKTG AEGDVLKKFAETEQQRADQ RAPGKYDGRELALRLVLQRVAR VVRDRSDACAENVRQWFLKENVFAERKDFN KFFFNRLGNLY VSPFSNRRHAGYKLS DGLVERSGAVWRELLALVKEMRGAYA SFSEAGETFLRLESLLMGMRIGALTKNIPAEVAALRLDDETAL ESVSEGLKLQLQQA EVPPSVLAKAFNVYVSLLSGCLIALRRER FFLRTKFSFVGNTALVYVPKEKSWPMPSRYEASPSWTPIFEND VLVRLSTGEVEVAETFRRAVALWGRTTDPVLKKALREL FHQL PHDWCCQVSVRSSGDMTPAKRKEDDRDVLIVEKKGKYDSTII SKKIAATALVRLVGPSTHKERLNRLLLDVGEVACDMTLLADQ EILQKVEDDRVHLS PGKLQFSLSVPISTPAEQCEDEVKSERKST HFRRIVAI DQGERGFAFAVFRLEDAGKKGAQPIAQGFVNIPSIR RLIARVHSYRK GKQSVQKFSQRFDSTMFTLRENVAGDVCGAI AGLMSRYRAFPVLERQVSNLASGGKQLELVYK MVNARFLDD RIPMHSLERTSWWCGTSDWVIPDLWVEVPESYAVKAKKDEIL EKDGKFYRTL RITPGAGVNAKWTSRICSQCGGNAMELIEKAR EEKVKTVTL DANGEVTLFGRTLRLYKRPSEERSREARRRNER APWTEPRADVRLSLDDFRRAVAENMRRQPKSLQSRDTSQ SRY FCVFTDCRCHNKEQHADINAAVNIGRRFLESLLRE
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【表 1 - 4 5】

45	cas12c	MRRQHHGGQNARDWRRKVAAAALRQKESVFTYKFGLSVND GDFDFDAAARTYDITEGIERGSLIGLVCAVHLSGFRLFSKVAET RQFLNRSRYPENEFQAALAAHTEIENPSVTVQSIESVFVTPPRK QDGVARLWSADELAKRLFQTWNNRSPREGERNHPELLLAQGI ARAVTKAFSGWKELADNAVHALTCADNYLATLGNRFPKLSL LPPLTAGSTQTGTLAFDPEPFLNMTGNEDIWLHQVVAVCAG RLKRYMPEIDPSSRKFA SRLTDSIVSSQNNGLSWLFGNGLRFLR QSSIAQIAETLSVSQNEHRRVEQLKEFADAIPVNPFFATDGYAE FRGSVGGKISSWVSNYWKRICELTVLHSQPPDITIPEGLLASEN ATLFSGQHTAAAGLVALSARLPSQVRDAGKALFVLSGDGVPR ADDIATVEDVAGELAE LTGQLAMLDNRIQQEIERAQDANDEG RVGSLASLRPNPTKELKEPPKLNRISSGTADAAGELARLETSL NDLIRARREHFYRLAEWTGNTASLDPLPALAERERKALTD RG MDPTLAEADEYALRRL LHRIAGMARRLSPNEAKRVRETMTP L FLKKREANLYFHN RAGALYRHPFSNSRHQPYSIDLNRARATD WLAWLEERAREMLG LLGSGAPANHEYLRDLLSIETFVFTTRL S GLPAQVPGYLAKPKSDL TNIPPLAAQLDVDEVSRDVALRAF NLFNSAINGLSFRAFRDSFIVRTKFLRLGHDEL FYVPKARAWK PPADYRSAKGKISKGLALPAVKRNEAGSILPRETTQGLSRAKF PEGSHALLSQAPHDWFVELDLRHDKMPQLAGLPVKMNADGL KGWRARRRPTFRLAGPPSFKTWLDRALTSTAVKLG DYTLILD QSFKQSLRVEDGEVRLSAEPAGIKAEIAPVIDARFPFETEA EA LFDNIIGIDLGERRIGYAVFSLPALLKSGNPTRVKPTVVGSV AIP AFRRLMAAVRRHRGSRQPNQKVSQTYSTALQQFREN VVG DV CNRIDTLCERYRAFPVLESSVANFETGANQLKLIYGT VLR RYT FSNVDAHKSARSAYWYSANRWQHPYLFVREWNKAQR TFTGS AKPLAIYPGVTHPAGTSQICHRCGRNALRALRNMPDR TIRVG KDGLIVLADSTIRLLERADYSDRELKTFKRRKQRPPLNMPVPE GARPRDQLERVLRRNMRQQPQSEMSPD TTQARFTCVYTD CGF EGHADENAAVNIGRRFLERIDIEASSRT
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【表 1 - 4 6】

46	cas12c	MTHAKKIPFPVLKRSTLRKARQRIAAGSITAGERPFNSTVTRV VPVKDPVSDQVWAVAREAAMTLRGFGQGSFLDMLIHLHADG FRLFPSGREREAFFLKDLFDPTFDDGARRAFGDVMPGFTANS LREILGAPARKCGKVTSEILLPRLSKGLGVKKSAAPEVLSSL AAALCEAFPTWSLLTAVDGGVGKVIDDVLRTHGSRLPSLEKA WSTNLPEVPKGLGVPTLAFDDQAPAQSEQTPTGRFAGVVARY LAETFASNPEATAGDASKAVQAKVTTPNGNALSWLFAVGRR AMCSTTLDELAIGLNITSPRGRHALSSLKERMALPALSVLGE RAYPDSRATLQGTVDSLIANYVNRLFELSSSATSIAQTKLILPA AIQGD TAVFDGMPFSAEDVGALFEQLPSEIAKLEHAVKVLVG KERTSTLGYQKA VDDVDEFGVWASSVDAVIGQINARLKTLE AQEPLGKLMGDGKLR LVNIHEPEGPAVEIIPVLDQELQDVL SCRTAFADLEARYPMTVAKAQRHAEAEVRNALELASRKEGG LSLASADVPALAKRKILEPIISIARRSSPAMATAVLTECLRQKLI VKGTGSESLRGYVLSGEQVIYAHPLSRRRSIVRLDREGLQNF DALEFLDALQKDATQRTNVRESLIVEMARQSLLLSALPDRIEIG AISWQTPSQNQHAPWANLRPVNGTVGRSETIKSFTAVFHSRIS GLLYRLNRQKFMEKYDLRCFIGSTLLFSPKNADWAPPPQYRH GRFSALLARSDFPWEAEGTHANAVRLAKFLIDETR NATDLQ QAIAAKALLAQLPHDWVVCDFDGAPSYEGAFVSAGEVSAW AKRSGYLLTPPRHFAGAFLEGFKSTKISPHGLTFERMLERDGD SVIETGRRVTA AFPITQEVAPAAQPWKPRHLA GLDLGEAGLG VCLKNLDNGHEQTLLKTRKTRLLAHS AEHYRRKDQPRQVFR KQYNQSSENA IKA AIGEVCG LIDNLIARYDAVPVFESQAAAAR GSNRMVARVYAGVLQRYTYVVGNGAADA TRTSHWLGANR WSYSFGADVIPKVRDL SPEVLSIKK PENVFRDALGFPGVLAN AWRTSMICSVCGTDPIGALEEAIANQISFVTDNEGEGSLDLG DGRKVTLRVEVPTSSALTKREASRRKRRAPWEAKVGT VWTL TRKSHRDDLLTTIRSLRRPSSTFQGSTTKQWEFHCPCCGQIQQ ADVNAASNLVRRYFVRASDNARARQHWADDSKRLAFIASMG PDRSAREEKVS
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【表 1 - 4 7】

47	cas12d	MRKKLFGYILHNKRLVYTGKAAIRSIKYPLVAPNKTALNNLS EKIIYDYEHLFGPLNVASYARNSENRYSLVDFWIDSLRAGVIWQ SKSTSLIDLISKLEGSKSPSEKIFEQIDFELKNKLDKEQFKDIILL NTGIRSSSNVRSLRGRFLKCFKEEFRDTEEVACVDKWSKDLIV EGKSILVSKQFLYWEEFGIKIFPHFKDNHDLPKLTFFVEPSLEF SPHLPLANCLERLKKFDISRESLLGLDNNFSAFSNYFNELFNLL SRGEIKKIVTAVLAVSKSWENEPELEKRLHFLSEKAKLLGYPK LTSSWADYRMIIGGKIKSWHSNYTEQLIKVREDLKKHQIALDK LQEDLKKVVDSSLREQIEAQREALLPLDMLKEKDFSDDELEL YRFILSDFKSLLNGSYQRYIQTEEERKEDRDVTKKYKDLYSNL RNIPRFFGESKKEQFNKFINKSLPTIDVGLKILEDIRNALETVSV RKPPSITEEYVTKQLEKLSRKYKINAFNSNRFKQITEQVLRKYN NGELPKISEVFYRYPRESHVAIRILPVKISNPRKDISYLLDKYQI SPDWKNSNPGEVVDLIEIYKLTGLWLLSCNKDFSMDFSYDLK LFPEAASLIKNGSCLSGYYLSKMIFNCITSEIKGMITLYTRDKF VVRYVTQMIGSNQKFPLLCLVGEKQTKNFSRNWGVLEEKG LGEEKNQEKCLIFKDKTDFAKAKEVEIFKNNIWRIRTSKYQIQF LNRLFKKTKEWDLNMLVLSEPSLVLEEEWGVSWDKDKLLPL LKKEKSCEERLYYSLPLNLVPATDYKEQSAEIEQRNTYLGLDV GEFGVAYAVVRIVRDRIELLSWGFLKDPALRKIRERVQDMKK KQVMAVFSSSSTAVARVREMAIHSLRNQIHSLALAYKAKIIEI SISNFETGGNRMAKIYRSIKVSDVYRESGADTLVSEMIWGKKN KQMGNHISYATSYTCCNCARTPFELVIDNDKEYEKGDEFIF NVGDEKKVRGFLQKSLLGKTIKGKEVLKSIKEYARPPIREVLL EGEDVEQLLKRRGNSYIYRCPCGYKTDADIQAALNIACRGYI SDNAKDAVKEGERKLDYILEVRKLWEKNGAVLRSKFL
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【表 1 - 4 8】

48	cas13a	MPIVKKFGRSQTSLSDRKIVLKMETAARNIPDFLLSDPEAVIGQ WASAMDKIAKKPKGKDKPSSYQRKFRERLGKAIWADLTGPE GPLRDVPAAELEDLRKRWDRRVHPYPDGTKDGPKPATPKGRL YTRFAGEVGYGKADAVAIARDIRIHLLLETEFKTGGGTRDAGR AVRRASSIEKNVLKKARVPQRPKPQEAAWSKEDEDYFIPHD VARKIVLAAKAQEKEDHRVAWRTAAAVLFEHFGRIFQQDGR ALSFAEAEKQMPGLLALHRAVEGYRQALKRHRKDRREHEA RPGREKGTGRRKVSAILPKDKTALLALIGHQHQNREIAALIRL GRILHYEAGRRGNSDMVANINRNWPADVSESHYWTSAGQIEI KRNEAFVRIWRSALSHANRTLGDWLSPEVANDITMSWESKH EKSGKRKTGKLEENREEAEAHAPVIFGGSERLGTGDDFQKT LEAICEVFSQLRHSSFHFRGLDGFKDALTCTVKTCDPGAVARL QDLHAEDQANREARLKEDLRGAHAELFLDEGRLAEIWALLHP KSTKTLPLPRYSRVVTRAENTCNGLKLPKSVNRESMKVPAI HCRYILTRLLYQSGFRTWIAEAPAAQLNRWIETATERAQKATV GITKNEADRARMVGQIKVPEGQGIRRFLLDLAGLTATEFRVQ AGYESDREAARDQAAFLNLNCDVMALAFDKYLSDHKLGWL AGIDAESRPSETPLSNVDELPSGSLGTPERWEAALYAVCHLIP VSEVGRLLHQLRRWSNGQKATPDGGRRLERLFELYLDMHDAK FDGSTPLRDHDDLAVIFETTGIRDRVLPSSLQHGEHERLPLRGL REMLRFGNLRVLAIFATAKVDQAMIGELEGLEARIGDAPSQV DRAQALRTEMHAALCKKRKLAHDDKKSVDYLTSLQTVIRH RRLANHVRLTNHVRTNEILMSVMGRLADFSGIWERDLYFVTN ALLYQAGLTPCDVFSKEPPKENRRSPLQEFENGQIVFALRKMQ AQCDTHAGLVDQIKGETARLFHIAEGAPGNDPRIQNRNWFH FNALKPKTGDRLDLTADMNRARDLMAYDRKLKNAVVSIVT LLERENIVIAWTMKDHQLTDAVLAAKSIEHLKQNKIRENLRDE RSLGYVAALFGGRVAEEAPDIMHDRTVFHLVGALTEEMEPAE
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【表 1 - 4 9】

49	cas13a	MRIVRPYGESRTDLGGERGQTRVLVDNTAARARHEIPDFAQS HDALVIAQWISVLDRIATKPQGTQGATRAQHAFRDRLGRAAW AQMCAADRISAAAQADPYVAALWRFKTHPYGDAKYRPRKG KDGKPLGEPKPQGRWYGRFAANAEPEQADVAAIAALMDHHL HVAELRIDPKRPEKRGKGLIEARAKSIEGNVLVAEPRKRPVGSW SREAITRYFMRQDVAAEIFAAARDREQGLNDVPRGPVRLALA AKILHGHWTRLFHAPGTRTAYSIREAEEKEPELFALHMAVKD AYAKLLKRRTQPKTLKKGVKPPQQAPVTTVLPKNAGELLRLV QHRSRNRDLSALIRRGKLIHYTAFDIAAAAAEAESKTPDVPDA DRLAYVLTHWPDDL SASRYLTSDGQSAIKRSEAFVRVWRHTI AMASLTLRDWASMNDLGDVLGSANKVDQAIGRANFDPAW HDKKVRLFLFGARAALFPSDDDGRKALLASVIRAGLALRNSSF HFTGRGGFLAALKKLGSEEVMPVPSILAAHALWREDATARA GRLRAALTGAHAAHYFEEDQNASILTLLDEAPPKESLPIPRFR VLGRAENTWKGKEALVLPPTANRRQLEDPARRCRYTILKALY ERPFRSWLIARAPEEVNAWIDRAIERTTRAAKDMNAKRGEDD KRSVIAAKAESLPRLSGERGIGDFFFDLSSATASEMRVQRGYG HDGEAAKEQAGYIDDLLCDVVALAFDAWLRNPQANGRPLTFI CDLKPETPLPAAPKCTLQEIGSAAEPVRPEDWQAALYLLHLV PVGEAGRLLHQLAKWTVTSRLADDLLNANVTDDPSKAERTA DEEDLKRLVHTLIQHLDMDHDAKFEGGDALTGCEPFAALFASR PGFARIFPAEADERLDRRVPKRGLREIMRFGHHGLVASFAEDT RITDKEVGDYLRLEIEERPDNVAALQARKEEAHERWVKAKEK RKTVDPKHLEDYVTALCGIARHRLASRVTLTDQVQVHRLLM TVLGRLVDFSGMFERDLYFAMLGLLDEKGARPDEVFSGPIDEP KSRLALLANGRVLAALREQIPHSKDLAEELRKDLERLFGMDC SGIRLLEADERGDTCLRDIRNDLSHFNLLHDDSFALDLTTLVN RTRGLMSYDRKLKNAVSKSIKELLAREGLTSLWDMTDRHDLE NARIGAKPAVHLGGRKLAFRGGDRRPEPVRENHSPHLEAV ARLFGGKVVEEDDVTNLDLSSIDWAAEPHNSKETHRHRPAGP RKSPPKRRAYHAPR
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【表 1 - 5 0】

50	cas13a	MRIHKPYGRTLVEHDGAGERKRVLTLRPDHDSKLDIEAFARDH DELVVAQWVSTIDKIAAKPGPRKGATEEQRAFRDRIGKAAWA LLVRNALLPGLADADRDLAKIWRRKIAPYGDLRPNERPAS AKGRWYGAFAGEADVADVDAGEIAAKIHEHLYDAEYRISGD GRKPDGCIAARARSIAVNVLRPADSSACGQPEWSDRDLQAYR VADVAKQIWDAALSRENGRDGAGTKRVTNSVAGGVLFHEHW ARIFPGPDGKALSIREAIEKEPGLFALHMAVKDCYARILKHHK KKAPGRRENGDVSPIRKVLPRDMDELFARIISGRGNRDLNA LVRLGKVIHYTASDPNADHPESITENWPGDLAGSHYWTSAGQ AEIKRNEAFVRVWRHVVLAAARTLTDWGDPHGEIGSDILGKA NDATGAKFDEAAFNKRCALLFGKRASHFTAAPDLAFKKAVL KTAIKGMAALRHKSFFHAGRGGFVKALEGIGGLNEIDRFPDVT RALRTLLVEDIEDQSRQVRATMVGAFHFGVYLSKGQVEAIYRA VTGAEPGSLPLPRFSRVLRRAKGAWEADVLPVPVNRDLLEQ RGRLCQYTGLKLLYERPFRRWLEGRSAAKLNFGFIYRAVTRAS DAARTLNTKESDDWRDIIVARAELKGVDPGGDIHGFFELSA ETASEMRVQQAYESDGERARQQAIEYIEDLKCDVVGLAYRSFL ETEGFDLRTLDPEAAIAEAHRFDPAELPDPAVDTDADWEAV LYFLVHLVPVDEIGRLLHQMRKWDLLAHDRTAPVADGGQAR LVDKVQRVFTLYLDLHDAKFEGGEALTGIEPFRKLFEESEDGFD TIFPPQQGYEEDRRVPLRGLREIMRFGDLPPLLSIYGRRPATKS NIERYRRAEVADAGGRSEIARLQARREELHAKWVEAKKEGLG PEDRRAYVEALAEIVRHRHLAAHVTLTNHVRHLRLMMAVLG RLADFSGLWERDLYFATLALLHRAGKTPREVFENEGIDLLRN GQIVYALRKLNSSNASALRSGLFPHFGSAFKRGDPIGGIRNAF AHFNMLRAAQPPNLTECINRARQLMKHDRKLKNAVSKSVIDL LAREGLNIAWAVHTRAGAHDLAEAVLSSRQAQHLGKLRLFPV SGDGRDGKGFFIMEDLHGADFVEMAAELFGGRVSDRWRGKG CVSELRLDSIDWSRQREQKKHGGGKKPTGRARKANRGHKNR HRRRA
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【表 1 - 5 1】

51	cas12f	MSARNIKVKIDTKGNPELRLGLWKTHQVTNEGVKYYTEWLIK RQQDIYRQSREDASPRVIISASDLKADLLCHARQLQKERLPRITG SDAEILGTLRQVYELIVPSSVGKSGDSKTLARKFLSPLTDPGSAG GRDQASGRKPTWMKMKSEGNPRWEETFRKWKDRKDNDPTPL VLNQIADYGLLPLIPLFTDVGENIFDPKSKSQFVRTWDRSMFQQA IERLMSWESWNQVRREWEALNQKHSFYREQFTADPDAAALY RVAQSLEEEMRKEHQGFASDAPEAFRIRRVALKGFDRLLERWQ KTLGKNGQSATLLDDIRRVQSDLGDKFGSAPLYQKLLDERWQR LWAVDPTFLQRYAAFNDLTQRLQRAKRVANLTLPDVAHPIWS RYEGANASSGNRYHIHLPTKGQPGSVTFDRILWPDGNGGWYER KRVTVFLRPSHQVDRIHEAPTDSVVDNFPLVVEDQSARTILRAS WGGAKLEYDRNRLPRQLKKGVPDSIYLSLTNLDTNKPSTGLFHT QQNGRVWIRKDVLMQYYNETPGDNVQFKPLYVMSVDLGIRSA AAVSIFSVQLKAGIEEHRLTYPVADCPGLVAVHERSVLLTMPGE RREQWDRRYEQQRQGLRELRTDMRGMNDLLRGAYMDGDRRE EFLARLSKLEETSPELWGPVYRSLNDSKVASATEWERLVVYCHR QVEQSLSSRIQNLRSGRSAYRMSGGLSLDHVQDLERIRGHASWT NHPRIPGSVVRWQQGRSHTVALGRHILELKRDRVKKVANYLIM TTLGYAYDSKRARGEKVVRRYPACHLMVFEDLTRYRFRFTDRPR SENRLMRWTHQELIAVTGIQAEPHGISVGTMAGFSSRFDAVT KAPGVRGATVRQILRTRGMVRLKEIAADVIGIDINTLRPHDVLPT GDGEYLLSVVRHGESYRLKQVHADINAHNLRRLWTQDEVFR VSCRLALNSGRVAMPPPSYNKRYGKGFFEKGDNGVYIWKTTGG KIKISDTLEEDMDIPEDTAELLRGNSVTLFRDPSGTIAGGNWLEA KEFWGRVNSLVNKGVRDKILGGIPVDNSSAHAE
52	cas12f	MPMIKITECVTWGTTCDGLWDARPHLEVRRSWSPVQGGRTNR LDAPPASVTLNIHGRVEHPRDADALSVAPLRVRHMFERTTTKAA FLSPLDLRPTQATDLERFAGTTRWAFNWANALLEAHHQAYEGR RQQAARHLFGLGPEQLDELRLVLANGTRDENGKKAKGDPVKRRE YESIQKATKKAVSEENKALGAEMKLWDEHRSVVHKGRPLLT GDEPALDAPPLAHRLYARRVELAGIQKTDPDYYAEQRKKEREAI TPNVVAMKRDLMAKGAYFPSEYDLQYIWRTVRDLPKKEGGSP WWPECPTILFYDGINRARTAWKNWMDSASGARKGPPVGMPRF KSKYKAKDTFTITNPNRSVIKFETYRRIAITGIGSMRLHRGAKLL ARRIAAGQAEITSATISRSGTAWYVSVLCTVHTTARTAPSKAQRS RGAVGVDWGVRLATTSKPIALTPGKPASRTVPAEKYGAAMSQ KIARAQRQLARMPKGSSRRRKAARHVADLQHLVAQRRASSVH QLSKALAQSFIVAIEGLNVRGMTKSAKGTVENPGKNIRQKAGL NRAILDATPGELKRQLEYKTKKYGSRLVELDTWYPSSKTCSRCG WVHPKLLKLSMRTFRCQCGLVEDRDFNAAVNIERQGITHIVKEN EGTDDREEG

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【表 1 - 5 2】

53	cas12f	MSTPMGWTAVNGGDATSPTRVSSPPGEPRTGACPRAAAD ATRAESSPRRTSSPARPGERHARARTSRYPIPTYVVDPSAEG DRHGQSSLDGCPVRRSGALHQSSQAAHRRSMTGAKQKTPI RVVRFSDHSALTPAQVVA FARHAGAA RQTWNWALGRWMD WRNNTKFYVDYKVFKAAGMG PGLSTDDLIQVIERAVSIRQDD KWMDAAWDEARQIHGEWDQFQKASTLQSLYLAGAQEPDPS RDDGINPYHWWVTEGDKSGLPKAERHNVNSGATYTA PLRAF EEAVGRFYKLPGKKGTPKF KSKHDDEQGFCIQRLTETGLSPW RAIEGGHRIKVPSIGSIRVVQSTKRLRQLIKRGGKTT SARFTRR GGKWFVSVSVAFDLSAPRVQRPARLSRRQRAGGSTGV DLGV NRLATLSSGDQFPNRLLRKSMAEIKRLQRKFDRQHRAGSPEC FNEDGTHKKRCRWGREDPAMSRSAQTTKRQLRRIHDLTAR RRAGVLHEITKDLATRFELIGVEDLNVAGMTAKSKPKPD PDRP GHFLPNRRAAKAGLNRAILDVGFYEFKRQLGYKTEWYGSTM QMVHRYAATSKTCSGCGWVKPKLTLAERTFNCTQCGLAMDR DHNAAVNIRALALEGAAPMEREQPAPVGAAEKHRDPVSHR RRPKSLAPCESTRPVRDLSPPATQEETA
54	cas12f	MAQAEAPRRLRAYKFALDPTEAQLREFEQHAGSARWAYNHA NAILSRYSDTLRNRWNAWIAQH HGLSREQLYALPDRERTAIQ AAARA AVKAENAQLAAELRIIDDHRKRVTHKGKPSVEPGEQP AEDAPERAYQLWRERVELARLHAEDPQAYRAERKRILDEIRP LVNATKRKLIEQGAYRPTAMDISTLWREIRDLPPDEGGSPWW PEVSIYAFTSGFAHAETA WKNYLES LAGRRAGRPVGKPRFKK KRRSRRSFTLYGSVKLV TYRRIQVPSIGSVRLHGS AKRLHRL ERRGGIISITISQGGHRWYASVLVDEL DITPGRETQRGPSRRQ RDRGAVGVDLGVHHLVALSDPNEKTLDNPRHLRKARKRLK AQRAMSRRRGPDKRTGQEPSRRWVKARNRVARLHHELAVRR AGHLHEITKRLATSYELVAIEDLNVAGMTRSARGTIDQPGRGV RAKAGLNRSILDTSPA EFRRQLQYKASWYGATVAVIDRWAPT SRTCSSCGAVKAKLSLAERTFFCEHCGMELDRDINAARNILAF AQSAYPGEGKALNACGGSVSPGSQS VVQAGADEAGRPARKP RRSSRGSDPPATPTTRA

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【表 1 - 5 3】

55	cas12a	MTSSSPTQRAYTLRLKSAAQGDKSWAEKLWDTHEIVNKGAR AFGDWLLTLRGGISHKLENLNDKETGEEGKKRRRILLALSWS VESKDFAPEKYIVEKDGEDKHRTKEALEAILKSRNLEDEEVES WVNDCKDSLTSIRDDAVWVNRSRAFDDAVRKIGDSLREEI WDVLGRFFGKKEAYLAPRTIDEKNGKTKKEEPKDLARKAGG WLSKRFGKGKGTDFSKLSKVYSEIVKWAEPRKSEPRTLNL ASALKEDSLQGILNLIKNSGSKSGTRNFLEEIGEVEVSKENLAIL KAKAEGNRNYCKKEIGGKGRREWSDRILKSIEETLDGKFTYL QEKGPARHWEFAVMLDHAARRISAGHTWIKLAEARRRNFE DSQKINEVPENARQWLETYREDRSKSSGAIEGYLISKRAVTEW ETVVKAWKNCKTEEDRIAAAGALQDNLGIDQFGDINLFRALA SEDVRCVWQVDGKPDANILLNYVAATKAEDKRRFKVPAYR HPDPLLHPVFCDYGNRWEIRFDVHEVNRTGKKAKQNKKTIE TADVHGLKMDLWTGSKIENVSLRWQSKLLEKDLAVKQLDGK EDGKKEVSRASRLGRAAVGAGWETPVSASSVFAQHWNRL QASRKELSRIARRVKTRGWDEKANSMMKNLKWFITFSPKLKL QGPWISYVDNSEDKRPFTFTSKGEPILDEVFSIENKNRKGRARL ILSRLPGLRVLSMDLGHRHAAACAVWETLSSRQLEDACAEGG YDKPAPDAMYHHIKSNRGKRVIYRRIGADELSDDSIHPTPWAR LERQFLIKLQGEERKARMATADEIWEVHELERALGRKTPLVD RLTKSGWGSDSGTTPRQRQLLGELNQGWPDEAQENSEDDEI TSRESLLVDKLMSRTVDTV RKGLRRHGNRARIANFLVAREKT VPGGQMDTLNNEGRKEIADALAFWYELANGGEWKDTEALD WWKIHIEPELSVEELPDIAGTGIAPKERKRKKELKEKLKPV ERLLTSGAKKLSQWCERWKQDDKEWQKTLRWLRDWILPR GVRGKSELIRNVGGLSLDRLTTIQSLYQAQKAYFTRITPKGIQ MDKDKPLTAVMNFGGHILNDLENMREQRVKQLASRIVEAAL GVGRVKIPKSKDPKRHYERVDAPCHAVVIENLTNYRPEETR TRRENRLMTWCSGKVKKYLSSECSLHGLFLWEVPPSYTSRQ DSRTGSPGIRCEEVSVEKFFKTPFRQREVARAEKDSKNKASA YEQYLIDLKERWKSARGEETALLRIPRKGGEIFVSANSNSPASKG LQADLNAAANIGLKAITDPDWSGSWWYVPCSSKDFVPIKDKI GGSRAFENITPMPNPDDAKEATGKKRSGKKEIINLWRNPACS PLERDEWERTAKYWNMVEYHVIKRLKRQMG
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【表 1 - 5 4】

56	cas12a	MKNFQDFTNLYELSKTLRFELKPIWGTCKKLIEEKNILKLDKCK RENYEKVKPYFNKIHQEFINFALRNPNFDFSQFEKEYLNWLKD KKNKDLLKEKESIDKIFLEKIWKL FENS VKDFL KENG FESIVKS EDQNLKFFRRKEIFEVLQEKYGSELETQMVNKDWEIKSIFNGW EKWLWYFDKFFNTRDNFYKTDWTSTAIATRIIKDNLKIFLENTI IFEKVKNKKIDFSEVEKNFSVSIDTFFEINN FNNCFLQDWIDFY NKVIWGETLENWEKLKWLNEIINKYRQDTGEKIPYFKKLQKQI LSEKDWVFIDKIEDDGGFYEV LKNFYKNAAEKEWFLKNIFENF YTISDNLEKIYFNKIAFNTISHKFWSALEFERILYEEMKKEKA DWIKFEKKENKYKFPDFIQIIFIKRSL ENYDSEN LFWKERYYS EENVDWFLEKNNNNIWEQFCKILNFEFLNILKRRRIIDEAWEEY EVWFEISKNILWEKLENFELNQENKWI KDFADYSLALYSFWK YFAVEKWRNWDLNIDISDDFYGWEDWYIEKFYNTGYDEIVKP YNLMRNYISKKPWEDSKKWKINFETSSLLSWWDKNLESNWS YIFQKWNKYIWIINWSKPAKEVLEKLYSWNGEKIKRFIYDFQ KPDNKNTPRMFIRSKKDSFSPAVGKYNL PVEDILEIYDNWLFK TENKDNSNYKESLSKLIDYFKLGFSKHESFKHFNFWKDSKEY ENIADFYRDVEKSCYQITSEFLDFEELKKLTFKKHLYLFQIYNK DFELDESLQKNWYNFRDEWQKNIH TKYFEALFLEENILRKSW AVFKLSWGWEVFFRKESIKAEKEKRKNIEVTKNRRYTEEKYF LHFPIQVNFKNEISWNFNQEINKFLANNPDINVIWIDRWEKHL AYFSVINQKWEILESWSFNKIENYNKNWEKLLFPEREIKEIHKD WSLIDLELVETWRKV DYVDYKLLLEYKERKRLQRQSWKEV EQIKDLKKWYISALVRKIADLIKHNAIVIFEDLNFRFKQIRGWI EKSIYQQLEKALIDKLNFLVNKNEINLEKAGSILKAYQLTPV DSLKEIWKQTWVIFYTEAAYTSKIDPIKWWRPNLYLKKQNAEI NKENILKFDNIIFNSKENRFEFTYDLKKFFWKDSKFPKTVNT VCSCVERFKWNRNLNNNKWGYIHYENLTDWKLANK EQKED EFSNFKELFEKYFIDINWNILEQIKNLDTKNNEKFFSSFIDLFTL VCQIRNTNQNAKWDENDFILSPVEPFFDSRKSQNFWKSLPKN WDENWAFNIARKGLIILNRISENPEKPDLLIFNADWDNFARNI
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【表 1 - 5 5】

57	cas13b	MTEQNEKPYNGTYTLEDKHFWAFFNLARHNA YITLAHIDR QLAYSKADITNDEDILFFKGQWKNLDNDLERKARLRSLILKHF SFLEGAAYGKKLFESQSSGNKSSKKKELTKKEKEELQANALSL DNLKSILFDLQKLKDFRNYSHYRHPESSELPLFDGNMLQRL YNVFDVSVQRVKRDHEHNDKVDPHRHFNHLVRKGKKDKYG NNDNPFFKHHFVDREEKVTEAGLLFFVSLFLEKRDAIWMQKK IRGFKGGTEAYQQMTNEVFCSRISLPKLLKLESLRTDDWMLL DMLNELVRCPKSLYDRLREEDRARFRVPVDILSDEDDTDGTEE DPFKNTLVRHQDRFPYFALRYFDLKKVFTSLRFHIDLGTYHFA IYKKNIGEQPEDRHLTRNLYGFGRIQDFAEEHRPEEWKRLVRD LDYFETGDKPYITQTTPHYHIEKGKIGLRFVPEGQLLWPSPEVG ATRTGRSKYAQDKRFTAEAFSLVHELMPPMMFYFLLREKYSE EASAEKVQGRIKRVIEDVYAVYDAFARDEINTRDELDACLAD KGIRRGHLPRQMIAILSQEHKDMEEKVRKKLQEMIADTDHRL DMLDRQTD RKIRIGRKNAGLPKSGVIADWLVRDMMRFQPVA KDTSGKPLNNSKANSTEYRMLQRALALFGGEKERLTPYFRQM NLTGGNNPHFLHETR WESHTNILSFYRSYLKARKAFLQSIGR SDREENHRFLLLKEPKTDRQTLVAGWKSEFHLPRGIFTEAVRD CLIEMGYDEVGSYKEVGFMKA VPLYFERACKDRVQPFYDY PFNVGNSLKP KKGRFLSKEKRAEEWESGKERFRDLEAWSHA ARRIEDAFVGIEYASWENKKKIEQLLQDLSLWETFESKLKVK DKINIAKLKKEILEAKEHPYHDFKSWQKFERELRLVKNQDIIT WMMCRDLMEENKVEGLDTGTLYLKDIRTDVQEQQSLNVLNH VKPMRLPVVVYRADSRGHVHKEEAPLATVYIEERDTKLLKQG NFKSFVKDRRLNGLFSFVDTGALAMEQYPISKLRVEYELAKY QTARVCAFEQTLELEESLLTRYPHLPDES FREMLESWSDPLD KWPD LQREVRLIAVRNAFSHNQYPMYDETIFSSIRKYDPSSL DAIEERMGLNIAHRLSEEVKLAKEMVERIIQA
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【表 1 - 5 6】

58	cas13b	MESIKNSQKSTGKTLQKDPPYFGLYLNMALLNVRKVENHIRK WLGDVALLPEKSGFHSLLTTDNLSSAKWTRFYYSRKFLPFLE MFDSDKKSyenRRetteclDTIDRQKISSLLKEVYGKLQDIRN AFSHYHIDDQSVKHTALIISSEMHRFIENAYSFALQKTRARFTG VfVETDFLQAEEKGDnKKFFAIGGNEGikLKDNALIFLICLFLD REEAFKFLSRATGFKSTKEKGFLAVRETFCALCCRQPherLLS VNPReallMDMLNelnRCPDILFEMlDEKdQKSfLPLLGEE QAHILENSLNdELCEaIDDPFEMIASLSKRVRyKNRFPYLMLR YIEEKNLlPFIRFRIDLGcLELASYPKKMGeeNNYersVTDHA MAFGRLTDFHNEDAVLQQITKGITDEVrFSlyAPRYAIYNNKI GFVRTGGSDKISFPTLKKKGGEghCVAYTLQNTKSFGfISIYDL RKILLsFLDKDKAKNIVSGLLEQCEKHWKDLSENlFDAIRTE LQKEFPVPLIRyTLPRSKGGKLvSSKLADKQEKYEsEFERRKE KLTEILSEKDFDLsQIPRRMIDeWLNVLPTSREKKLKGyVETLK LDCRERLRVFEKREKGEHPVPPRIGEMATDLAKDIIRMVIDQG VKQRITSAYYSEIQRCLAQYAGDDNRRHLDSIIRelRLKDTKN GHPFLGKVLRPGLGHTeKLYQRYFEeKKEWLEATFYPAASPK RVPRFVNpPTGKQKELPlIRNlMKerPEWRDwKQRKNShPID LPSQLFENEICRLLKDKIGKEPSGKLKWNEMFKLYWDKEFPN GMQRFYRCKRRVEVFDKVVEYeySEEGGNYKKYyEALIDEV VRQKISSSKEKSKLQVEDLTLSVRRVFKRAINEKEYQLRLLCE DDRLLFMAVRDLYDWKEAQDLdKIDNMLGEPVSVsQVIQL EGGQPDaVikaEeCKLKDVSKLMRYCYDGRVKGLMPYFANHE ATQEQVEMELRHyeDHRRRVFNwVFALEKSVLKNEKLRRFY EESQGGCEHRRCIDALRKASLVSEEEYEFLVHIRNKSahNQFP DLEIGKLPPNVTSGFCECIWSKYKAiICRIIPFIDPERRFFGKLLE QK
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【表 1 - 5 7】

59	cas13b	MESIKNSQKSTGKTLQKDPPYFGLYLNMALLNVRKVENHIRK WLGDVALLPEKSGFHSLLTTDNLSSAKWTRFYKSRKFLPFLE MFDSDKKSyenRRetaeCLDTIDRQKISSLLKEVYGKLQDIRN AFSHYHIDDQSVKHTALIISSEMHRFIENAYSFALQKTRARFTG VFVETDFLQAEEKGDNKKFFAIGGNEGIKLKDNALIFLICLFLD REEAFKFLSRATGFKSTKEKGFLAVRETFCALCCRQPHERLLS VNPREALMDMLNELNRCPDILFEMLDEKDQKSFLPLLGE QAHILENSLNDELCEAIDDPFEMIASLSKRVRYNRFPYMLR YIEEKNLLPFIRFRIDLGCLELASYPKKMGEENNYERSVTDHA MAFGRLTDFHNEDAVLQQITKGITDEVRFSLYAPRYAIYNNKI GFVRTSGSDKISFPTLKKKGEGHCVAYTLQNTKSFGFISYDL RKILLLSFLDKDKAKNIVSGLLEQCEKHWKDLSENLFDAIRTE LQKEFPVPLIRYTLPRSKGGKLVSSKLADKQEKYESEFERRKE KLTEILSEKDFDLSQIPRRMIDEWLNVLPTSREKKLKGyVETLK LDCRERLRVFEKREKGEHPLPPRIGEMATDLAKDIIRMVIDQG VKQRITSAYYSEIQRCLAQYAGDDNRRHLDSIIRLRLKDTKN GHPFLGKVLRPGLGHTeKLYQRYFEEKKEWLEATFYPAASPK RVPRFVNPPTGKQKELPLIIRNLMKERPEWRDWKQRKNShPID LPSQLFENEICRLLKDKIGKEPSGKLKWNEMFKLYWDKEFPN GMQRFYRCKRRVEVFDKVVEYEYSEEGGNYKKYYEALIDEV VRQKISSSKEKSKLQVEDLTLSVRRVFKRAINEKEYQLRLLCE DDRLLFMAVRDLYDWKEAQDLDDKIDNMLGEPVSVSQVIQL EGGQPDaVIKAECKLKDVSKLMRYCYDGRVKGLMPYFANHE ATQEQVEMELRHYEDHRRRVFNWVFALEKSVLKNEKLRRFY EESQGGCEHRCIDALRKASLVSEEEYEFLVHIRNKSahnQFP DLEIGKLPPNVTSGFCECIWSKYKAiICRIIPFIDPERRFFGKLLE QK
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【表 1 - 5 8】

60	cas13b	MDTPNFSEIPVSLQSHPYFAHYLNMARHNAYVILEYVNRE LIKPGKNLDEDNLIQSTVLKDGYPDRKPDELSHRNRLLVQHFP FLREAENEGARTCNVSYKLKTAALNQWRNNASHYPLNQ NHEKDFDLQPFFSFAIEACKKRMREVFQPDDEFYLLTNEKQFY TLHNENGFTTEKGLYCFICFFLEKKYAFQFLAGIKGFKNTTDNK FRATLETFTTEHCCRLPKPKLDSSDIKLDMLGELSRCAPPLFDLL DIEERKKFIREPEEVKPDSESGDREEVQQVLMKRYDDRFPYFAL RYFEEKNLLKGISFHHIGRWIKSEHTKKIMGAERDRRLKDIR TFGELKEFSPEHAPDYWLRDGITPDDVDQFSPQYRIVGNRIGIK LNYNGHNRWSVPDKEINVKPDIIISTYEFNLFLYEHLYQKKL TGLSPAEFIQDYLDLRFNNFLSEFKAGHIRPVGDFSLEKRRGQG DEPDLTARRKSLQKELDRFVLKGKDLDPKIREYLLGYKQKSE KKQAKWILGGMKETVYWRNKAEQSPEKMRSGDMAQQLAR DIIFLTTPHTVKEHKQKLNLSLEYDVLQYALAYFSSNREKLYSFF KEHQLTVKGDRAHPFLYKIRLDECQGILDFFIVYMQQKEKWL GWLDRNLKSPRLNEEEFFNTYSYFIKTDTKRAIEMDYESCPNY LPRGIFNEPIAKALQKAGVKIKDEDNASYALSVYSNGKTQPFY NKERYYNKGIFRMEELPEKLQPKELLGKIQTIKSSGKDTEEF RSLQNLKNRILNTEKEIRYVQSTDRLWIMVADLFPETFELRP DDLECIGHDLSDDLLSRPYQMKEKVYNYTITDYLPIKRYGEFR RFLKDRRLNLLTYFEEGVPLHREALVAELEAYDLQRKNLLEI IYRFEKLVFDRHRHELTFSGEGENQYVNHWDYLDVFARKYGL SAEVKELNSERFTELNRKMLHNQIPYQLWIKEAIAAREENTVC GRIMGMIGEIERMTTEIEKQMQV
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【表 1 - 5 9】

61	cas13b	MFDNEQKNLEKEPYWGVFLNQARLNAYIALRDISERLEENAA DEDSLSEWPVLKYLDNDTDAVKSRRIFDLVEKHFSMLKIIYGG EKEGDLVKRSKEYKIILKCLFRALNFYRNKFCHMYSGNRARK YNEKELIKYLEDCFDASVRKIKELRRLDEKDVHLHRRKIAEGK DANKRVIDNPQFRYPFKNEKGELNEKGLYFLASIFLDKKEAHE FLKKQEYFKNDSEPKYRATLESFYHYRIKLPRPVIESDVVDKNG LALDMLNELKKCPKELFDLLSKEQQEKFRVVDSEDADEEGNE ILMRRYSRFPYLALRYCDENQVFERIRFQIDLGRYYFKFYPK ETIDGKTQQRSLDKRLKIFGRIKDVKSKVEQEWSGIIKSPDTIEE NPNEPYKLKTTPRYNIVDNQIGFVITGDKNLPDVKRPDGRIELE KPDGWLSIYELPGMLFHGLKYGFDKTERMIKIYIEKQRKICKEI CEKGTITPDDGESMPEALKGGAKAAKRNYSKLERMLQDTE QRIRAIQTTQKRMDEPGNKPGKKKFFDIRAGKLADFLARDIMA LQRFDPAKHGKDKLTAINFQVLQATLAFYGAKKDVIEDMFKG IGLLEGDNPHFPLNQIDPAQYNSIAGFYQAYLQKKRSYLEDYR KEEEYDEQFLRPKRQRYAQEKREIKTVARQLLDNPVNVPKNF FKKEIEEFVFSQDPSLKKSKMNTAYMIQALFEKHYGRQQPFYS YNRTYPVVSKAIEYGKKGKNKKIAKVLMAIEPKLNYMEIKKI VNEMPDGQYEPENLKRNLYESGYKDYEKDERIIRCKVQDVVS FMMVEETLKDQLDFNGNVLTLEKITPWEASPFKKPVLCHTIISI PFNTKGGHTDKDYVDFIKNNFEGSYDCEPNKIILKYKVTSKDT KLKDIGKYRMYSHDRRLPGLLIWKYRPNDQNGNEIKFTEIEQE IKAFERRRIEIAQCLYTLEKKVIDSWFTQDELGEEHIPFNKVIDV IKAKMPNFEDKCNVLLKIRNAINHNQFPVYEQAIQTAPGKEIA GKMLRITESYIEQIMAKIDPDFGRTEDAESSR
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【表 1 - 6 0】

62	cas13b	MDTPNFSEIPVSLQSHPYFAHYLNMARHNAYVILEYVNRE LIKPGKNLDEDNLIQSTVLKDGYPDRKPDELSHRNRLLVQHFP FLREAENEGARTCNVSYKLKTAALNQWRNNASHYPLNQ NHEKDFDLQPFFSFAIEACKKRMREVFQPDDEFYLLTNEKQFY TLHNENGFTTEKGLYCFICFFLEKKYAFQFLAGIKGFKNTTDNK FRATLETFTTEHCCRLPKPKLDSSDIKLDMLGELSRCAPPLFDLL DIEERKKFIREPEEVKPDSESGDREEVQQVLMKRYDDRFPYFAL RYFEEKNLLKGISFHHIGRWIKSEHTKKIMGAERDRRLKDIR TFGELKEFSPEHAPDYWLRDGITPDDVDQFSXPQYRIVGNRIGI KLNYNHNRWSVPDKEINVKPDAAISTYEFLNLFLEYHLYQKK LTGLSPAEFIQDYLDRFNNFLSEFKAGHIRPVGDFSLEKRRGQG DEPDLTARRKSLQKELDRFVLKGKDLDPKIREYLLGYKQKSE KKQAKWILGGMKETVYWRNKAEQSPEKMRSGDMAQQLAR DIIFLTTPHTVKEHKQKLNLSLEYDVLQYALAYFSSNREKLYSFF KEHQLTVKGDRAHPFLYKIRLDECQGILDFFIVYMQQKEKWL GWLDRNLKSPRLNEEEFFNTYSYFIKTDTKRAIEMDYESCPNY LPRGIFNEPIAKAVQKAGVKIKDEDNASYALSVYSNGKTQPFY NKERYYNKGIFRMEELPEKLQPKELLGKIQTIKSSGKDTEEF RSLQNLKNRILNTEKEIRYVQSTDRAWIMVADLFPETFELRP DDLECIGHDLSDDLLSRPYQMKEKVYNYTITDYLPIKRYGEFR RFLKDRRLNLLTYFEEGVPLHREALVAELEAYDLQRKNLLEI IYRFEKLVFDRHRHELTFSGEGENQYVNHWDYLDVFARKYGL SAEVKELNSERFTELNRKMLHNQIPYQLWIKEAIAAREENTVC GRIMGMIGEIERMTTEIEKQMQV
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【表 1 - 6 1】

63	cas13b	MKT LGALSSHNYNNKKYYFSGLLNTAQYNFNLALQEVNDRL GKKGKNPGKTMKNIFDQKDSFSTQERAMYYLEEFFPWIFLV MKQSGINIPTEEQETKLHKEEIQLIQEHLISLYELLDDL RNEQTH YMHDPVIIPEEVSKMLDALLQILKNTRKKCKDDEYRTFIVKK YQEEFQKEIKVQVKDRFGKEKEKIVTGEVKENYVINRCFRKWI QKEGEEETLRYSTVQEEQGKYVWSSSGFVFFLSLFLRRKELED VMNHVPYFKDSRKL LFYLTRKTFSSYCFRDLRKSLSRSDYSNDS LLMQMIEELYKCPGELYEVLLKEQKQEFIEDINEYYKDNPEFE GSANEAQVIHPVIRKRYQDKFPYFALRFIDEYFNFP TLRFLVL GEYVTDRRTKELQGTALFTDRVISQRISYVGKLSEAEMNKKRE GYTETGWKEYPNPYK IENNRIPLYIEFSKNEELIFKEKKFKYN TLAKWENREIDKRTGEFNQV NKQRRITQLEEFKIDNP KKMKT P NVFLSIYELPALLHALLIEKKTEAEIEDI IKAKIKKQLTEIAEGR R NL SGLPKGIKKMRNCNSDFEKKKLISDIDNEIKKG EKILEEVQQ WLN PVINKKGTGKQENNK PFFSNTYRGKYATWLAYDIKRFTG KDH IQNWKG YQFSELQTLLSLYTLRKEELKNFLEKDLQLT SHP FLKEALKAVNLEDFMGAYLRGRQFFLEKAKKQIGIKGVKKSIF QYFEERKYKIYSSNLDYWEELWKHPVNLD RGLFDERGTVYN KNKELNDLQNRAAWFSFAETNPKQQFYHFPRIYSDEDITK PVT DRYGKTKEKLILFKLSPQKGFMEQIPSDLKKKYQEDKGKVEH PEVQKEKKYEEKKH PGINAFIKNAYKNEQKIRRISRNDIFLYE MVKYMLNKISPATEFSSLDKVWLTRIEREKQATEAREQS FKEK GDTSENKIRQDYLLSFPITLTLFNDIIEKVKIKDIGRFRKLEKD ERVQTMISYYTSGLWKNDQPSLTIKELEAELESYHKIRLQEIFK EVH KLEKEIYEFTPEEDKSKLLARESFPKFY YISFYFIPKEDQE VFNEIQFDKYKNLEQIPGRKPEYDPYLLIFIRNKFAHNQLPAE PIYKTALTFLPNNFNTLA EYYHKL FILLNNKNYNN
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【表 1 - 6 2】

64	cas13b	MNILPAAPEKEKIAYSTATAPWFFGAFLNQARHNLFLT VNDLA IRLGEKVIDYDDQLLNSNVVRMLVNEKASPLQLEILMKYLDR HLPFLIPMQVALKGHQGDASDNPVIGSPADYGAILSKLIVCLN AARNHFSHYHSTSGWSGYNEVIEWMEHVTRNIETVVKRFTL TEEEVQHLKKPVDKSPKGTIPPYYFSFCKGDIWTDGLAFFICL FLTREEAYLFLKKLRGFKRGEERFHKATLEAFCVGSCLKVPRER LESNNSPQSAFLDMCNELVRCPSLFDLLEPEKQELFRRDPEPE DAEDNGIEEEEDQPQALLVRKENRFSYFALRYLDIAKAFPRLR FGVDLGTYFFSVYPKTFAGIEETRQLSKRLIGYGKLEEFAREKR PEHIAALFRSKEEANAAPTEPFIRETAPHYHLDGNNVYLYMSG DGEAQWPAVELEEVTGKSYPRKLVKKSTLLPFAVLTVNELPA LLFYHLLHKEKGAGDAAERVIINHMERVKRFFKALQDDKVDQ VAGQPIRKPDVDADESLHMEYDRRWKLLKKKLSEYQLRASYI PEKIINYLLNIEAVDLGDKAMAQLKNLQRAQDDIAAIERRME HLMKKGADGRKTLKVGNLAQQLAEDMLQMOPVQIGTDGEP VPASKANNLAFRLLQSHLAYFAENRHNLPAVFEACGLIGASN KHPFLDNINIESCKGVVDFFILNFRNKLDLDFLRCLQEGEWHRY HFISAALKSGAKVTIKKYLNEAFESKGRNHIPFTLPPSLFLDA SLDWLAKFGDGKAKKVAENEYVNSVFLIRRLFADGGLQPFY AWKREYRLFEEKAGKAVFLDEAGMRKADKIGIEVERHREFL ARPVKKGKQYDIKKAQAEQFLRSYRFYLQEEKYIRLLAAQDM LLFRCICDLLTYHVGDIGLEELAEAKAGTFSLANITPEKTETAK SLLNYRPAGGVVLDHRHFYATDEKGAFVKQEGKLVPGGQVRIF DNTLKIKNAGNFRKLLKDRRMNNLFFYFKQHADEPVVLHRM VLENELRAYDRMRLKVLPIAEFEKKLYQHCTDVEKERLVVN GSMHHRCYLDVYREKYQPDWGWEAAGNLLRIRNAFVHNQFP LMEGDGFKLEVAHWKKINADFPSEQGSLSGYGIIDRLGQLA VEGYEGLIKNIHV
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【表 1 - 6 3】

65	cas13b	MGEEQAHILENSLNDELCEAIDDPFEMIASLSKRARYKDRFP YLMRYIEEKNLLPFIRFRIDLGCLELASYPKKMGEEENNYERS VTDHAMAFAFGRLTDFHNEDEVLLQQITKGITDEVRFSLYAPRYAI YNNKIGFVWTSRSKKSFPSTLKKKEGEGHRVAYTLQNEESFG FISYDLRKILLLSFLDEGKNIVSGLFKQSKANWENLSENLFDAL RTELQKEFPVPLIRYTLPRSKGGKFVDPKLADKQEKYESEFER RKEKLSEILSEKGFDSLQIPRRMIDEWLNVLPTSKEKKLKGYY ETLKLDCRERLRVFEKREKGEHPVPPRIGEMATDLAKDIIRMVI DQGMKQRITSAYYSEIQRCLAQYAGDDNRRHLDSEIRELGLKD RKKGHPFLGKVLRPDLDHTEKLYQRYFKEKKEWLEATFYPA NPKRVPRFVNPPAEKQKELPLIIHNLMKERPEWRDWKQRKNS HPIDLPSQLFENEICRLLKDKIGKESSGKLKWNEMFKLYWDKE FPNGMQRFYRCKRRVEVFDKVVEYSEEGGNYKKYEEALI NEVVRQKISSSKENSKLQVEDLTLVRRAFKRAINEKEYQLRL VCEDDRLLFMAVRDLYDWKEVQLDLNKIDNMLGEPVSVSQV IQLENGQPDAVIKAECKLKDVSKLMRYCYDGRVKGLMPYFA NHEATQEQVEVELRHYEDHRRRVFDWVFALEKSVLKNEKLR RLYEKSQEGCEHRCIDALRKATLVSEEEYKFLVHIRNKS AHN QFPDLEFGKLT PNVTSGFCECIWSKYKAIICRIIPFIDPERRFFGK LLEQK
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【表 1 - 6 4】

66	cas13b	MRIPKLIEEHKSVFGAYSTMALSNVETVLNHIAERAGLDGYER DRGPGVEDYWEHPVMQCLCRKDKPRSIPSDVLLDVNRNLFERS FPFLKIMAENQRDYNRAKGKVECVEINESDIFVVLNNSFRVLK AYRDTCTHYLIENRIWEDNSPMLMYNECPLAAMVNQYYTAA LRVTKERYGYETRDLTFIQKRRFKQEPEKEASGNVKKKAVPD LAFFLSLVALNGDGRKWLHLSGWGVVLLICLFLEKKYVNVFL SKLPNPGNYPPSSKERRIIRSMGVCVVLPERIHSETGDLVS ALDMLNELKRCPRELFDTLSPGDQERFRTISSDHNEVLQMRSK DRFAQLVLQYIDHNRLFENLRFHVNMGKLRYLFNPKKYCIDG QTRVRVLEHPLNGFGRLQEMEEKRLQENGPFARSGIKVRCFD EVRRDDANESNYPYIVDTYTHYVLENDMVEMFFCPEGSGMK MPEVTSREGKWYVDKKVPHCRMRSVLELPAMLFHLLCGA KNTEVHIGKVCDNYCHLFSDMAQGNLTEENILSYGIKKEDIPQ KVWDCVRGVHMGKDSRAYREKEIRERYEDVTRRLERLEADR KAVLGGENKIGKRGFVQIVPGRLAAYLATDICRLQPSLRKGDG YGTDRLTGLNFRLQSSIATYNCGESDILYGRFRDVFCSAGLIG GDNPHPFLDKVLPEAYSVCCPRNTIEFYERYLEEYQRYLKPLVI KLEKGKVPSSLFVNEGQRRWARRDDAYYHELGNLYLSQAIEL PRQMFDDDEIKDKLREMPERDVDFDHANVTFLIGEYLKRVRH DESQEFYSWPRHYKYVDMLKCILNPKNGLQAVYIQMGEREG LWQERSELEEKYAKIRLRDLGRKGLDKDEANERIKTGLGNRK KEYQKA EK VIRRYKVQDALLFMLAKNTLFNSVEVDDERFKLK DIMP DGEKGILSEVVPMDFCFRSGNSATRKLMGTIHS DNTKIK NYG DFFALANDKRMVTLLPLVGEQCLVKEEVKEEFDKYDDC RPEMISMVFD FEQWAYSAYPELKELVSNEAIKGRLFSNLLQEL LGRGELTYEEKYALVGIRNAFLHNSYPKDGGVVKVRTLPDIA KSLKDVFKEYIRLE
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【表 1 - 6 5】

67	cas13b	MKNFYKSVLTAFFTAVDSLRNKYTHYSHKDLNIREIKIECTLGG KDYCIGLLNALDCIYDSAVNLLKLRFMAGEDEVAHLRRCXAVN KKVVVRTEKDGfYYRLSDNGGVTEKGVIFIASMFLNRKYGFLFL KQLEGFKRSDEKRYRLTLEAFLAFSNIKPVDRKSDKLDASLGL DMLNELTKIPKELSETLSVDCLYKYLASDGEDDLRSRIRYQDRFV PLALEFISQSDEFKDFRfYTYVGNyVYKGYIKRLIDGTDKERYLS DRLCGFYKSVNDASSDAIAQKYGVEIKDSNEPDYMLPDSFRPHV LRATPHFVINTNIGIKICGNDCLPIVNGKGVESPEPDYWLSIYEL PAMLFYAYLREKNGKRfKDYKSIRELIEGVEKKADEKNDRDKG ALMARHIDKEIHWtQTKLDEVKRLEEKKVAAYGKKGRVVLKAG RMADLLAHDMVRLQPATKGSdKITGANfQALQVSLAYfKRdIL ADVFSRAMLTtTGNRHPFLYRIDVSHCSSLRDFYVAYLGERRKY FEDVAKKIAKNKLNTpCHILRRLQREGSGEEAGKDVkPKFLPRGI FTDSIKNCLEQSKLNIYIRNARNDVKPAINAAYLILMYyKEIEKGE FQGFYGEKRRYDILEEGKPLDLAERKKALASIKPAKIDVSEANMP MSKEEHLMRKRYHAVCNNEsAIRMYQVQDILLLLMAKDIFKKA LSEGVMSKKIGLENLNGIFDAPVNFVKNFdNIKLTATGIKIDYG KVCRLGTDFKfNSLIKAfHKVYSKSVEMDYSDYLKEEEFEKYR LNMVKLCREVERGITEDLHLSLDGKSHLSFNDDVIKPYNDKYNV FNGGDLTFFINARNMFMHGDYKYECVKYVvSEHFkGSLNDVSF AKETYGHfCNLLESMRKKTGLRIdI
68	cas12g	MLPTRYKPARTLVRPLGRLPHEPRKEfVEKCRRVRMHfEQFNID VADLCQWLMSLRPNTRIGDAQSTVFWDFFLNPSILTVEADEKER DRWRLAAfDELLQIRFGHDPNAPPWSEEFsAIRHVAQRPKSAT AQRLFDRLRSLTAPHRLVLLKSAAEWIARYQRGMENWQRQFAE WQREKEEWAAHPNLtPEVRDAfTRVfKNLFENPDGDGKIGVR RKNPRICsWERLKLNDNCVYAGQKGHGPLCWEFSKfVKAQKN AGTIKtFFVDVANKYLHVRRLNSKPGVKLKKSPRQEAfKRLYNQ KGMEKARNWFTDAWSGYLTALNLNEKTILDHGCLKHCgaIGAE FEKSLCQfNPHTLcVQYRNALESLEPAIRELEGDYREWRRFLA PPRKPSfRYPPSSRRLPMPKIFGEHFHQIDFDQSILRLRLEDMAEGE WIEFGfKPWPkDYRPGKDEVrVTSVHVNFHGnRMRAGFHFfEAP AKPSRFactQDELDLRSKQfPRQSQRQLLEVARRRLESFDG MLESdLRILAVDLGEKGAAAVYQGHGHEADVAIPVKIDRLYD HVPDVLdVESARVPPPKFDDSRDPRGVRKEHVGRHLGQLQrGA QTLAQHRQQDESAPAALRRHDFRSLTRHIRWMIRDWTRHNAAQ ITAAAETHRCHLIvFESLRGfKPRGYDQMDfAQKARLAffAYGR VRRKVVEKAVERGLRVVtVPYGfTSQICSECgHRQRNKGRlRK NKYQRRfVCECGEPKKSANKTAAPDRSATVSPCTCRLQLGSDVN AARVLARVfWDEIVLPTREEMREPAVDSAPPSK

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【表 1 - 6 6】

69	cas12g	MCLCTLSGRTRQEEIIGSTQYTEARSLVRRIRRPRESRRQFK SNVLLRRHFEQFNVDASEICQWLMGIRPGGRHADESTGPFW EFFLDPGRFLRETGRGPEDADERIDAYRRIAFDVVAGIEDES MSDPSIPRQIVESLHAVSMATRATESARRLFERLAGLEPSHRQIL LKAAAEWIVSRYWRSVQGWPDYKHWSDKEEWEKAHPRL TESLREEFTGIFRDLGIRKKPRVCPWERLEKGMNDCMYAGE RIKVGYSRQSHSQLCAKYERFSYKQRQRTKSGKNFKSYFVK AELYLKLRRKNRSLIKKDVMLFRKKVPQALWFEKAWEYL KALGVDEATLTKDGKLPHCTQFADDKECLFNHTELCLQYRE RLLRLPHLQELEQLYREWDRKYLSGPRRPSLRYPKRTLPMPK VFGRGYFCADFTNSLLDLRLEGMGEGDFVRFGFAPWPADYD AQPSDATVTSVHIHFVGTRARAGFRFQAPHKTSRFASSQDEID DLRSRKFPRAAQDGEFLDAARKLLESFTGDAEREMKLLAVD LGDRGAGAAVFEGRCFKEAMPLKIIKTDTLIDKPPPVTKT GKPGKRESKRARGLDKYHVARHLDTWKRGARKIAERRAKGE ADPVKLGAHDMRSLSLHVRWMIRDWVRLNASQIIKTAESHKT DLIVLESLRGFSAPGYHKLDDDEKKRTLAFFAYGRIRKLT VERGMRVVVAPYLRSQVCAECGREQIDRNKLMKDKRKRRI CEYSDCTWQCSDQNAACVLGRVFWGEIELPSEKDD
70	cas12g	MHPSRYKTARTLVRRLCRLPGEDRSAFRSKVGLLRGHFEQFN VDVSELQWLMSLRKRNVENPATFGALGDFLLQPLPGEE TDEKEADRLRLAVFDAVAGFRMLEDRLAASIPASLSAIRDEA VFLAGVRAAGKPSGLARVLARLEACAPAQRLVLLKSAAEWIV ARFLRGTENWMRQRAEWEKEKAWEAAHPLTPEVRAQFN KIFESLHDPENSGKPGVSRKNPRICPWDRLKQNLNCCYGEKG HSALCWRYQDFLKQRMGENRRDKKNFSATAMDLAQICREW KIQHSRNALNNPRVLDRLFAEHERRKQDKTKKESRSPKPRQG GYKANPKADYLRSFKAHWKAYLEHMKLNDTTVLERGCLPHC LSIKNGKESTCKWNKHTELCLEYKRS LAPLPSVLELEPEYR EWRRLYLHGPRPHFRYPSAGELPLPKVFGEGFHQVDLDRSIV RLRLEGAAEGEWLEFGFIPWPRGYQPSRREVLITSVQVHFVGT RPRAGFRFDVSHRTSRFGCSQDELDELRSRRYPRQAQDKEFLA AARALIQT FEGGEGGAARQQMRVMSVDLGEAGACASIYEGR THQKDESLKVIKIDRRYDQHPEVLEKDVGAAPQKFEKSDPR GVRKEHVARHLNRIAAGASAI AEHRRKERSDAECSVGELQEH DFRSLKRHIAWMIRDWVRLNAAQIIDVAKQHCCDLIVFESQR GFRLPGYDELDRGKKQRFALAFGRIRRVVEKAVEHGMRVV TVPYFASSQVCSACKRVQENRGSWRENKKRVFACEFCKLKL NSDANASRVLARVFWGEIELPEPTRAHLPSKA

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【表 1 - 6 7】

71	cas12g	MPVSRYSERLTVRPLARLPHEERQDVTPKVARLRRHFERFNV DVAELCQWLMGLRNQFGPKESPASFGPLGDFLIEPALDNIDAD ETERDRWRLAVFDAVAGFRPIRGLGDHPVPTLRLAMQQAAS LSPTPTTARLLERLRPLSPAHLVLLKSAAEWIVARYQRGMEN WVIQHAAWHKEKEAWEREHPALTPAVRERFTALYKQLSDSK PTDRPVSRKNPRICEWERLRQNIDNCCYAGEKGHGPLCRKY ANFVKARKAVDGKFNDLLFWDATSFIALCRKFNVTRARNAL QSQLDALFAEDQRRKAERDQAKGRQPRPLHPQAAARAKSDFL RIFKDGWNAYLSAMGLNDSTAIEKGRLPHCQKIGGTFENSKCE WNPHTDLCHQYRRLAGQLDDATLAEKDYREWRRLYLAGPR KPSFQYPSSRDLPMPKIFGAGFFELMDRSILRLRLDDMVEGE WLEFGFKPWPREYTPSRAQVARPGRITSVHVNFIGSRCRVGFR FEAPHAGSRFGCSQDEIDQLRRDHPRERDDQPFLEAARKRLVE TFAGDARRDLRLLAVDVGEKGCCAAVYQGTRYVADALLPIIK INQLYTEPPTTELKPDShNRPApDRrPFNDEKdPRDPRGVRKEH VARHLKRMADKAPEVAAAYRLAQREKAAPSPSASPPPVTLGvH DFRRLKRHVtWMIRDWARHNAARIVAEaQRHGCDLIVFESH RGRRPPGYHEVGDDAERRKLDNATFAfGRIRrkVTEKAVERG LRVVtVPYHCSSKvCSRCGRLQENDGllRRnKKERKFICEQC KFETNSDGNAARVLARVFWGEIMlPSPEERRKKREGSGGRSP TPANPGGLVDAPPSRRNLr
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【表 1 - 6 8】

72	Cas12	MEDYSGFVNIYSIQKTLRFELKPVGKTLEHIEKKGFLKKDKI RAEDYKAVKKIIDKYHRAIYIEEVFDSVLHQKKKKDKTRFST QFIKEIKEFSELYYKTEKNIPDKERLEALSEKLRKMLVGAFK GEFSEEVAEKYKNLFSKELIRNEIEKFCETDEERKQVSNFCSF TTYFTGFHSNRQNIYSDEKKSTAIGYRIHQNLPKFLDNLKIE SIQRRFKDFPWSDLKKNLKKIDKNIKLTEYFSIDGFVNVLNQ KGIDAYNTILGGKSEESGEKIQGLNEYINLYRQKNNIDRKNL PNVKILFKQILGDRETCSFIPEAFPDDQSVLNSITEFAKYLL DKKKKSIIAELKKFLSSFNRYELDGIYLANDNSLASISTFLFD DWSFIKKSVSFKYDESVGDPKKKIKSPLKYEKEKEKWLKQK YYTISFLNDAIESYSKSQDEKRVKIRLEAYFAEFKSKDDAKK QFDLLERIEEAYAIVEPLLGAEYPRDRNLKADKKEVGKIKDF LDSIKSLQFFLKPLLSAEIFDEKDLGFYNQLEGYYEEIDSIGHL YNKVRNYLTGKIYSKEKFKLNFENSTLLKGWDENREVANL CVIFREDQKYLLGVMDKENNTILSDIPKVKPNELFYEKMVY KLIPTPHMQLPRIIFSSDNL SIYNPSKSILKIREAKSFKEGKNFK LKDCHKFIDFYKESISKNEEDWSRFDKFSKTSSYENISEFYRE VERQGYNLDFKKVSKFYIDSLVEDGKLYLFQIYNKDFSIFSK GKPNLHTIYFRSLFSKENLKDVCCLKNGEAEMFFRKKSYND EKKKREGHHPELFEKLKYPILKDKRYSEDKFQFHLPISLNFK SKERLNFNLKVNEFLKRNKDINIIGIDRGERNLLYLVMINQK GEILKQTL LDSMQSGKGRPEINYKEKLQEKEIERDKARKSW GTVENIKELKEGYLSIVIHQISKLMVENNAIVVLEDNLNIGFKR GRQKVERQVYQKFEKMLIDKLNFLVFKENKPTEPGGVLKA YQLTDEFQSFEKLSKQTGFLFYVPSWNTSKIDPRTGFIDFLHP AYENIEKAKQWINKFDSIRFNSKMDWFEFTADTRKFSENLM LGKNRVWVICTTNVERYFTSKTANSSIQYNSIQITEKLKELF VDIPFSNGQDLKPEILRKNDVFFKSLLFYIKTTLSLRQNNGK KGEEKDFILSPVVDKGRFFNSLEASDDEPKDADANGAYHI ALKGLMNLLVLNETKEENLSRPKWIKNKDWLEFVWERNR
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【表 1 - 6 9】

73	Cas12	MKKFTNLYSLSKTLRFELIPQGKTLENIQKSGILEQDNSRAE KYEKIKKIIDDYHKFFIEKSFTGKKIDDYFLNQYFELFKIKDK DEEQKKDFKSIQENLRKNIISFFDKNKLKRLFEKEIHKEDLPNF VKEEEDKKLISEFDKFTTYFVGFHENRKSMSYSEEEKSTSIAY RTINENLPKFINNIFVFEKISKTPISENFRELYKDLEEYLNVD IQDIFKLNYSNVITQKQIDVYNLVIGGKTLENGTKIKGLNEY INLYNQNQTDKKNKLPLLTVLKFQILCDRDTISFLPEQFENDI DVLDNIKNTYSNMEKSIKDIKDLSNLKDFDLSKIYITNDIAL TDISQQVFNNYSIIHNAIKENIKKENPKKKTENEEKYGERIDKI FKSNNSFSIKYINDCIKEKNIEIYFMDFGKKENNKVKNLFD ELQNNYSMVKDLLEYKKIQSLIQDEKSIELIKNFLDSIKNIQH FLKPLYVKDNDIVKDISFYRDFEELYLNIDKITPLYNKVRNY VTQKPYSVKKIKLNFENSTLLAGWDLNKERDNTCAILRKDD LYYLAIMDVNNRNRFNEKGIDGIGYEKMEYKLLPGANKML PKVFFSKSRIKDFNPSEQIIRNYEKETHKKGSNFSKDKCHKLI DFFKSSINKHEDWKNFNFKFSNTDKYEDLSGFYREVEQQGY KITFRNISKEYVDKLVEEGKIYLFQIYNKDFSKYSKGTPTNMH TLYWKALFDEDNLKNVVYKLNQAEIFYRKGSIEKENIVIH KANNAIENKNMDNKKKQSKFEYDIKDRRYTVDKFQFHVPI TLNFKAIGNERINEQVNQYIKDNNIKHIIGIDRGERHLLFSLI DLKGNIHKQFSLNEIVNEYNGNSYKTNYHMLLEKREEERDK ARKSWKTNIKELKEGYISQVIHKITQLMIEYNAIVVLEDLN FGFMRGRQKVEKQVYQKFEKMLIDKLNVLVDKDKDKNEA GGLLKAHQLTNKFESFQKMGKQNGFLFYIPAWNTSKLDPIT GFVNLFDTHTYTNVDNAKKFFENFEDIRFNEKKNYFEFIVND YTKFNTKAEGTKLNWTICSNEDRIKTRSSSKNNQWVSETV NLTDSLIELFKKYDIDYKLELKEQIISKSEKNFFETLLYLFKLT LQMRNSITGTETDYLISPVADKTGNFFDSRKGIEENLPNADA NGAYNIARKGLWVIEQIKKAKDLKKVKLAISNKEWLQFVQ GK
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【表 1 - 7 0】

74	Cas12	MAKNTIFSQFTGLYPVSKTLRFELKPMGKTLEKIKETGVIE DKKRHNDYFDAKKIIDKYHKYFIDAALSKFPRIDWSPLKEAI ERSLDRSDASKKKLEKTQTEFRKKIAKALTTHDHYKELTAS TPKDLFLKVFPDHFQKQPAIDTFDGFSSYFTGFQENRQNIYS DEAISTAIPYRLVHDNFPKFLSNIEVYKTLKDNAPSVLSDAE NELRDFLNGKSLANIFELNAYNEVLTQSGIDFFNQVIGGISDE GGEKKTRGINEFSNLYRQQHPEFAQKRLATKMIPLYKQILSD RETKSFILESYSNDSQVQNSVKEFFESQILNWDIAGRNVNL NELTSLVKRISEFDLGNIVNQEELSNISLKLFDNWSINGLL FKHAENRIGSAEKSANKKKIDAWMKNKEFSIATLNLIAES NSEEISRVKIESYWNNEAKVQSILCGDNRRNLDEFISATFNE NNALREDSKIIKLLKAFDLALIEIMHSIKPLISDAENRDLFSYN ELIPLYDQLSLVPLYNKIRNYATQKLTESEKFKLNFDNPTL ADGWDQNKEEANTAILLLKNGLYYLGIMNAKNKPKIKDFK TSESEDCYDKMVYKLLPGPNKMLPKVFFSEKGLATFKPPKD ILDGYNAGKHKKGDLFDIGFCHQLIDFFKESIAKHPDWKKF DFNFSDTSSYEDISGFYKEVTDQGYKITFSKIPTSQIDEWVKE GKLFLFQIYNKDFAPGAKGSPNLHTLYWKSVMFSPENLKDVV VKLNGEAELFYRPSSVKKPYSHKVGEKLVNRIGKDGFLPLPE SVFGELFRYFNGKLEGELSDEAKRYLDVAVVKDVKHEIVKD RRYTQDKFEFHVPLTLNFKADSKNEYMNERVRHFLKDNP VNIIGIDRGERHLLYMTLINQKGEILKQKSFNVVESVNYQAK LVQREKERDAARRSWSSVGKIKDLKEGFLSQVIHEITTTMIE NNAIVVLEDLNFQKGRFCVERQVYQKFEKMLIDKLNLYLV FKNKPEGDVGGVLKGYQLAEKFDSFQKLGKQSGFLFYIPAA YTSKIDPTTGANLFNMTELTSAEKKKEFLSHFEDITYDGKN DRFLFSFDYKNFKCFQTDYIKKWTVYSQGKRIVYDKESKSA KEISPVEIKAALAKQNIALTDQLDVLSAINSVEASPKSASFFG DICYAFEKTLQMRNSIPNTDEDYLASPVMNKRGEFYDSRSC DDALPQNADANGAYHIALKGLYLIKNVFDAGGKELKISHED WFKFAQSRNC
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【表 1 - 7 1】

75	Cas12	MSKGKIWENFINQYSVSKTLRFELKPVGKTLENINAKGLIEE DEQRAEDYKKAKKIIDEYHKYFIEGALGSCSLDLNILNEFLQ LYNKAQKTDADKKEYEKIQTTLRKNI AESFGKNADKKTK QYENLFKKELLRNDLPDWVEDEEDAKIIFRKTFTTYFTGFH ENRKNIYDNEEKSTAIGYRIVHENLPKFIDNMNAFEKISKAL DLSEIDRDFQSELGEIKAEEFFTIEFFNQCLNQFGIDRYNTLLG GISEGENIKKKQGLNERINLYNQQLKGERKKERLPKLKVLY KQILSDSSSHSFSIDEFENDNELLESLEIFYKNELIGFNHSGVD SNIFDLVKDLLLKIDSEQSSIYLNKNDKGLTEISQRIFGDWNII KSALEEYYDEHYPPKKDTFNKKELDERSRWLKENHSIGVIE KALANYENEIVREHLKQNSAPIVSYFKSLEVDGENLIDKIYS AYGNISDLLNSSYPDEKKLVSDRTSKDKIKVFLDSLMSLLHF LKPLDVKDLGNKDSAFYGDYDFIVEQLSKLVRLYNKTRNYL TRKPYSIEKIKLNFENSTLLAGWDVNKERDNNCVIFKRQDG DRELFYLGIMDKSHNKIFTKIEEAKSDDVYQKMNYKLLPGP NKMLPKVFFSKKSIDFYAPGEELLKNYKNGTHKKGENFNLQ HCHELIDFFKRSINKHEDWSQFNFKFSDTSEYEDTSFFFKEVS QQGYSITFKNIDRETIEKFVDEGKLYLFQIYNKDFSPKSKGRP NLHTLYWKMLFDERNLANTVYQLNGEAEVYRKKSSISEKD RVVHRADEPIGLKNSSENSAQKSLFPYDIVKDRRFTVDKFQFH VPITLNFKSEGNERLNISVNKFLKDNPDVNIIGLDRGERHLY LTLINQKGEILHQESLNEVMGVNYQQKLHRVEKDRTEERRN WDRIENIKELKSGYLSQVVHKISQLMVEYNAIVVMEDLNFG FKRGRIKVEKQVYQKFEKTLIDKLNLYLVFKDREPEEPAGVL NALQLTNKFESFKKLKQCGFLFYVTSDYTSKIDPATGFVNL LYPKYESVEKSQNFFRKFDNICFNSGAGYFEFDFDYSNFTDR ADGTRTRWKVCTVGNERFGYNPCKASETVNVTESLKELL LQHEIAFENGESLVESISKNTTKYFHKSLLNFLRLTLRLHSK TGTDIDYILSPVANEEGVFFDSRNASDKMPKDADANGAYNV ALKGLMVLERINAAEDLSQFKFKDMSIKNKDWLKFVQDRQ G
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【表 1 - 7 2】

76	Cas12	MKNLANFTNLYSLQKTLRFELKPIGKTLDWIHKDLLKQDEI LAEDYKIVKKHIDRYHKDFIDLAFESAYLQKKSSDSFTAIMEA SIQSYSELYFIKEKSDRDKKAMEEISGIMRKEIVECFTGKYSE VVKKKFGNLFKKELIKEDLLNFCEPDELPIIQKFADFTTYFTG FHENRENMYSNEEKATAIANRLIRENLPRYLDNLRIIRSIQGR YKDFGWKDLESNLKRIDKNLQYSDFLTENGFFVYTFSSQKGID RYNLILGGQSVESGEKIQGLNELINLYRQKNQLDRRQLPNLK ELYKQILSDRTRHSFVPEKFSSDKALLRSLLDFHKEVIQKNK LFEEKQVSLLQAIRETLDLKSFDLDRIYLTNDTSLTQISNFV FGDWSKVKTILAIYFDENIANPKDRQRQSNSYLKAKENWLK KNYYSIHELNEAISVYGKHSDEELPNTKIEDYFSGLQTKDET KKPIDVLDAIVSKYADLESLLTKEYPEDKNLKSCKGSIEKIK NYLDSIKLLQNFLKPLPKKVQDEKDLGFYNDLELYLESLES ANSLYNKVRNYLTGKEYSDEKIKLNFKNSTLLDGWDENKE TSNLSVIFRDTNNYYLGILDKQNNRIFESIPEIQSGEETIQKMV YKLLPGANNMLPKVFFSEKGLLKFNPSDEITSLYSEGRFCKG DKFSINSLHTLIDFYKKS LAVHEDWSVFNFKFDETSHYEDIS QFYRQVESQGYKITFKPISKKYIDTLVEDGKLYLFQIYNKDF SQNKKGGGKPNLHTIYFKSLFEKENLKDVIKVLNGQAEVFF RKKSIHYDENITRYGHHSELLKGRFSYPILKDKRFTEDKFQF HFPITLNFKSGEIKQFNARVNSYLKHNKDVKIIGIDRGERHLL YLSLIDQDGKILRQESLNLIKNDQNFKAINYQEKLHKKEIER DQARKSWGSIENIKELKEGYLSQVVHTISKLMVEHNAIVVL EDLNFGFKRGRQKVERQVYQKFEKMLIEKLNFLVFKDKEM DEPGGILKAYQLTDNFVSFEKMGKQTGFVFYVPAWNTSKID PKTGfVnFLHLNYENVNQAKELIGKFDQIRYNQDRDWFEFQ VTTDQFFTKENAPDTRTWIICSTPTKRFYSKRTVNGSVSTIEI DVNQKLKELFNDcNYQDGEDLVDRILEKDSKDFFSKLIAYL RILTSLRQNNGEQGFEErDFILSPVVGSDGKFFNSLDASSQEP KDADANGAYHIALKGLMNLHVINETDDESLGKPSWKISNK DWLNfVwQRPSLKA
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【表 1 - 7 3】

77	Cas12	MNLIENETKSEEIKSKLDSIMEIMHWTKMFIIEEIEKDVNFYNEIE EYDELQPLVTIYNRIRNYVTQKPYSEBKIKLNFGIPTLANGWSKT KEYDNNAIHMIRDGKYLLGIFNAKNKPDKKIMEGHQSEENGDYK KMIYRLLPGPNKMLPKVFMSKTGIAEYKPSQYILECYEQNKHIKS DKNFDIKFCRDLIDFFKTSINRHPEWSKFNFKFSETSEYEDISTFYR EVEKQGYKIEWTYISEKEIKELDENGQLYLFQIYNKDFSEKSKGK ENLHTMYLKNLFSEENLKNIVLKLNGEAEVFFRKSSIKKPIIHKKG SVLVNKTYNENGERKSIPEEQYTEIYKYLNSIGTNELSEKSKKLME EGKVEYYKANYDIVKDYRYSVDKFFIHLPMTNFKAAGFSPINNI ALKSIALKEDMHIIIGIDRGERNLIYVSVIDTKGNIVEQRNFNIVNGI DYKEKLKQKELDRDNARKNWKEIGKIKDLKEGYLSLVVHEIAKL VVKYNAIITMEDLNQGFGRFRKVERQVYQKFETMLINKLNYLV DKDLAVDQEGGLLRGYQLTYIPESLKVLRQCGYIFYVPVAYTS KIDPTTGFAIFNYKGMTDKDFVTSFDSIKYDDERGLFAFEFDYE NFVTHKVEMARNKWTVYTYGERIKRKFKNGLWDTAEKVDLTY QMRSILEKYEIEYNKGQDILEQIEELDEKAQNGICKEIKYLVKDIV QMRNSLPDNAVEDYDAIISPVINNNGEFFDSTRGDEDKPLDADAN GAYCIALKGLYEVMQIKKNWNEETEFPRKELKIRHQDWFDIQN KRYL
78	Cas12	MENRYQVLQGLTAAQKAAAAAkkRSSFSIVELNAATRSRVPDE KYVPVQNYFSAMGKVC SQGEPKRENFVTRICAAAYQELEEYIPSIR KSLQEKRATELIKNYLDAVNDLLRFIKPLLGRGNETDKDANFYG EFSFLTDCFLAIVPLYNEVRNYLTQKPYSTEKFKLNRGSTALLNG WDKNKERDNLGVILRKEGKYFLAIMNKKHNTLFTGKLLQQTG GECYQKMEYKLIPGSKMLPKVFFSKKGISTFQPSSELLNRYRIGTY KKGEKFNLEHLHLKIDFYKHSIAVHEDWSKFDHFSDTSSYRDIS GFYKEVEQQGYKLTFRNVSVSYINRLVEEGKLYLFQIYNKDFSEY SKGTPNLHTLYWKMLFDPENLKDVVYKLSGEAEVFRKKSLDVS HPHTPKNEPIEKKNNNNKGEKSLFSYDLIKDRRFTVDKFQFHVPI MNFKGEQGDVRNQMVSQSYVRNNKGLNVIGIDRGERNLLYLVI NEHGEILEQFSLNEIRNAYNGKEHKIDYHTLLEERSKKRQDARQS WQTIEGIKDLKTGYLSQVIHVITQLMVKYNAIVVLEDLNFQFKSS RQKFEQSVYQQFERKLIDKLNFLVNKKAAPNEVGGLLNAYQLTA PLGNSRKMGKQNGFLFYVPAWHTSKIDPRTGFVNLLDTRYENVA KAKEFFAKFASITYNPEKKWFEFAFDYKAFGNRADGSRTKWTICS YGERIETFRNPENNNQWDTKSVPLTERLTELFSKYGIDYTTNLKE QILNQTDKAFFVELLGALRLTLQLRNSRKSTGEDFLFSPVADENG CFFDSREANDNEPKDADANGAYHIALKGLWVLDTIRNTEEGKNP KLAITNKEWLSFAQAKPFAHE

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【表 1 - 7 4】

79	Cas12	MSDSYDELTKAQKEKQEKRKHVALTEVVAALEKYTIALDNGHEH KNAVNTEFKNYFQNYFFHFDTDKKKTAKTLDCQIKDEYNGLKGILN TPWDKNKKLQQDKKL VQQIKSFLDSIQELLWFIKPLVLT DNTLEKD ERFYGEFMPLYDEISNIIKLYNKIRNYLT KKPYSIEKYKLN FENGSL SGWDVNKEKDNTSVLLCKDNQYYLAIMHIDHNKVFELDELIKHA GKGYQKINYKLLPGANKMLPKVFFSGKNISYYDPSKEILKIRNYGT HTKNGDPQPGFSKRDFS VDDCRKMIDFFKNSIAKHEDWKNFDFKF QPTKNYNSIDEFYREV EEQGYKITYSNVSEDIYDSLVEY GKIYLFHI YNKDFS DKRDESKKHTDNMHTLYWKALFDAKNLKD VVYKLNGE AEIFYRKKSIDIKKPTHEKGKPIDNKNPNARKKTSVFKYDLIKDKRF TVDKFFFHVPITLNFKSKGYLSNDDVNAAIKKNNDIKIIGLDRGER NLIYLSLINSKGEIAYQESLNVVSTDKGFDVNYHKLLDDKEGNRDE ARKNWDKIENIKELKAGYLSQVIHAKL MIDNNAIVVMEDLNFGF KRGRFKVEKQIYQKFEKMLIDKLNYLVFKNVHPEQAGGLYKAYQ LTAQFESFKKL GKQSGFLFYIPAWNTSKIDPTAGFVDFLKPRYESVT QAKSFLQRFDKINYNKTKDYFEFAFDYKNFTDKANDTKTDWVVC TYGTERYYYDVRTKTTQKIDITAE LKKLLEKSEINYLNGKDIKELII AVDSKEFHSALLKYLAIVLALRYSDSQSGRDFILSPVANEQGHFFN SDKTDDTLPKDADANGAYHIALKGLWAINQIRKTKNGDKLKL TIS NKDWLNFVQKKEYRKG V
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【表 1 - 7 5】

80	Cas12	MQTLFENFTNQYPVSKTLRFELIPQGKTKDFIEQKGLLKKDEDRAEK YKKVKNIIDEYHKDFIEKSLNGLKLDGLEKYKTLYLKQEKDDKDKK AFDKEKENLRKQIANAFRNNEKFKTLFAKELIKNDLMSFACEEDKK NVKEFEAFTTYFTGFHQNRANMYVADEKRTAIASRLIHENLPKFIDN IKIFEKMKKEAPELLSPFNQTLKDMKDVIKGTTLLEEIFSLDYFNKTLT QSGIDIYNSVIGGRTPEEGKTKIKGLNEYINTDFNQKQTDKKKRQPKF KQLYKQILSDRQSLSFIAEAFKND AEILEAIEKFYVNELLHFSNEGKS TNVLDAIKNAVS NLESFNLTKMYFRSGTSLTDVSRKVFGIEWSIINRA LDNYYATTYPIKPREKSEKYEERKEKW LKQDFNVRLIQTAIDEYDNE TVKGKNSGKVIADYFAKFCDDKETDLIQKVNEG YIAVKDLLNTPYP ENEKIGSNKDQVKQIKAFMDSIMDIMHFVRPLSLKDTDEKDETFYS LFTPLYDHLTQTIALYNKVRNYLTQKP YSTEKIKLNFENSTLLGGWD LNKETDNTAIILRKDNLYYLGIMDKRHN RIFRNVPKADKKDFCYEK MVYKLLPGANKMLPKVFFSQSRIQEFTPSAKLLENYANETHKKGDN FNLNHCHKLIDFFKDSINKHEDWKNFDFRFSATSTYADLSGFYHEVE HQGYKISFQSIADSFIDDLVNEGKLYLFQIYNKDFSPFSKGKPNLHTL YWKMLFDENNLKDVVYKLNGEAEVFYRKK SIAEKNTTIHKANESII NKNPDNPKATSTFN YDIVKDKRYTIDKFQFHIPITMNFKAEGIFNMN QRVNQFLKANPDINIIGIDRGERHLLYYALINQKGKILKQDTLNVIAN EKQKVDYHNLLDKKEGDRATARQE WGVETIKELKEGYLSQVIHKL TDLMIENNAIIVMEDLNF GFKRGRQKVEKQVYQKFEKMLIDKLN YL VDKNKKANELGGLLNAFQLANKFESFQKM GKQNGFIFYVPAWNTS KTD PATGFIDFLKPRYENLNQAKDFFEKFDSIRLNSKADYFEFAFNFK NFTEKADGGRTKWT VCTTNEDRYAWN RALNNNRGSQEKYDITAE L KSLFDGKVDYKSGKDLKQQIASQESADFFKALMKNLSITLSLRHNN GEKGDNEQDYILSPVADSKGRFFDSRKADDDMPKNADANGAYHIA LKGLWCLEQISKTD DLKKVKLAISNKEWLEFVQTLKG
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【表 1 - 7 6】

81	Cas12	MQLTDNLSDKYKEAAPLLNENYSNEKGLKNDDKSISLIKNFLDAIKE IEKFIKPLSETNITGEKNDLFYSQFTPLLDNISRIDILYDKVRNYVTQK PFSTDKIKLNFGNSQLLNGWDRNKEKDCGAVWLCKDEKYYLAIIDK SNNSILENIDFQDCDESDCYEKIYKLLPGPNKMLPKVFFSEKCKKLL SPSDEILKIRKNGTFKKGDKFSLDDCHKLIDFYKESFKKYPNWLIYNF KFKKTNEYNDIREFYNDVASQGYNISKMKIPTSFIDKLVDEGKIYLFQ LYNKDFSPHSGKTPNLHTLYFKMLFDERNLEDVVYKLNGEAEMFYR PASIKYDKPTHPKNTPIKNKNTLNDKKTSAFPYDLIKDKRYTKWQFS LHFPITMNFKAPDRAMINDDVRNLLKSCNNNFIIIDRGERNLLYVS VIDSNGTIYQHSLNIIGNKFKGKTYKTNYREKLATREKDRTEQRRN WKAIESIKELKEGYISQAVHVICQLVVKYDAIIVMEKLTEGFKRGRT KFEKQVYQKFEKMLIDKLNYYVDKCLDPDEEGGLLHAYQLTNKLE SFDKLGTSQGFIFYVRPDTSKIDPVTGFVNLLYPRYENIDKAKDMIS RFDEIRYNAGEDFFEDIDYDKFPKTASDYRKKWTICTNGERIEAFRN PANNNEWSYRTHIAEKFKELFDNNSINYRDSDDLKAEILSQTGKGF EDFFKLLRLTLQMRNSNPETGEDRILSPVKDKNGNFYDSSKYDEKSK LPCDADANGAYNIARKGLWIVEQFKKADNVSTVEPVIHNDKWLF VQENDMTNN
82	Cas12	MLPNEKERNEFKNSNAKQYIREISNIITDTETAHLEYDEHISLIESEEK ADEMKKRLDMYMNMYHWAKAFIVDEVLDREMFYSIDIDDIYNILE NIVPLYNRVRNYVTQKPYNSKKIKLNFQSPTLANGWSQSKEFDNNAI ILIRDNKYYLAIFNAKNKPKDKIIQGNSDKKNDNDYKKMVYNLLPG ANKMLPKVFLSKKGIETFKPSDYIISGYNAHKHIKTSENFDISFCRDLI DYFKNSIEKHAEWRYEFKFSATDSYNDISEFYREVEMQGYRIDWT YISEADINKLDEEGKIYLFQIYNKDFAEINSTGKENLHTMYFKNIFSEE NLKDIIIKLNGQAELFYRRASVKNPVKHKKDSVLVNKTYKNQLDNG DVVRIPDDIYNEIYKMYNGYIKENDLSEAAKEYLDKVEVRTAQKD IVKDYRYTVDKYFIHTPITINYKVTARNNVNDMAVKYIAQNDDIHVI GIDRGERNLIYISVIDSHGNIVKQKSYNINLNNYDYKKLVEKEKTREY ARKNWKSIGNIKELKEGYISGVVHEIAMLMVEYNAILAMEDLNYGF KRGRFKVERQVYQKFESMLINKLNYFASKGKSVDEPGGLLKGYQLT YVPDNIKNLGKQCQGVIFYVPAAFSTKIDPSTGFISAFNFKSISTNASRK QFFMQFDEIRYCAEKDMFSFGFDYNNFDTYNITMSKTQWTVYTNGE RLQSEFNNAARTGKTKSINLTETIKLLLEDNEINYADGHDVRIDMEK MDEKDNSEFFAQLLSLYKLTVMRNSYTEAEQEKGISYDKIISPVIN DEGEFFDSNYKESDDKECKMPKDADANGAYCIALKGLYEVLKIKS EWTEDGFDRNCLKLPHAEWLDFIQNKRYE

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【表 1 - 7 7】

83	Cas12	MSNLYSNLHNLYPVQKTLRFELKPQGKTENMEKAGILKADEHR AEVYGKVKKYCDEYHKTIFDRCLSNIELNEIDKYYELYSINNRDD KQKEELDQLETGLRKQISDAFKKSAEYKGLFQKDMITSYLVMTY KENQEKMQDIGEFNRFTTYFTGYNKNRENMYSEEDKSTAISYRLI NENLPTFIDNIKIYKKIVSLMPENIEKIYKDLEEIYQVNSVDEIFNIS YYNDVLTQRGIECYNILISGRTKNDGDKIKGLNEYINEFNQTHNE KIPKLQELYKQILSDAESASFVKVDIENDKELLNLIEVYYANILPTL NKIEDLFTRISNYNLELILVNNDGSLSTLSNMVFNEWSYIKGIISQK YDAEYSGKEKYGTEKYAQKKQEYLKKQKIYSLKFLNDCIGNNAI CEYLKNYIIQNKNIETIKEDYNEVQNIKAEDDTKELIKDEKSIEKIK KFLDDVKSLQEFVKLVIPKDRTVKDAKFYSELTPYYEKIKEIPL YNKVRNYVTQKPYSTEKIKLNFECPTLLNGWDANKEEANLGVIL LKEGKYLLGIMNPYCKKIFEVYEKDSNEQNNYKKMEYKLLPGPN KMLPKVFFSNSRIEEFNPSKELQEKYNKGYHKKGKDFDINFCHEL IDFYKQSLNKHEDWKKFNFKFKDTSEYNDISEFYREVEEQGYKIE YTEYSEKYINELVDRGELYLFQIYNKDFSEYSKGKENLHTLYWK AVFDPDNIMNPVYKLNNGNAEIFYRKKSLEMKVTHPANQPIANKNI STIEAGRSTSTFKYDLIKDKRYTMDKFQFHVPI TVNFKSERLFNIN QIVNKYLKYND DIHVIGIDRGERNLLYVCVIDKNEKIVYQKSLNEI VSEYNNNRYTTDYHGLLDRKEKEREIAREDWKNINIENIKELKEGY MSQIIHILVELMKKYNAIIVIEDLNKGFKNSRIKVEKQVYQKFEKM FIDKLNLYLVFKDEDKMDEGGVLNAYQLTNKFESFTKLKGKQSGIL YYIPAWCTSKIDPTTGFINRFYLYKYENFDKSKEFVNRIIDIRYNEK ENLFEFDIDYSKFTDRLNDTKNKWTLCSYGERILTQKNANGWEF DRRIQLSIEFKNLFEKYVINLNNIKDSILKLDKDNIEFYKNGENL GFIQLFKLMVQMRNSLTGKEEDNLISPVKNQHGKFFNTSERVEGL PIDADANGAYNIARKGFMLVEQMKNVEDEKLNKIKYNITEKEWL NYVQNRGMWWKRQYLYHI
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【表 1 - 7 8】

84	Cas12	MAKNTIFSQFTGLYPVSKTLRFELKPMGKTLEKIKETGVIENDKKR HNDYFDAKKIIDKYHKYFIDAALSKFPRIDWSPLKEAIERSLDRSDA SKKKLEKTQTEFRKKIAKALTTHDHYKELTASTPKDLFLKVFPDHF GKQPAIDTFDGFSSYFTGFQENRQNIYSDEAISTAIPYRLVHDNFPK FLSNIEVYKTLKDNAPSVLSDAENELRDFLNGKSLANIFELNAYNE VLTQSGIDFFNQVIGGISDEGGEKKTRGINEFSNLQRQHPFAQKR LATKMIPLYKQILSDRETKSFILESYSNDSQVQNSVKEFFESQILNW DIAGRRVNVNLNELTSLVKRISEFDLGNIYVNQEELSNISLKLFDNWN SINGLLFKHAENRIGSAEKSANKKKIDAWMKNKEFSIATLNLAIAE SNSEEISRVKIESYWNNFEAKVQSILCGDNRRNLDEFISATFNENNA LREDSKIIKELKAFLDALIEIMHSIKPLISDAENRDLSFYNELIPLYDQ LSLVVPLYNKIRNYATQKLTESEKFKLNFDNPTLADGWDQNKEEA NTAILLLKNGLYYLGIMNAKNKPKIKDFKTSESEDCYDKMVYKLL PGPNKMLPKVFFSEKGLATFKPPKDILDGYNAGKHKKGDLFDIGFC HQLIDFFKESIAKHPDWKKFDFNFSDTSSYEDISGFYKEVTDQGYKI TFSKIPTSQIDEWVKEGKLFLFQIYNKDFAPGAKGSPNLHTLYWKS VFSPENLKDVVVKLNGEAEFYRPSSVKKPYSHKVGEKLVNRIGK DGLPLPESVFGELFRYFNGKLEGELSDEAKRYLDVAVVKDVKHEI VKDRRYTQDKFEFHVPLTLNFKADSKNEYMNERVRHFLKDNPDV NIIGIDRGERHLLYMTLINQKGEILKQKSFNVVESVNYQAKLVQRE KERDAARRSWSSVGKIKDLKEGFLSQVIHEITTTMIENNAIVVLEDL NFGFKRGRFCVERQVYQKFEKMLIDKLNLYLVFKNKPEGDVGGVL KGYQLAEKFDSFQKLGKQSGFLFYIPAAYSKIDPTTGAFANLFNMT ELTSAEKKKEFLSHFEDITYDGKNDRFLFSFDYKNFKCFQTDYIKK WTVYSQGKRIVYDKESKSAKEISPVEIIKAALAKQNIALTDQLDVL SAINSVEASPKSASFFGDICYAFEKTLQMRNSIPNTDEDYLASPMN KRGEFYDSRSCDDALPQNADANGAYHIALKGLYLIKNVFDAGGKE LKISHEDWFKFAQSRNC
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【表 1 - 7 9】

85	Cas12	MYKDKTDKTKIIDSLLIKFINIAESTQLDSMSQDEAKELVKEFWG FTTYFVGFYDNRKNMYTAEKSTGIA YRLVNENLPKFIDNMEAF KKAIARPEIQANMEELYSDFSEYLNVESVQEMFQLDYNNMLLTQ KQIDVYNAILGGKTDDDEHDVKIKGINEYINLYNQHKDDKLPKLK ALFKQILSDRNAISWLPEEFNGDQEVLNAIKDCYERLSENVLGDK VLKSLLGSLSDYSLDGIFIRNDLQLTDISQKMFGNWCVIQNAIMQ NIKHVAPARKHKESEEDYEKRIAGIFKKVDSFSISFINDCLNEADP NNAYFVENYFATFGAVNTPTMQRENLFALVQNAYTEVAALLHS DYPTAKHLAQDKVNVAKIKALLDAIKSLQHFVKPLLGGKGDSEDK DERFYGELASLWAEELDTVTPLYNMIRNYMTRKPYSQKKIKLNFE NPQLGGWDANKEKDYATHILRRDGLYYLAIMNKESKLLGKA MPSDGECYEKMOVYKLLPGANKMLPKVFFAKSRMEDFKPSKELV EKYNNNGTHKKGKNFNIDCHNLIDYFKQSISKHEDWGKFGFNFS DTSTYEDLSGFYREVEQQGYKLSFARVSVSYISQLVEEGKMYLQ IYNKDFSEYSKGTPTNMHTLYWKALFDERNLADVYKLNQAEM FYRKKSIENTHPTHPANHPILNKNKDNKKKESLFDYDLIKDRRYT VDKFMFHVPIITMNFKSSGSEINQDVKAYLRHADDMMHIGIDRGE RHLLYLVIDLQGNIEQYSLNEIVNEYNGNTYHTNYHDLLDVC EEERLKARQSWQTIENIKELKEGYLSQVIHKITQLMVKYHAIIVL EDLNMGMGRGRQKVEKQVYQKFEKMLIDKLNLYLVDKKADASV SGLLNAYQLTSKFDSFQKLKGKQSGFLFYIPAWNTSKIDPVTGFV NLLDTRYQNVEKAKVFFSKFDAIRYNKDKDWFEFNLDYDKFGK KAEGTRTKWALCTRGMRIDTFRNKEKNSQWDNQEVDLTAEMKS LLEHYIDIHGNLKDASQAQTDKAFFTGILLHILKLTLMRNSITGT ETDYLVSFVADENGIFYDSRSCGDELPENADANGAYNIARKGLM MIEQIKDAKDLDNLKFDISNKSFLNFAQQKPYKNE
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【表 1 - 8 0】

86	Cas12	MNEADPNNA YFVENYFATFGAVNTPTMQRENLFALVLNAYTEVAS LLHSYYPAEKNLAQDKANVAKIKALLDAIKSLQHFVKPLLKGKDES DKDERFYGELASLWAELETVTPLYNMIRNYMTRKPYSQKKIKLNFE NPQLLGGWDANKEKDYATIILRRNGLYYLAIMDKDSRKLKGKAMPS DGECYKEMVYKLLPGANKMLPKVFFAKSRMEDFKPSKELVEKYNN GTHKKGKNFNIQDCHNLIDYFKQSISKHEDWGKFGFNFSDTSTYEDL SGFYREVEQQGYKLSFARVSVSYISQLVEEGKMYLFQIYNKDFSEYS KGTPNMHTLYWKALFDERNLADV VYKLNQGAEMFYRKKSIENTHP THPATHPILNKNKDNKKKESLFEYDLIKDRRYTVDKFMFHPITMNF KSVGSENIQGVKEYLHHADDMHIIGIDRGERHLLYLVIDLQGNIK EQYSLNEIVNEYNGNTYHTNYHDLLDAREDERLKARQSWQTNIENIK ELKEGYLSQVIHKITQLMVKYHAIVVLEDLNMGMGRGRQKVEKQV YQKFEKMLIDKLNLYVDKKADASVSGLLNAYQLTSKFDSFQKLG KQSGFLFYIPAWNTSKIDPVTGFVNLLDARYQNVEKAKAFFSKFDAI RYNKDKDWFEFNLDYDKFGKKAEGTRTKWTLCTRGMRIDTFRNKE KNSQWDNQEVDLTAEKSLLEHYIYIDHGNLKEAISTQTDKAFFTGL LHILKLTLMRNSITGTETDYL VSPVADENGIFYDSRTCDEL PEN A DANGAYNIARKGLMMIEQIKNAEDLGNLKFDISNKAWLNFAQQKP YKNG
87	Cas12	MDNNNLHAVDGYFATLGAVNTPTMQRENLFALIQNAYTDISDLLDT PYPENKNLAQDKTNVAKVKALLDAIKSLQHFVKPLLGMGDES D K D ERFYGELASLWTELDVTPLYNMIRNYMTRKPYSEKKIKLNFNENPQL LGGWDANKEKDYATIILRRNGMYLAIMDKDSKKLKGKTMPSDGE CYEKMVYKLLPGANKMLPKVFFAKSRINDFKPSKKIVENYNNGTHK KGKNFNINDCHDLIDYFKQSIDKHEDWSKFGFNFSDTSTYEDLSGFY REVEQQGYKLSFTNISVSFIDKL VDEGKMYLFQIYNKDFSDYSKGTP NMHTLYWKALFDERNLADV VYKLNQGEAEMFYRKKSINNTHTPHHA NHPIQNKNKDNKKKESVFEYDLVKDRRYTEDKFLFHPITMNFNSV GAENINQQVRKYLQQADDTHIIGIDRGERHLLYLVIDMQGNIKEQF SLNEIVNEYNGNTYRTNYHDLLDVRADKRLKASQSWQTNIENIKELK EGYLSQAIHKITQLMVKYHAVVVLEDLNKGFMGRGRQKVEKQVYQK FEKMLIDKLNLYVDKHKDANETGGLLHALQLTSEFKNFKKSEYQNG FLFYIPAWNTSKIDPVTGFVNRFDRYTNAVEAQKF FRKFDEIRYNE EKDWFEFEFDYDKFTQKAHGTRTRWTLCTHGKRLRSFRNPAKQYN WDSEVVALTDEFKRILGEAGIDIHENLKDAISNLEGKRRKYLEPLMQ FMKLLLQLRNSRKNPEEDYILSPVADENG V FYDSRSCGDKLPENAD ANGAYNIARKGLMLIRQIKEAKELGKVYDISNKAWLNFAQQKPYK NE

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【表 1 - 8 1】

88	Cas12	MQKKAFEENQQNLRSHAKKLTEDKAYANLFGKNLLESYKDKTDKT KIIDSDLIKFINAESTQLDSMSQDEAKEIVKEFWGFTTYFVGFFDNR KNMYTAEKSTGIAYRLINENLPKFIDNMEAFKKAIARPEIQADMEE LYSNFSEYLNVESIQEMFLLDYYNMLLTQKQIDVYNAIIGGKTDDEH DVKIKGINEYINLYNQQHKDDKLPKLKALFKQILSDRNAISWLPEEF NSDQEVNLNAIKDCYERLSENVLGDKVLKSMGLSLADYSLDGIFIRND LQLTDISQKMFGNWSVIQNAIMQNIKHVAPARKHKESEEEYENRIAG IFKKADSFSISYIDACLNETDPNNAYFVENYFATLGAVDTPMQREN LFALVQNAYTEITALLHSDYPTKLNLAQDKANVAKIKALLDAIKSLQ HFVKPLLGGKDESDEKDERFYGELASLWAEIDTMTPLYNMIRNYMT RKPYSQKKIKLNFENPQLLGGWDANKEKDYATIILRRNGLYYLAIM NKDSKKLLGKAMPSDGECYEKMVYKLLPGANKMLPKVFFAKSRM EDFKPSKELVEKYNNNGTHKKGKNFNIQDCHNLIDYFKQSIDKHEDW SKFGFKFSDTSTYEDLSGFYREVEQQGYKLSFARVSVSYINQLVEEG KMYLFQIYNKDFSEYSKGTPTNMHTLYWKALFDERNLADVYKLNQ QAEMFYRKKSIENTHPTHPANHPILNKNKDNKKKESLFEYDLIKDRR YTVDKFMFHPITMNFKSVGSEINQDVKAYLRHADDMMHIIGIDRG ERHLLYLVIDLQGNIEQFSLNEIVNDYNGNTYHTNYHDLLDVRE DERLKAQSWQTIENIKELKEGYLSQVIHKITQLMVKYHAIVVLEDL NMGFMRGRQKVEKQVYQKFEKMLIEKLNLYVDKKADASVSGLL NAYQLTSKFDSEFQKLKQSGFLFYIPAWNTSKIDPITGFVNLLDTRYQ NVEKAKAFFSKFDAIRYNKDKEWFEFDLDYDKFGRKAEGTRTKWT LCTRGMRIDTFRNKEKNSQWDNQEIDLTAEKSLLEHYIDIQGNL KEAICTQTDKAFFTGILLHILKLTQMRNSITGTQTDYLVSPVADENGI FYDSRSCGDSL PENADANGAYNIARKGLMLIEKIKNAEDLDTIKFDIS NKAWLNFAQQKPYKNG
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【表 1 - 8 2】

89	Cas12	MLENEQEAEEKIKNKLDDIMNIYHWIKIFLVDEEIEKDMDFYSEIED IYEELSPLVSLYNRVRYVTQKPYSQEKMKLNFGSPTLADGWSK SKEFSNNAIIMLKDGKYYIGIFNIRNKPKEVIEGRNNRINDSDYK KMOVYRLLPGANKMLPKVMFSKKGIEYYNPSQYILSGYNSKKHIK SNENFDINFCHDLIDFFKESINKNEEWKNFDFKFSDTESYNDISEFY REVEQQGYKIEWVYISEQDIEQLEKNGQLYIFQIYNKDFAKKSIGN KNLHTMYLENLFSEENLKDVVLKLNGEAEIFFRKSSIKKPIVHKA GSILVNKCIEDETGNKVSPDDIYNEIYQYMNGMTDVLSERAQNY YEKVKHSVSKQDIVKDYRYTVDKYFIHLPITINFKASSFMPINDIA LKYIAKRDDIHIIIGIDRGERNLIYVSVIDLQGNIVYQKNYNVVNGY DYKAKLRETEIQRDNARKNWKEIGKIKQLKEGYLSLVVHEIAQLI VKYNAIVVMEDLNMGFKRGRFKVERQVYQKFENMLINKLNYLV DKNKKVDEDGGLLRGYQLTYVPGQKEHVGKQCGFIFYVPAAYT SKIDPTTGFSIFNNKVNAKEFVTKFDSIKYNKNMKMFELKFDYN NFETYNITLAKSKWTIYTNGIRLKRYYNNGRWNKITEVDLTKEM ANTLKKYDIEFENNEEILKSISQLDEKNQRNICNEIKEIIKLIVQLRN SMPDNGSKDNEYDKIISPVLNENNYFYDSSEVCDNSAPENADAN GAYCIAMKGLYQVIQIKENWSQDSNPKNILGIKHYEWFDPMQNK RYL
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【表 1 - 8 3】

90	Cas12	MAKNTIFTQFTGLYPVSKTLRFELKPMGKTLEKIKETGVIE DKKRHNDYFDAKKIIDKYHKYFIDAALSKFSRIDWNPLKEAI EGSLDRSDASKKKLEKTQTEFRKKIAKALTTHDHYKELTAS TPKDLFLKVFPDHFQKQPAIDTFDGFSSYFTGFQENRQNIYS DEAISTAIPYRLVHDNFPKFLSNIEVYKTLKDNAPSVLSDAE NELKDFLNGKPLANIFELNAYNDVLTQSGIDFFNQVIGGISG EGGEKKTRGINEFSNLYRQQHPEFAQKRLATKMIPLYKQILS DRETKSFILESYSTDSQVQESVKEFFESQILNCDIAGRKNVNL NELTSLIKRIAEPDLGSIYINQEELSNISLELFKSWNTINAVLF KNAENRIGSAEKAANKKKIDAWMKSNEFSIATLNLAIAESD SEEISRVKIESYWNDFEAKVQSILCGDNRRNLDEFLSATFNE NNALREDSEIIGKLKAFLDALIEIMHSIKPLISDAENRDLSFYN ELMPLYDQLSLVPLYNKIRNYATQKLTSESEKFLNFDNPT LADGWDQNKEDANTAILLLKNGLYYLIGIMNAKNKPKIKDF KTSESEDCYDKMVYKLLPGPNKMLPKVFFSEKGLATFKPPK DILDGYNAGKHKKGDLFDIGFCHQLIDFFKESIAKHPDWKK FDFKFSDTSSYEDISGFYKEVTDQGYKITFSKIPTSQIDWVN EGKLFLFQIYNKDFAPGAKGSPNLHTLYWKS VFSPENLKDV VVKLNGEAEFYRPSSVKKPYSHKVGEKLVNRIGKDGLPLP ESVFGELFRYFNGKLDGELSDEAKRYLDVAVVKDVKHEIVK DRRYTQDKFEFHVPLTLNFKADSKNEYMNERVRHFLKDNP DVNIIGIDRGERHLLYMTLINQKGEILKQKSFNIVESVNYQA KLVQREKERDAARKSWSSVGKIKDLKEGFLSQVIHEITTTMI ENNAIVVLEDLNFQFKRGRFCVERQVYQKFEKMLIDKLNLYL VFKNKPEGDVGGVLKGYQLAEKFDSFQKLKGKQSGFLFYIPA AYTSKIDPTTG FANLFNMTEL TSAEKKKDFLSHFDDITYDGK NDRFLFGFDYKNFKCFQTDFIKKWTVYTQGKRIVYDKESKS AKEIFPVEI IKAALAKQNIALTDQLDVLSAINSVEASPKSASFF GNICYAFEKTLQMRNSIPNTDEDYLVSPVMNKRGEFYDSRS CDDALPQNADANGAYHIALKGLYLIKNVFDAGGKDLKISHE DWFKFAQSRNC
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【表 1 - 8 4】

91	Cas12	MRPVLQLTDTEKLSQNKPAVGKIKALLDAFKDLQHFIKPL LGSGEENEKDELFYGAFQLIWDELDTVTPLYNKVRNWLTR KPYSTEEKIKLNFDNAQLLGGWDVNKEPDCTGVLLRKDGFY YLGIMNKKSNRIFDADVTPADGICYEKIDYKLLPGANKMLP KVFFSKSRIDEFAPSEAILSSYKRGTHKKGADFSLSCHRLID FFKASINKHEDWSKFGFQFSDTKTYEDISGFYREVEQQGYM LSSHQVSEAYINQMVEEGKLFLFRIWNKDFSEYSKGTPNMH TLYWRMLFDERNLADVVKLNGQAEVFYRKASIKAEQIM HPAHHPIENKNTLNEKRSSTFDYDLVKDRRYTVDKFQFHVPI TINFKAIGQTNVNPIVHETIRRGGFTHVIGIDRGERHLLYLSLI DLKGHIVKQMTLNEIINEYNGLAHKTNYDILLVKREGERTT ARRSWDTIENIKELKEGYLSQVIHIISKMMVEYNAIVVLEDL NMGFMRGRQKIERQVYEKFEKMLIDKLNCYIDKQADSQSE GGLLHPIQLANKFESFRKLKGQSGCLFYIPAWNTSKIDPVTG FVNLFDTTRYETREKAKLFFSHFQRICFNAEKDWFEFSFDYND FTTKAEGTRTQWTLCSYGTRIRNFRNPLQNHQWDDEEIVLT EAFKALFDKYDIDIHANLKEAINAQTDQFFKDLMLMKLL LQMRNSKTNSEVDYLLSPVADEHGRFFDSRAGAGSLPDNA DANGAYNIARKGLWVIRKIQETPEGEKLSLAITNKEWLEFA QTKPYLND
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【表 1 - 8 5】

92	Cas12	MNLNTYFSQFTGLYPVSKTLRFELKPMGKTLEKIKETGHIEN DKKRHNDYFDAKKIIDKYHKYFIDAALSKEPCIDWNPLKEAI ERSLDRSDASKKKLEKTQTEFRKKIAKALTTHGHYKELTAS TPKDLFLKVFPDHFQKQPAIDTFDGFSSYFTGFQENRQNIYS DEAISTAIPYRLVHDNFPKFLSNIEVYNILKDNAPSVLSDAEN ELKDFLNGKPLANIFELNAYNDVLTQSGIDFFNQVIGGFSGE GGEKKTRGINEFSNLYRQQHPEFAQKRLATKMIPLYKQILSD RETKSFILESYSTDSQVQESVKEFFESQILNCDIAGRKVNVLK ELSSLIKRITEFDLGSIIYNQEELSSISLELFKSWNTINAILFKN AENRIGSAEKAANKKKIDAWMKSNEFSIATLNLAIASDSEE ISRVKIESYWNNFEAKVQSILCGDNRRNLDEFISATFNENNA LREDSKVIEKLKAFLDALIEIMHSIKPLISDAENRDLSFYNEL MPLYDQLSLVPLYNKIRNYATQKLTESEKFKNFDNPPLA DGWDQNKEEANTAILLLKNGLYYLGIMNAKNKPKIKDFKT SESEDCYDKMVYKLLPGPNKMLPKVFFSEKGLATFKPPKDI LDGYNAGKHKKGDLFDIGFCHQLIDFFKESIAKHPDWKKFD FKFSDTSSYEDISGFYKEVTDQGYKITFSKIPTPQIDEWVNEG KLFLFQIYNKDFAPGAKGSPNLHTLYWKSVPENLKDVVV KLNGEAEFYRPSSVKKPYSHKVGEKLVNRIKDGGLPLPES VFGELFRYFNGKLDGELSDEAKRYLDVAVVKDVKEIVKD RRYTQDKFEFHVPLTLNFKADSKNEYMNERVRHFLKDNPD VNIIGIDRGERHLLYMTLINQKGEILKQKSFNIVESVNYQAKL VQREKERDTARRSWSSVGKIKDLKEGFLSQVIHEITTTMIEN NAIVVLEDLNFQFKRGRFCVERQVYQKFEKMLIDKLNLYLF KNKPEGDVGGVLKGYQLAEKFDSFQKLGKQSGFLFYIPAAY TSKIDPTTGANLNFNMTELTSAEKKKEFLSHFEDITYDGKND RFLFSFDYKKFKCFQTDYIKKWTVYSQGKRIVYDKESKSAK AISPVEIKAALAKQNIALTDQLDVLAINSVEASRETASFFG DICYAFEKTLQMRNSIPNTDEDYLVSPVMNKKGEFYDSRSC GDSL PKNADANGAYHIALKGLYLIKNVFDAGGKDLKISHED WFKFAQSRNR
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【表 1 - 8 6】

93	Cas12	MQTLFENFTNQYPVSKTLRFELIPQGKTKDFIEQKGLLKKDE DRAEKYKKVKNIIDEYHKDFIEKSLNGLKLDGLEEYKTLYL KQEKDDKDKKAFDKEKENLRKQIANAFRNNEKFKTLFAKE LIKNDLMSFACEEDKKNVKEFEAFTTYFTGFHQNRANMYV ADEKRTAIASRLIHENLPKFIDNIKIFEKMKKEAPELLSPFNQ TLKDMKDVIKGTTLEEIFSLDYFNKTLTQSGIDIYNSVIGGRT PEEGKTKIKGLNEYINTDFNQKQTDKKKRQPKFKQLYKQILS DRQSLSFIAEAFKNDTEILEAIEKFYVNELLHFSNEGKSTNVL DAIKNAVSNLESFNLTKIYFRSGTSLTDVSRKVFGEWSIINRA LDNYYATTYPIKPREKSEKYEERKEKWLKQDFNVSLIQTALD EYDNETVKGKNSGKVIVDYFAKFCDDKETDLIQKVNEGYIA VKDLLNTPYPENEKLGSNKDQVKQIKAFMDSIMDIMHFVRP LSLKDTDKEKDETFYSLFTPLYDHLTQTIALYNKVRNYLTQ KPYSTEKIKLNFENSTLLGGWDLNKETDNTAHLRKENLYYL GIMDKRHNRIFRNVPKADKKDSCYEKMVYKLLPGANKMLP KVFFSQSRIQEFTPSAKLLENYENETHKKGDNFNLNHCHQLI DFFKDSINKHEDWKNFDFRFSATSTYADLSGFYHEVEHQGY KISFQSIADSFIDDLVNEGKLYLFQIYNKDFSPFSKGKPNLHT LYWKMLFDENNLKDVVYKLNGEAEVFYRKKSAEKNTTIH KANESIINKNPDNPKATSTFNVDIVKDKRYTIDKFQFHPIT MNFKAEGIFNMNQRVNQFLKANPDINIIGIDRGERHLLYYTL INQKGKILKQDTLNVIANEKQKVDYHNLLDKKEGDRATAR QEWGVETIKELKEGYLSQVIHKLTDLMIENNAIIVMEDLNF GFKRGRQKVEKQVYQKFEKMLIDKLNLYVDKNKKANELG GLLNAFQLANKFESFQKMGKQNGFIFYVPAWNTSKTDPAT GFIDFLKPRYENLKQAKDFFEKFDSIRLNSKADYFEFAFDK NFTGKADGGRTKWTVCTTNEDRYAWNRLNNNRGSQEKY DITAEKSLFDGKVDYKSGKDLKQQIASQELADFFRTLKMY LSVTLSLRHNNGEKGETEQDYILSPVADSMGKFFDSRKAGD DMPKNADANGAYHIALKGLWCLEQISKTDLDLKKVKLAISN KEWLEFMQTLKG
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【表 1 - 8 7】

94	Cas12	MIDNTKEKKEGSVFDGFTRKYQLSKTLRFELRPILNTPKMLD DEQVIKNDETRKKYEAVKPWFDQLHREFIEDALKSFKFKN LAIYQDTFQTWQKDRKSKQKCDTLVKIEVGLREEIVRRFEE VANIWVRSEQYKLLGIKKEGLGMLFEAGVFRLKERFKNEK DTTVDGNNIFDEWTRWTGYFKKFFETRKNFYKSDDTSTAIA YRVINQNLRRFCENIQIFEKISEKIEFSEVEKSFDISCAGIFSLA YYNACLLQGGIDTYNKIIGGEVDEKDKKIPGINELINKYRQD NSGEKIPFLKQLDKQIHSakeAFIESIETNKELVGKLKTFYEN AEVKIQSFRNLIADIVTDYSGYDIDKIYLTKEAVSHNASRWF ASFESFERDLFAVVAEKQNKLVYELLRTHKNDSKISDKDGK FSFPDFIKCSHIKRALEKQEGRIWKGEYYEDIVDFEIKIDVFT QFLCVFKFELEQQFFRKTTSAQTEQTKIGYEIVTKINELIT RENVIDLEEKIAIKNFADATLLIYQIAKYFAVEKRRGWLDN YDLDDRFYKSSDIGYLNFYRDAFEQIVRPYNLFRNYLTKKP YNTNKWVLSFENPTLADGWDKNKEKTNAAVILRKDGRYY LGIKEDCKSLFADRYSKEMSEGIESGSFQKMAYKFFPEASK MIPKCSTQTKNVKEHFRKSSSDYNLFHEKDYKISVAITKNIY ELNNVFYRKDNIEESFVPKNDFEKKLGVKKFQRQYLEISRD NNGYKQALAQWIEFCIRFLKAYKSTTIFDYSRLREAKEYESL DAFYQDINALTYNISFVPISEQYIKEKNDNGELFLFEIYNKDW SLGPMDKNRKRTKNLHTLYFEQLFSKENEQENFLFQLNGEA ELFFRPKTEEKRLGYKVWDAGEKKWVKAKEKEDGAVIDRK RYAKDIILFHCPIITLNRVSESKTKREMDVEIREVLSSTPGVHII GVDRGEKHLAYYSVIDQNGKIIETDTLNSIGKDGRGKPEVEY ASKLEKRAQEREASRRDWEEVEAIKDLKKGYISQVIRNLAD LIIKHNAIIVFEDLNMRFKQIRGGIEKSAYQQLERALIDKLSFL VKKGEEDPKQTGHILRAYQLAAPVIAFKDMGKQTGLIFYTQ AGYTSKTCPECGYRRNIKCLFENIEQAKTLIENLESINYNKKE DVFQISYSLEKLSSKDQKKEKKVSNELYAKTLKKDIFILTTK NALRYKWYDRYSEKAKVAKRGIDEYKGEVNESETKKGVV KEFNLTEYLKGLLKYEIDYEHGGIREQILSVARGREFYKDF LYALFLLTETRHSISGRNTDYIQCEPECFDSRKGFKDIKEFNG DANGAYNIARKGIMILEKIKQFKKDNDGNLEKMGWGDLSIS IEEWDKFTQKE
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【表 1 - 8 8】

95	Cas12	MKNFQDFTNLYELSKTLRFELKPIGGTKKLIEEKNILKLDKK KRENYEKVKPYFNKIHQEFINFALRNPNFDFSQFEEKYLNWL KDKKNKDLLKEKESIDKIFLEKIGKLFENSVDKFLKENGFESE VKEEDQNLKFFRRKEIFEVLQEKEYGSELETQMVNKGDEIKSI FNGWEKWLG YFDKFFNTRDNFYKTDGTSTAIATRIIKDNLKI FLENIVAFGKIKNKKIDFSEVEKNFSVSIIDTFFEINNFNCFLO DGIDFYNKVIGGETLENGEKLGKLEIINKYRQDTGEKIPYF KKLQKQILSEKDGVFIDKIEDDGGFYEV LKNFYKNAAEKEG FLKNIFENFYTISDNLEKIYFNKIAFNTISHKFGSALEFERIL YEEMKKEKADGIKFEKKENKYKFPDFIQIIFIKRSLNENYDSEN LFWKERYKSEENV DGFLEKNNNNLWGQFCKILNFEFLNIL KRRIDEAGEEYEVGF EISKNILGEKLENFELNQENKGIKDF ADYSLALYSFGKYFAVEKGRNWDLNIDISDDFYGGEDGYIE KFYNTGYDEIVKPYNLMRNYISKKPWEDNKKWKINFETSSL LSGWDKNLESNGSYIFQKGNKYLLGIINGSKPAKEILEKLYS GDGEKIKRFIYDFQKPDNKNTPRMFIRSKKDSFSPAVEKYNL PINDILEIYDNGLFK TENKGNPNYKESLRKLIDYFKLGFSRHE SFKHFNFWKDSKSYENIADFYRDVEKSCYKIDFEFLNFEEL KKLTFEKHLYLFQIYNKDFELDESLQEKGYNFKGEGQKNIH TKYFEALFLEENISRKSGAVFKLSGGGEVFFRKKSIKAKKEK RNSVEVIKNKRYTECKYFLHFPIQVNFKEEISGNFNQEIKNFL ANNP DINVIGIDRGEKHLAYFSVINQKGEILESGSFNKIENYN KNGEKLFPEREIKEIHKDGLIDLELVETGRKVDYVDYKLL LEYKERKRL LQRQSWKEVEQIKDLKKGYISALVRKIADLIK HNAIVIFEDLNFRFKQIRGGIEKSIYQQLEKALIDKLNFLVNK NEINLEKAGSILKAYQLTVPVDSLKEIGKQTGVIFYTEAAYT SKIDPITGWRPNLYLKNNNSKINKENILKFDNIVFNSKENRFE FTYDLKKFFGKDSKFPKTVNTVCSCVERFKWNRNLNNNK GGYIHYENLTDGKLANKEQKEDEFSNFKELFEKYFIDINGNI LEQIKNLDTKNNEKFFSSFIDLFTLVCQIRNTNQNAKGDEND FILSPVEPFFDSRKSQNF GKSLPKNGDENGAFNIARKGLIILN RISENPEKPDLLIFNADWDNFARNI
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【表 1 - 8 9】

96	Cas12	MSNNFQEFTQKYALSCTLRFELKPVGKTEILEKEMPMYQII NADKNIAKYIQT KPFFDQLHRDFIKEAFENVELSGLSDFFE NWKIYKQDKKANEKIYKKS AENLRKEVVSFLNAKGKDWA EKYHSSGLKKADIEILFEEGIFKVLEIRYGTDTNSFITNATTGE ITSIFQGWKGFTGYFLKFWNTRENYKYTDGTSTAIATRIVDQ NLPGYLENLEIFEKMKGKIDFESVRGDFSDFEKIGTVEYYST CLLQEGIDGYNRIIGGYTYENGEKIKGINEINLYRQTHKDEK VPFLKTLDKQIGSEKIAFMETIDTPEEFRKIFEEFVLKSSEKVV LLKQCLNHLFENELTDGVFLSKESLNTISHKWIDIGNMKLFH ESLFTILKKEGAKYDSKEDEYKFPDFIRISDIKTALVKITTESF FWKNRYLYEKDENPTGFLTSDNSLWEGFIQIFSHEFSSLFERT EKDEEGKDIQWGYDISLLNIQKLLENNEYNPNDEKNKIIKSF ADDILRIYQMCKYFALEKKRQWNP DNLEIGEFYSHPEIGYD KFYFDSYKIIVQGYNDIRNYLTKNPWSEEKWKLN FENPTLA NGWDKNKETDN SCIFLKRDNKFFLALMSRGNNQVFDERNI QKFAQNIEQGKY EKMVYKYMKDVALGIPKATTQLNAVQE HFFQSDKDYIITKGGSSIGEFIKPLRVTKRIFELNNRIYPKDNL GISFLRNQVNKKEQKNYIKIFQKEFITLGGDEVVYKKA VHD WIDFCKEYTKSYPS CAYFDYSGLKDTKEYSSIDEFYNDLDSF GYQISWQDISSSYIDELVESGKLYLFEIYNQDFSNGKTGAKN LHTLYFEHIFSKENQEVNFPLKLNGQAELFFRPKSIEAKGEN RKFNREIIAKKRYTEDKIFFHVPLTLNRTEGDIYGFNTEINNF LAHNP DINIIGIDRGEKHLAYYSVIDQKGNIIESDSLNTVNEIN YGEKLTDTAEKRKQARQDWQAVEGIKNLKKGYISAVVHKL TDLIIKYNAIVIFEDLNMRFKQIRGGIEKSVYQQLEKALIEKL NYLVEKGEINPEKAGHLLNAYQLTAPFETFKDMGKQTGIVF YTQAAYTSKIDPVTGWRPHLYLKYSSAEQVKKEIAKFSNIIW NNTEKRFD FMYDIRNFSTQKEYPKNNIWTVCSSVERYRWD KTLNQNKGDYVHYKSITPEFEKLFSD FQIDGTKNILEQINRM ETKGNEKFFKSFIFFFGLICQIRNTNKADSDENKQDFILSPVV PFFDSRDSENTKNGLPRNGDENGAYNIARKGLIILQKINEFSD ENGNC DKLGWKEL SISQVDWDNYIKT
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【表 1 - 9 0】

97	Cas12	MEYDEHISLIESEEKADEMKKRLDMYMNMYHWAKAFIVDEVLDRLD EMFYSDIDDIYNILENIVPLYNRVRNYVTQKPYTSKKIKLNFQSPTLA NGWSQSKEFDNNAIILIRDNKYYLAIFNAKNKPKDKKIIQGNSDKKND NDYKKMVYNLLPGANKMLPKVFLSKKGIETFKPSDYIISGYNAHKHI KTGENFDISFCRDLIDYFKNSIEKHAEWRYEFKFSATDSYNDISEFY REVEMQGYRIDWTYISEADINKLDEEGKIYLFQIYNKDFAEENSTGKE NLHTMYFKNIFSEENLKNIVIKLNGQAELFYRKASVKNPVKHKKDS VLVNKTYKNQLDNGDVVRIPDDIYNEIYKMYNGYIKESDLSGAAK EYLDKVEVRTAQKEIVKDYRYTVDKYFIHTPITINYKVTARNNVND MAVKYIAQNDDIHVIGIDRGERNLIIYISVIDSHGNIVKQKSYNINLNNY DYKKKLVEKEKTREYARKNWKSIGNIKELKEGYISGVVHEIAMLMV EYNAHAMEDLNYGFKRGRFKVERQVYQKFESMLINKLNYFASKGK SVDEPGGLLKGYQLTYVPDNIKNLGKQCGVIFYVPAAFSTKIDPSTG FISAFNFKSISTNASRKQFFMQFDEIRYCAEKDMFSFGFDYNNFDTYN ITMGKTQWTVYTNGERLQSEFNARRTGKTKSINLTETIKLLKLDNE INYADGHDVRIDMEKMDKSEFFAQLLSLYKLTVMRNSYTEAE EQEKGISYDKIISPVINDEGEFFDSNYKESDDKECKMPKDADANGA YCIALKGLYEVLKIKSEWTEGDFDRNCLKLPHAEWLDFIQNKRYE
98	Cas12	MFGNWGVIQNAVQMNIKRVPARKHKESEEDYEKRIAGIFKKADSF SISYINDCLNEADPNNAFYVENYFATFGAVNTPTMQRENLFALVQN AYTEITALLHSDYPTTEKNLAQDKANVAKIKALLDAIKSLQHFKPLL GKGDESDDKDERFYGELASLWAEALDTMTPLYNMIRNYMTRKPYSQK KIKLNFENPQLLGGWDANKEKDYATHLRRNGLYYLAIMNKDSKKL LGKAMPSDGECYEKMVYKLLPGANKMLPKVFFAKSRMEDFKPSKE LVEKYNNGTHKKGKNFNIQDCHNLIDYFKQSIDKHEDWSKFGFKFS DTSTYEDLSGFYREVEQQGYKLSFARVSVSYINQLVEEGKMYLFQIY NKDFSEYSKGTPTNMHTLYWKALFDERNLADVYKLNQAEMFYR KKSIENTHPTHPANHPILNKNKDNKKESLFEYDLIKDRRYTVDKFM FHVPTMNFKSSGSEINQDVKAYLCHADDMHIIGIDRGERHLLYL VIDLQGNIEQFSLNEIVNDYNGNTYHTNYHDLLDVREDERLKRQ SWQTIENTIKELKEGYLSQVIHKITQLMVKYHAIVVLEDLNMGMFRG RQKVEKQVYQKFEKMLIEKLNLYVDKKADASVSGLLNAYQLTSK FDSFQKLKGQSGFLFYIPAWNTSKIDPVTGFVNLLDTRYQNVEKAKS FFSKFDAIRYNKDKEWFEFNLDYDKFGKKAEGTRTKWTLCTRGMRI DTRFNKEKNSQWDNQEVDLTAEMKSLEHYIDIHSNLKDAISAQT DKAFFTGLLHILKLTLMRNSITGTETDYLVSPPVDENGIFYDSRSCG DELPENADANGAYNIARKGLMMIEQIKDAKDLNLFKDISNKAWLN FAQQKPYKNG

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【表 1 - 9 1】

99	Cas12	MSNLYSNLHNLYQVQKTLRFELKPQGKTENMEKVGILKADEHRA EIYSKVKKYCDEYHKLFIDKSLSNIELNGIDRYEYELYSINNRDDKQKE ELDQLEASLRKQISDAFKKSAEYKGLFQKDIITSYLVMTYKENQEKM QDIGEFNRFTTYFTGYNKNRENMYSEEDKSTAISYRLINENLPTFIDNI KIYKKIVSLMPEDIEKIYKDLEEYIQVDSIDEIFNISYYNDVLTQRGIEC YNILISGRTKNDGDKIKGLNEYINEFNQTHNEKIPKLQELYKQILSDA ESASFKIDVIKNDKELMNLIEVYYANILPILNKIEDLFTRISNYNLELIL VNNDGTLSTLSNMVFNWSYIKGAISEKYDEEYSGKEKYGTEKYAQ KKQEYLKKQKIYSLKFLNDCIGNNAICEYLKNYIIQNKNIETIKEDYN EVQNIKVEDDTKELIKDEKSIEKIKFLDDVKSLQEFVKLVIPKDRTV EKDAKFYSELTPYYEKIKEIIPLYNKVRNYVTQKPYSTEKIKLNFEC TLLKGWDANKEEANLGVILLKEGKYLLGIINPYCKKIFEVDEKDSNE QNNYKKMEYKLLPGPNKMLPKVFFSNSRIEEFNPSKELQEKYNGY HKKGKDFDINFCHELIDFYKQSVNKHEDWKKFNFKFDTSEYNDISE FYREVEKQGYKIEYTEYSEKYINELVDRGELYLFQIYNKDFSEYSKG KENLHTLYWKA VFDPDNIMNPVYKLNGBAEVFRKKSLEMKVTHP ANQPIANKNISTIEAGRSTSTFKYDLIKDKRYTMDKFQFHPITMNFK SERLFNINQIVNKYLKYNDIDHVIIDRGERNLLYVCVIDKNEKIVYQ KSLNEIVSEYNNNRYTTDYHGLLDRKEKEREIAREDWKNIEKELK EGYMSQVIHILVELMKKYNHIVIEDLNKGFKNSRIKVEKQVYQKFE KMFIDKLNLYLVFKDEDKMNEGGVLNAYQLTNKFESFTKLKGQSGIL YYIPAWCTSKIDPTTGFINRFYLYENFDKSKEFVNRIDDIRYNEKEN LFEFDIDYSKFTDRLNDTKNKWTLCSYGERILTQKNANGEWLDRIQ LSIEFKKLFKEYGINLNNIKDSILKLDKDNLEFYKGNESLGFIQLFKL MVQMRNSLTGKEEDNLISPVKNQHGKFFNTSEKIEGLPIDADANGA YNIARKGFMLVEQMKNVEDEKLNKIKYNITEKEWLNLYVQNRGM
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【表 1 - 9 2】

100	Cas12	MARIFEDFKRLYPLSKTLRFEAKPIGATLDNIVKSGLLDEDEHRAES YVKVKKLIDEYHKVFIDRVLDNGCLPLKNEGHNNSLTEYYDSYVS KSQNEDAKKA FEENQQNLRSHIAKKLTEDKAYANLFGKNLIESYKD KTDKTKIIDS DLIQFINTAESTQLNSMSQDEAKELVKEFWGFTTYFV GFFDNCKNMYTAEKSTGIA YRLINENLPKFIDNMEAFKKA IARPEI QANMEELYSNFSEYLNVESIQEMFLLDYYNMLLTQKQIDVYNAIIG GKTDDEHDV KIKGINEYINLYNQ QHKDDKLPKLKALFKQILSDRN AISWLPEEFNSDQEV LNAIKDCYERLSENVLGDKVLKSLGLS LADY SLDGIFIRNDLQLTDISQKMFGNWGV IQNAIMQNIKRVAPARKHKE SEEDYEKRIAGIFKKADSF SISYINDCLNEADPNNA YFVENYFATFG AVNTPTMQRENLFALVQ NAYTEVASLLHSYYP AEKKLAQDKANV AKIKALLDAIKSLQH FVKPLLGGKDESDKDERFYGELASLWAELD TVTPLYNMIRNYITRKPYSQKKIKLNFENPQLLGGWDANKEKDYA TIILRRNGLYYLAIMDKDSRKLLGKAMPSDGECYEMVYKLLPGA NKMLPKVFFAKSRMDDFKPSKELIEKYNNGTHKKGKNFDIQDCHN LIDYFKQSIDKHEDWSKFGFNFSDTSTYEDLSGFYREVEQQGYKLS FARVSVSYINQLVEEGKMYLFQIYNKDFSEYSKGTPNMHTLYWKA LFDERNLADV VYKLNQAEMFYRKKSIENTHPTHPANHPILNKNK DNKKKESLFEYDLIKDRRYTVDKFMFHPITMNFKSVGSEINQG VKEYLHHADDMHIIGIDRGERHLLYLVIDLQGNIEQYSLNEIVN EYNGNTYHTNYHDLLDAREDERL KARQSWQTIENTIKELKEGYLSQ VIHKITQLMVKYHAIVVLEDLNMGFMGRGRQKVEKQVYQKFEKML IDKLNLYVDKKADASVSGLLNAYQLTSKFDSFQKLGKQSGFLFYI PAWNTSKIDPVTGFVNLLDARYQNVEKAKAFFSKFDAIRYKRIRTG LSLISTMTSLVKKQKVQGLSGFYAPEECVLILSEIKKKTHNGIIRKLT
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【表 1 - 9 3】

101	Cas12	MISLNYFQNQYAVAKTLCLELRPIEKTMEYIISGILKEDEHRNESYK LVKKIIDDYHKAYIELSLSRFELKITSCSKNDALEDFYCQYLANSQEE KDKNIFKKTQDNLRKQIAKHLTQGEAYKRIDKKELIQEDLLEFVAAD PDAANKKILINEFRDFTTYFTGFYENRKNMYSEEAQSTAIAAYRIIHEN LPKFIDNMGTFFKQLMQSSITDILPQIFDNFKKDLEVSSIQEIFDLNYFN KVLTKQKQIDIYNAIIGGKSLNENSRIQGLNEYINLYNQQHKENKLPLL KLLFKQILSDRNSLSWLPEAFETDKQVLHAVRKCYANLKESVLHEA GLVQLLSSLPSYDSTRIYIRNDQALTTISQKLFGDWGIIHPAIKERLKK DISAKRKETEEAYLERIEKAFKQADSYTIAAYINDSLKEIGVDKKNIED YFIHLGAICTEGQEENILQRIASAYSQAQPLLEEKVPVHKNLMQDK DSVELIKSLDELKNLQHFIPKLLGKGSESDKDERFYGEFVGLWNL DQITTLYNKVRNYVTRKPYSIEKFKINFQATLLKGWDRNKERDNT SIILRKNGLYYLAIRKEYNKVFEEKYPAGTEENCYEKMMEYKLLPGA NKMLPKVFFSKSRINEFNPSQQLLQNYQMGTHKKGDQFKKEDCHAL IDFFKTSIEKHEDWKNFNFQFSPTSVMYEDMSGFYREVEQQGYKLVR SIDAEYIDKLVEEGKIFLFQIYNKDFSPFSKGTPLNHTLYWKMLFDER NLNNVVYKLNGEAEIFFRKKSSITYTHPTHPAEIPIKNKNVQNKKKES VFQYDLIKNHRFTIDSFQFHPITMNFKNAGLSNLNEQVYTYLRENK DAHIIGIDRGERHLLYLVIDRYGRIVKQFSLNEIVNEYHGNITYTTNY HDLLDKREEARQARQSWQSIENIKELKEGYLSQVVHKIANLMVEY HAIVVLEDLNGFMRGRQKVEKQVYQKFEKMLIDKLNLYLVDKKKA PEADGGLLKAFQLTNQFESFQKLKGKQSGFLFYVPAWNTSKIDPCTGF TNLLDTRYENIAKAQKFFRTFDAIRYNAVKDYFELELDYDKFHKRA EGTQTKWTLCTYGTRIKTRFPENNNQWDNVEINLTEEFKKLQFQF GINLSGDLQQAICAQTEKSFFESLLRLLKLTLMRNSITGTDVDYLLS PVQNAEGYFYDSRKGDKSLPANADANGAYNIARKGLWVIQIQKQTP QGQKAKLSISNKEWLKFAQEKPYLKD
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【表 1 - 9 4】

102	Cas12	MKTFFENFTNLYSLPRTLRFELKPLYKTKELIDSKQELFPKDKRIDEI YQNIKPCLNELHSDFIEKSMENKDFQNIPDNILKIYSNEKNIDDFKN IEKDLIKQINWFLKSNKTFFAENYSDDLKGKNSIDIHKVFWEKIYKKD DSWKIFLYNDLLWKS YEELINIYFKWFSTYLSNFKNRENLYDKK NEAKVWSVSGRTIWENFPRFLQNCINFRDKLEKLNLSIEQKDIFITN NFWKCISQKQIDYYNKIIWQINSKTNEFNQKNGLKWNKKLPKLLL LHKQILWKSENEINLNFINNIIQTDFELEQEIKIINKDIFQRIDFIKCSI VSNIEDFELEKIFIKKNRKLDISSLLMDNYSVLEKLLPEFNEEWKIHK ENELVNLSKIKKSFENIDLKDLKNIFKKEYFDESKDWFKLFLNWIY NHFSDLENNIKHHTHKL VQDKLISWNFSENIQKSEKNINLRDEIFVSS KWLLKAYLDSILALDRFVHMF DYWEQKDFDSNFYNNIEEYSINFSP FKTYNAVRNYLTCKNYSTDKIKLNFDPDFLGSNSLWKYAFIYKD SKWFYYLWVLDHSNSQSKYKPQILKNNTFEYQLEYKQIKFNTLAW KWYIRDFWVKYSEDENCIINLKTIIKKQYLERYPVLKEIVDFQTD KKIFDAKVKTILEQAYSINFVNIDKNYILEENNNWNLHFFQIYNKDF SENKKINSMENLHTMYFKALFEKENFNWWACFKLNSQWAEIFFRE KSINEKKVKDLKTRNENAIEKKRYTENKVFLHLPITLNFINKWYSK YSFWYINDSVKKYIKENKISIIWIDRWEKNLIYFSMINENLEIHELKSL NSLILKVSDLEEKEVNYFEKLSKKEWNRNKERKDWDEIETIKELKE WYISQIVDNLVKLIVKHNAIVVMEDLNSGFKRWRQKIEKQIYQKFE LALAKKLNF TVDKNKKHDELWWIYKAYQLTPQIENFQDIYSQTWI IFYTQAAYTSVTCPNCSFRKNYQKYENESKFKEFFKKYILEIKFED NCFIHKYKIDEKIDKKKNLKKLEFQVNTKNQIRLKFESLKWKW WETKEFNITEKFKEIFEKHKL DLWNLKEELLAWNWEIQLYKDFMF YFNLLLQLRNSKENDNWWYISCPSCWFHSGNWFQWFSYNWDAN WAYNIARKWRIILDKIKKDEKNLWITNVEWDNYYQK
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【表 1 - 9 5】

103	Cas12	MAVRSVKLKLLVPRDGS AESVRKRKALWATHQFVNDA AAAAYAE LLEMRQEDVCRGTDDHGKDVIEPAAHWQAKLRARLAAKQLPPV AVAEALPLLKAFYGSRLIKSFVANDKGVAGTGNATDLNTWLSGLV DPASVAGEKTEL RKQLLAELPLCEAADADFEGAARKMLAKSDAR EALLEGPGTGVGWPAAYNANPTDSVWLDMLHKAAAKARLELAD TTVSELKKLGVFLLQAASSNRVFGSGVLNPFERMAAAQAAAALL PWETKRHEMRKRRDKFADQLNQWDTEFGASHATALAAIRAFEAE ESERARRESLGNEGTYRIGGRELRDAWTLLRDWLKGHSTATAAA REDKVRELQAKQGRSFGSHRLLSWLAKPAQQWLADHSAGDVVTR IAVRNARQRKLD TARTLPIWTGADAVKHPRFANFDPPNNTNQPGF DLRAGTQKGRLTLRLSLLTERADGLLLAQDHDFQLVPSRQMAEIV LHKDGKERALS WQSQDGIGRQVGDVGG SALLFSRDHAECLLERK QITRLERGA WPAALPVWFKLSLDIGA EHKALLKQRFK WGVWLNS ALVTRNAKDAKGVP PPVGTRVLAVDLGLRSAATVSVWQVVDAAAT PVVAGKWRVPLSDTL SAVHERSAMLALPGEHVDAGVLAARRAAN EKLAGLLAATSHLSTVFKLGRAEQGDRRRELLERLGE GDDRRARA AVATTAAERDGLRAVLGATQDAWAGAVAAVWRRLETDLAGAIA AYRKQQREDVQLRREARHGPGASQLPKQAAAERLLGGKSAWQIE YKERVRLKLLTRWIMRQRP GDTAVRRLARKDLGKYCGLLDHLTA LKEDRAKTTADLIVQAARGRVRAHKDAHGRQQDRELWLAKYAP CDLIVMEDLGRYRFATDRPPSEN RQLMQWTHREVFRLVQM QAEV EGIQVLETGAEFSSKFDARTWAPGVRCEPITKLWVERYRNGEMPW LADKADEWRREGIELAQLVPGQLLPTGSGEQFVAVSATGGLRVRH ADLNAAQCIALRALTG HGTA FRLTARRLGDVFVSAKGLGKRPQGA LWREFGSALPPAVVVL RPAGEVRYALRPFASARDA AAAALGLQLGA LRNV DATDAESDAEDGDLAELLAGADPDRATFFRDPSGDVHGGA WVQAKVFWAEVRRHVRLGLQAQGLLPAAARSSEPRQMQLPLAG ALPGDDIPL
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【表 1 - 9 6】

104	Cas12	MLDKFASLYPVTKTLRFRLLPQGRTEENMQVAKVLENDLERSEAA AVVKGLIKKYHLQFISDTLSGSTLSWQALTETLDKFKADHTATAEL DSALAA YRCKLAELFTKSPKYKVMATPVSIKEILKTETDPENIAAL NKLNGYTYIIFDYVSTRMLTYSADAKATSLAYRLVDENYLRFYQDI SAAAEISAVLEEAGFDNAEVEAFIRTDYNTCLTSEGIASFNAAAGSI NQFVNVLLQQNPVLQSEPALRRHLQPLYKMLLDEAESKIIKFEDYG QLRDAVENFRRNFQDLPQSLIDIFAGRYDYSKIYVGYKYLNEASSQ IAGGYNWKLLENALED FYSKPYLVNGKLPVKYKTVVNKKMNQLA YSFTELQEALDAGDSGSSITDLFGKYAELHAAYAAADGNVIFYKEY DRKSIASLKNYLD AVNAIARFIKIFAAPEVYVKDEGFYGIVDGAAD KLRDFDLLYNMVRNYITKKPYKKSKVALTFNSSFGRGW DENKIY DELTIFTYNGKY YLGVIN KNDKPD LAAAVSKDEGGYKRMVYKT FDIVKQLPRLSFTKAVKAHFAESDEDFIFDGP KFAKPLRVPKEIYLQ SFTDNGDKLADS AKKYTKAYLDMSGDYKGY YEAIKRIDYTKEFL SAYKSTSIYDLAFLKPAGKAAGSLCWTRHI
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【表 1 - 9 7】

105	Cas12	MKTFFENFTNLYSLPRTLRFELKPLYKTKELIDSKQELFPKDKRID EIIYQNIIPCLNELHSDFIEKSMENKDFQNIPDNILKIYSNEKNID DFKNIEKDLIKQINWFLKSNKTTFFAENYSDLLGKNSIDIHKVFW KIYKKDDSWKIFLYNDLLWKS YEELINIYFKWFSTYLSNFNKNR ENLYDKKNEAKVWSVSGRTIWENFPRFLQNCINFRDKLEKLN SIEQKDIFITNNFWK CISQKQIDYYNKI IWQINSKTNEFNQKNG KWNKKLPKLLLLHKQILWKSENEINLNFINNIQTDFELEQEIKI NKDIFQRIDFIKKSIVSNIEDFELEKIFIKKNRLKDISSLLMDNYS VLEKLLPEFNEEWKIIKENELVNLSKIKKSFENIDLKDLKNIFKKEY FDESKDWFKLFLNWIYNHFSDLNENIKHHTKL VQDKLISWNFSE NIQKSEKNINLRDEIFVSSKWLLKAYLDSILALDRFVHMFYDWE QKDFDSNFYNNIEEYSINFSPFKTYNAVRNYLTCKNYSTDKIKL NFDYDPDFLGSNSLWKYAFIYKDSKWFYLLWVLDHSNSQSKYK PQILKNNTIFYQLEYKQIKFNTLAWKWYIRDFWVKYSEDENCII NLKTLIKKQYLERYPVLKEIVDFQTDDKKIFDAKVKTILEQAYSI N FVNIDKNYILEENNNWNLHFFQIYNKDFSENKKINSMENLHT MYFKALFEKENFNWWACFKLNSQWAEIFFREKSINEKKVKDLK TRNENAIEKKRYTENKVFLHLPITLNFINKWYSKYSFYINDSV KKYIKENKISIIWIDRWEKNLIYFSMINENLEIHELKSLNSLILKVS DLEEKEVNYFEKLSKKEWNRN KERKDWDEIETIKELKEWYISQI VDNLVKLIVKHNAIVVMEDLNSGFKRWRQKIEKQIYQKFELAL AKKLNFTVDKNKKHDELWWIYKAYQLTPQIENFQDIYSQTWIIF YTQAAYTSVTCPNCSFRKNYQKYENESKFKEFFKKYILEIKFED NCFIIKYKIDEKIDKKKNKLKLEFQVNTKNQIRLKFELSLKWK WWETKEFNITEKFKEIFEKHKLDLWNLKEELLAWNWEIQLYKD FMFYFNLLLQLRNSKENDNWWYISCPSCWFHSGNWFQWFSYN WDANWAYNIARKWRIILDKIKKDEKNLWITNVEWDNYYQK
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【表 1 - 9 8】

106	Cas12	MSFLVPHLPTVVSHRLGGYSSAMDQTPTRLTPAVKNTAAAT PKPEVPLTQRAYTLRLRGANDGDQSWREAVWATHEAVNM GAKVFGDWLLTLRGGLDRELADAKVKAGNNNPDRNPTPEE RRGRRVLLALSWLSVESAPKKGDAYEKFVIASGKKDSQSIR DEKVVRLALREILAKRGVANQDLEGWIVDCEPSLSAAIRDDA VWVNRSAAFDAAQCRVGTSLTREEIWDLLKPFPGSCESYLA SLTTDESDTEAAATDDKAKDLVQKAGQWLSSRFGTGKGA DFAAMSKVYSETAFWAGRASPFRSGAEALRLIAESLKSFCP KSFADAGILGLISGPGYKSATRNIIKAWSKRAGPVTADDLAN LSAVAAEDANKCSANTGSKGHRPWSDAILCEVENACGFTY LQPDGPALHSEFAVMLDHAARRVSIGHSWIKRAEAERDRFT KDALRIKEVPDPIRVCLDRFCADRAGTSGAIDGYRIRKRAVS AWKEVITRWGQAACKTAEDRVIAVRETQADPDIDKFGDIQL FEALAVDDAEVWRVNGEVTQPPLIDYAAATDAEAKQKRF KVPAYRHPDPLSHPVFCDFGNSRWKIRFAAHDAVTKLANA RTSLDRREADLAKAKERLDAKATAPEEQTEGKESLEEAEERHL RDARDRVAWLSSMHAFSMRLWGAGRVDGQRLFWSCKRL TDDMALRQNSGQAPTIAVTRADRLGRAAAGADTADSVDIL GVFTEEHWNGRLQAPRAQLDVIAAHVAKNQWDAKAKKM RDRIRWLVSFSAKLQPVGPWIEYSATFPEAALAKPFVSRKGE YAVRHVSNDDRAGLGKLVLSRLPGLRVLSVDLGHRYYAAC AVWETVSIAQTNAACDAAGHELPTESDLFLQLSTDTLTGKN RTTIYRRIGADMITDPKTGEKTPHPAPWARLERQFLVKLPGE DIPARKASPAEFDAIRLEEAFGRTRTADDPLLVRVDELLAA TVDSARLALRRHGDAARIAAYAFKPSAEKLTGGGREVMSPE ARKAMILDALLWHGLWHGDRWADVWASQQWDAYIKPE LGMDLPPWSETSGEPRCQYRSKVEGLLKRVAESLAARDGA GLHLLWAEQWRTRNAKWLGNTHLRTLRLSLLLPRGLTTST PAAWNVGGSLTRIATLKSLYQLHKAYHMRPEPEDPRKNVP AKGEEELRDFGRGMLDVMERLREQRVKQLASRLAEAAALGI GRMKASEGKRDRKRPRAQIDQPCHAVVIENTKNYRPEETRT RRENRLMSWSSSKVKKYLSEACQLNGLHLREVQASYTSR QDSRTGAPGIRCADVVPVQDFFTKPWRRQVSIAGRVNQG RGDARERFLADLDAKWSAAEKSERITAPPLRIPVNGGELFVS ADLHSPAALGLQADLNAAANIGLKALLDPDWPGKWWFVP ASLDADGWRVPAAKSCAGAEWVKNWKVGQLGDSYAPNG KPLQPTDDEGVKKAEDGVKLAKASLDDAEQALKAAKTK RKAEIDVASARAQEAKKNVDDMKKALVAAKKGASAKEIIN LWRDPVGVDPADFASGEPWRAYTVYKQORVEYHVINDVLR GRAGPRSDRP
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【表 1 - 9 9】

107	Cas12	MSITRSIKVKLIVPRDASLEARQLREGLWATHLFVNDGCHY YERLLEFRQRDVCVGKDDAGKDVIVPAAEWADRLRARLG RNGMVPSHIEAALPIFRELYENMVPSALKAKSGTGQAGRSW HKLVSPTSRGGEASAARIDVLRPLLPSGDDPAFEPAAARAL IEEAGDELLTSTGRCPAWVTAYRKGPESAWVEKLRIQLRE AVEAGDFDPPSDPQILAAGAVPAAPPLGAGIDALRPLLPLLG GDPAFEPAAARALVEDIGDELFTSTGRPPTWVTAHPTWVRAH RKDAECLEAADDFKWVERLRQRLRDDAKAGKFEQPLHERL GALGALPVAKPIGAGRVS RADLTVFERGAMELAIEHLIGW ESAGHRARAQYVERKKRHDDLLQWIEAEAPDALLAVRAYE AARTIHLATLGELGAAPQYTLRLREIRPWRKLREWLLQNP ATIDERRRRLATMQTNDPRGYGGEALAWLAAPERRALVEH PAGDVVTRIAVLNIRKSILDRSRLFPTCTLADPVEHPRFAKFG KPGDKNSAGYALAVDGVRRERAIKILVPRQDGLLVPTDLRV PFAPSGQMRDLRASGLDISYERQDGRGRQA AKLQGGNLMF DRTHFARCGAPGPEALGSVWIKVALDLSSPAASLAMKTATP VRTYLSTAVRGRPESTKYEKAAPPEGFRVLSVHMGLRTAAT ASMLRFGAPEEGGHEVPVSGLAGETLVAFHERTVTMKLPGE DPDTRTEANRGVAKRELRLGLRGIGCLKAIRRASASATPED RAEALVIIETHVGQGDRHGWAPAEAVGRLDPHGDPDDWKT ACAALYAAVEADLGVAISSWRKAARAGGATGMLGGKSLW AVDHLERSFRFLRSWDLRARPHDGDPRRPRPGYASKLLHHI DGVKDDRVTADTADRVQAACGRAWIGGPTVKRGTDVRLP GRWEQGRPRADLILLPDLTHFRFRSDRPRAENSRLMRWAHR QLAIYVRMQAEVEGILVADTGAAFTTRFDAWTGAPGVRCE PVTADHLRGIKREDYWLARLLREGALKHLRIDPASLRVDD LVPMDHGKILVALDGVDPGLRILDTVDNASQGLGRRYIEG HGLAYRLPGARVPRGEGEREAAVVHIKGRKRLASAMGGTVV VLRASEGPGDITWTAEVYDRPQGARKALGLSLAAFNSIATA AVDDEGPAPENDDEALEEEAEALGIATGERIVFFRDPSGAV AGGGWLEASAFWGIANRMVTDRLRELGR LG
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【表 1 - 1 0 0】

108	Cas12	MATAVDTSTTRAYTLRLSGGNNWRELLWQTHVAVNRGAW VWGDWLLTLRGGLPASLADGAERRVVLALSWLSVESPAS LAPQAHIVAYGSDARDERNRKVTERFRDILRRMGIKQQQEQ EWLDACLPALMASIREDAVWVDRSACFAEAQQCYRGLSSE WARKTLFDLGGEDDYFKPSAKEGASSKAKDFVQKAGRWL SRHWGAGKKSDPRDISTRLGKLAGVDPKAIDGHTGRAALE DLLRTLGSRPAQNADAELKLYRQLKRAVGWKGPRPSKGAVAL KKIRDAERVPNLWKEIASTLREEAAVQSSQTSDHAAVPDW RSHWPAEITGLPMPYRVDRDYIWEHGVMLDHALRRVSSAH TWIKRAEAERRRFQQDAAKMGSIPEEARNWLDAFRERRSSS SGATGDYLIRERAINGWDKVVQAWETLGPNSTRDQRIAAA RDVQANLDEDEKFGDIQLFAGFGDEHVDDPERCLADDRAT CVWRNSSGRADGRILKDYVAATVAEHNQRRFKVPAYRHPD PLRHPVFVDYGKSRWSINYSALTAAQQRKTTQKLAQAKT DNTRAKLQQQLASTADLRSVTLGVDGNNRIVKISQRWSK RFWRDLDLDFGSHPSAAVSRADRLGRVAARQDPGAAVYV AKVFEQQDWNGRLQVPRRELNLADVVYKGADPDFGKL ERLDPRARRLWERLSWFLTTSATVQPQGPWLDYVAAGLPS GIQYTKSRAGYYLNYDANHGRKGRARLCLARLPGLRVLSL DLGHRYAAACAVWQTLTIEQMTNECRQAAHPAPSNDLFI HLRHPTHKPQKSGRKKGRPVTKTTIYRRIGPDKLPDGTDHP APWARLERQFLIKLQGEDRPARYASQKEIDEVNQFRNFVGL EPIVDRPRVDDLHSDAVRVARLGLRRLADAARIAFAMTAAK KPISSGGHEVELTTAQRIEFLQDALLWQSLAASRRYRDDWA EKLWQSWVVEKLGGPQPAEIADDLPRSQRAASLKTARQSLR KVAEKLSDGQSPSAELHRLWAERWQQRQTEWRRHLRWL RRLILPRRKDHQQEDRPLQRVGGLSVKRIQTIRQLYQVLKAF RMRPEPSDLRKNIPAGDRSLASFGRILNHLERLREQRIKQL ASRVVEAALGAGRISKPPGRDRRRPQQPVDRPCHAVVIENL QHYKPEDSRLRRENRLMDWQARNLRKYIVEGCELHGLLF VEVSPAYTSRQDSRTGAPGLRCEDVSRTALQEAARRMHAS HSRPSNSSPGGSQTQFEREVCRWINEFKRVEGSSSSLSARQA VLKAFLHHQASIPTSLSTILLPRRGGELFVSADPDSPLACGLQ ADLNAAANIGLKALTPDWMGAWWFVLVDRASGQPVEEQ VQGCPIWLSGGLSNNPATIDPSDSPTAARRSNGTGAKGRA RANEYWWSSLSATTLPDHKAWQPTQDYWRDIEQRVVKRL LRLLDGSEWSED
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【表 1 - 1 0 1】

109	Cas12	MLDKFASLYPVTKTLRFRLLPQGRTEENMQVAKVLENDLE RSEAAAVVKGLIKKYHLQFISDTLSGSTLSWQALTETLDKFK ADHTATAELDSALAAAYRCKLAELFTKSPKYKVMATPVSIK EILKTETDPENIAALNKLNGYTYIIFDYVSTRMLTYSADAKA TSLAYRLVDENYLRFYQDISAAAEISAVLEEAGFDNAEVEAF IRTDYNTCLTSEGIASFNAAGSINQFVNVLLQQNPVLQSEP ALRRHLQPLYKMLLDEAESKIKFEDYGQLRDAVENFRRNF QDLPQSLIDIFAGRYDYSKIYVGYKYLNEASSQIAGGYNWK LLENALEDFYSKPYLVNGKLPVKYKTVVNNKMNQLAYSFT ELQEALDAGDSGSITDLFGKYAELHAAAYAAADGNVIFYKE YDRKSIASLKNYLDVNAIARFIKIFAAPEVYVKDEGFYGIV DGAADKLRDFDLLYNMVRNYITKKPKYKSKVALTFNSSSFG RGWDENKIYDELTTIFTYNGKYLLGVINKNDKPDLAAAVSK DEGGYKRMVYKTFDIVKQLPRLSFTKAVKAHFAESDEDFIF DGPKFAKPLRVPKEIYLSFTDNGDKLADSAKKYTKAYLD MSGDYKGYEAIKRIDYTKFELSAYKSTSIYDLAFLKPAGK AAGSLCWTRHI
110	Cas12	MCIRDRDLAVAALNRGDAXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXGQLNAIRNFLASDGYGAHDLVPVNYNGSNDRGAEV QVGNQKNWTVTSSAPVVVQYNNADTTLTVQGHTDRLIVTG SGNDTITLKDSGDDKVLLGDGNNTVVAGSGADTIVGGAGN DVLIGTNGGYGTELLGGAGNDVLRNAGSHGIYMDGGAGND TFYGGTGPDMEGGDGNLDMYANGRGSSIDGGAGNDTIYG GPGGDTLTGGDGNLLRSDSAFGTKGSGNLLVGGAGNDTL WAGAGYDTLKAGSGSDTLISGTGSSQMIGGSSGNTTFEVAY HTGNDTITGSGSGNTVYLDGRDFSDATISNHSGVTTVSFSDG QVLKISGVQDIVFSDHDYKV

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【表 1 - 1 0 2】

111	Cas12	MSITRSIKVKLIVPRDASLEARQLREGLWATHLFVNDGCHY YERLLEFRQRDVCVGKDDAGKDVIVPAAEWADRLRARLG RNGMVPSHIEAALPIFRELYENMVPSALKAKSGTGQAGRSW HSKLVSPSTRGGEASAARIDVLRPLLPSGDDPAFEPAAARAL IEEAGDELLTSTGRCPAWVTAYRKGPESAWVEKLRIQLRE AVEAGDFDPPSDPQILAAGAVPAAPPLGAGIDALRPLLPLLG GDPAFEPAAARALVEDIGDELFTSTGRPPTWVTAHPTWVRAH RKDAECLEAADDFKWVERLRQRLRDDAKAGKFEQPLHERL GALGALPVAKPIGAGRVS RADLTVFERGAMELAIEHLIGW ESAGHRARAQYVERKKRHDDLLQWIEAEAPDALLAVRAYE AARTIHLATLGELGAAPQYTLRLREIRPWRKLREWLLQNP ATIDERRRRLATMQTNDPRGYGGEALAWLAAPERRALVEH PAGDVVTRIAVLNIRKSILDRSRLFPTCTLADPVEHPRFAKFG KPGDKNSAGYALAVDGVRRERAIKILVPRQDGLLVPTDLRV PFAPSGQMRDLRASGLDISYERQDGRGRQA AKLQGGNLMF DRTHFARCGAPGPEALGSVWIKVALDLSSPAASLAMKTATP VRTYLSTAVRGRPESTKYEKAAPPEGFRVLSVHMGLRTAAT ASMLRFGAPEEGGHEVPVSGLAGETLVAFHERTVTMKLPGE DPDTRTEANRGVAKRELRLGLRGIGCLKAIRRASASATPED RAEALVIIETHVGQGDRHGWAPAEAVGRLDPHGDPDDWKT ACAALYAAVEADLGVAISSWRKAARAGGATGMLGGKSLW AVDHLEERSFRFLRSWDLRARPHDGDPRRPRPGYASKLLHHI DGVKDDRVTADTADRVQAACGRAWIGGPTVKRGTDVRLP GRWEQGRPRADLILLPDLTHFRFRSDRPRAENSRLMRWAHR QLAIYVRMQAEVEGILVADTGAAFTTRFDAWTGAPGVRCE PVTADHLRGIKREDYWLARLLREGALKHLRIDPASLRVDD LVPMDHGKILVALDGVDPGLRILD TDVNASQGLGRRYIEG HGLAYRLPGARVPRGEGEREAAVVHIKGRKRLASAMGGTVV VLRASEGPGDITWTAEVYDRPQGARKALGLSLAAFNSIATA AVDDEGPAPENDDEALEEEAEALGIATGERIVFFRDPSGAV AGGGWLEASAFWGIANRMVTDRLRELGR LG
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【表 1 - 1 0 3】

112	Cas12	MAQASSTPAVSPRPRPRYREERTLVRKLLPRPGQSKQEFREN VKKLRKAFLQFNADVSGVCQWAIQFRPRYGKPAEPTETFW KFFLEPETSPPNDSSRSPFRRRLQAFEAAAGINGAAALDDPA FTNELRDSILAVASRPKTKEAQRLFSRLKDYQPAHRMILAKV AAEWIESRYRRAHQNWERNYEEWKKEKQEWENHPELTP EIREAFNQIFQQLEVKEKRVRICPAARLLQNKDNCQYAGKN KHSVLCNQFNEFKKNHLQGKAIKFFYKDAEKYLRCGLQSLK PNVQGPFPREDWNKYLRYMNLKEETLRGKNGGRLPHCKNL GQCEFPNPHTALCKQYQQQLSSRPDLVQHDELYRKWRREY WREPRKPVFRYPSVKRHSIAKIFGENYFQADFKNSVVGRLR DSMPAGQYLEFAFAPWPRNYRPQPGETEISSVHLHFVGTRP RIGFRFRVPHKRSRFDCTQEELDELRSRTFPRKAQDQKFLEA ARKRLLETFFPGNAEQELRLLAVDLGTD SARAAFFIGKTFQQ AFPLKIVKIEKLYEQWPNQKQAGDRRDASSKQPRPGLSRDH VGRHLQKMRAQASEIAQKRQELTGTPAPETTTDQAACKAT LQPFDLRGLTVHTARMIRDWARLNARQIIQLAEENQVDLIV LESLRGFRPPGYENLDQEKRRVAFFAHGRIRRKVTEKAVE RGMRVVTVPYLASSKVCAECRKKQKDNKQWEKNKKRGLF KCEGCGSQAQVDENAAARVLGRVFWGEIELPTAIP
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【表 1 - 1 0 4】

113	Cas12	MNIIMENFEKFNLYELSKTLRFELIPFSQTKVELEKDWIIEK DREIEEKYHIIKEKLDLTHIKFVWQALEWVDLSLLEEYAELY FACKKDTKNKKLKSFEKLEKKIRQEITSFFDAEWNKWKEK YGFLKKWWTSTFLTEKEILDVLIDIFPENKDDFEIFKWFFTYFS NFNESRKNFYKDEWKAGQIATRAIDENLTTFLENIKYKNFK KENPDFFTENEEKVFELDFYNFCLTQKWIDNYNEIHWAKSLE EWKNTQGVNQRINLLKQKNEKSNKKNLSPKFDILYKQILS EKSENDIFIPNIENTEELFTVIQKSIKENDKKITEIDKLFKKFFLE ENNIDIWKVYISKQAVNTISSKYFENWSSLWWYLWENSKK KYFSLWEIKEALEDIKEKNIFKGEYYNNKIAFENKSNFENFL AIFYYEFQTNLSLLNWNQNNLESLQEKEFKKEEKQVDIIKKY FDSVMDLYAMSKYFFVDLKQAKNFPKDIEFYNDFDLYFSDY EPWKVYNLVRNFLTCKEVKTDKFKLNFSNSQFLTGWWDKDK EKERFWVILRKNEKYFLAILKKNNNKIFENYRENNPTDFYEK MEYKQLNNVYRQIPRLGFPLQKKLDSLKWKELEEYLEKYK NNFWYNKEIAFIEEFDIFQKNKEKWEKFDREKLKKLIDYY KKVVLEKYSPLYDLKKLENTDYDEL VNFYDDVEKSMYSLH FTKIETEFLENLEKNWEIYLFQIYNKDFSDYKKENTKENIHT KYFKHLFSEENLENLKIKLSGWAEIFFRDKTHNLKQKLDKN WKKMFYWENKDKKVLEHRRYAKDSYGFHISITLWANNWD MYKFNQFFNKNFTPKHIIGIDRWEKHLAYYSVIDLEGNLVET DTLNIVNGINYLEKLENIIEKSRMQERKSWWEIENIKNLKDG YISAVVSKLTELIEKYQAIIVFEDLNLGFKRWREKIERQVYQ KLELALAKKLNLYLTFKNKKDCEIWGVNLNGIQLVPRVKDYQ DIANYKQSGIIFYTNPAYTSTTCPECGWRKTLKFPSKITKTSIL EFFKEIQMSFYWEKFSFTYENILWKSETLFSNVKRTQWNNK SRKIEHKENITQELKSVFEKYNINLWENISEKLQQTDMILLED LKVLFFYNFKLINNIRNSDSKLEEDIISPCCLFNSENWFKGAY FNGDANGAYNTARKGIIMLENIKVNPERSNLFVRNEEWDEF LREEF
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【表 1 - 1 0 5】

114	Cas12	MSKLFENMTNLYSLNKTTLRFELKPVGNTRELIESKDFFKNDE EKAENYQFMKEKMDKIHRNYIQKSLETIKMLPILDQTEQKR LKKEDIKNELKSLRSFISAAFVSVDLLSNKIEWLISEASIEE KEKIKKFDKFFGYFKTYVQNRGNLYKAEDKAGQIAFRLIDE NLPRFFKAKQHIEEIIKKTPDFVVKERNEKQEETEKKITEYLSI FYLNSYCHYLSQSGIDLFNEIVGHINLSINLYKQKTGVKFSLI PLLYKLPLAPRKQISRLPKQIENPEEELIVKSVLDRIDQKINP FINNILQTVLEENSVYDLNWIYISIKTTEQWWSIGLSGRNSLR ELGYNQSKNWEPPVLKAEKNKFPFISLGEIKSFLDAKQLAW DDIKSVFWEGKSQSLMNWSWSNIFHFLIGKEISSLIEKYLHSR KNYQISQSKENQKHVLDNSLSLWRLLGWFVLMHKKTHLTP EIKESFFYDWENGLDAIVFDENS DPIHTIYDKVRNCLTKKPY SNKDKIKVNFDCPYLLWGWDQNYDAFGWLIFHDWKKYFL WLIKGSWLNMEENKLYEWINPMNSITKIIYDYQKPDFKNV PRLFIRSKWDTFAPMVREYWLPVNDILYLYDNELYKPDKKN PWKHKSYLRLIDYFKLWLSKHKSFKHYIFKRKESDQYENL AEFYSDVEFSCYAIKKEKVNFDQVKALCESERLYLFEIYNKD YNQFSKWKNKNLHTQYFEALFEERDNNLFMLSGGWSIFWR ESNWKIVEKIRSYSPKYNIEIIDKRRYTKNKLMIHIPVLNFCR NQEWRVNDMIKSLIQSQSNNFTILGIDRWEKHLLYYSLIRQD WTIIKTGSRNTITNKIKIVDYHKKLDDREKKRDEAQANWEQ QEQIKDLKKWYISQVINEISKMIIEHNAIIVLEDLNGWFKRW RQKVEKSIYQQFELALAKKLNHLVFKNRWDTESWGTMKA YQLTPLVAQFQDLSFQTWVVFYTPAWYTSTTCPCCGWRKN IYFKYENKQAKIELEKLNIVRENNYFSITYTAEWWNKKWK ITWSVLNKTDRILTTKWQTRLQYDRASKNTKEYDITTDENS VFTAKFLDYKIRLENAGSKQCRNLINSINLLLKIRNAKSGTDI DTIQCPACEFHSQWWFQWNEFNWDANWAYNIARKGKVIID KIVKGEKNTTVSQIEFDNEIQK
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【表 1 - 1 0 6】

115	Cas12	PAYRHPDPLLHPVFCDFGCSRWQICFDVRKNVRTTSPRRLCL TLFTGSGMELVPFSWQSKRLARDLALEQRHRNPEASEVTRA DRLGRAAAGVSAGGAVSIKNIFNEENWNGRLQAPRSQLAAL AARVDKHGWDAAKALRMLDRLRWLITFSPRLEPTGPWIEYA LRIPDDAAAKPFLSRKNGFAVLHRSNDDRKGLAKLILSRLPG LRVLSVDLGHRYAAACAVWETLSADQVREACQAAGHDGP TECDLYLHLKKDGRTVIYRRIGADTLSDGTPHPAPWARLDR QFLIKLQGEEHKAREASNAEIWAVHQMEAALGRSVPLIDRL VASGWGQRTEGQRARLEALKQLGWRPVAEKLDSDDEPGV MEESPAIKPSLSIDELMSSAVRTMRLALKRHGDRARIAHYLI TDEKTKPGNVKEQLDENGRIELLQDALVLWHDLFSSKGWQ DNKAKELWYVHIATLPEYKAFQSSGEGHAGPERRGKPEEDR EKLGVVAQALAPNVTLREALHNAWKKRWEEDDARWKALL RWCKDWILPRGEAANSPAIRKVGGLSLIRLATLTEFRRKVQ VGFFARLRPDGKKAETGEKFGRKTLDALEELREQRVKQLAS RIAEAALGIGKEHVFP TAKEPQKKCWCGSVHRKKDPKPRE RVHSPCHAVVIENLTHYRPEETRTRRENRLMSWSSGKVKK YLAEACQLNGLHLREVNAAYTSRQDSRTGAPGIRCQDVPV KEFMRSPFWREQVAQAKKKQAEGKGDARERFLCDLDEQW KNRSEDEWKKAGPVRVPLRGGEIFVSADGTSPTAKGLHADL NAAANIGLCALTDPDWPGRWWYVPCDPASFKPIMDKVEGS AAVQPDQALRQPAQAQRGDAARDRKKRGKVGGRSREVVN LWRDVSSRPISPNDSWQEFTPYWNDVQARVVNLRQSAGLT RGQGEP
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【表 1 - 1 0 7】

116	Cas12	MPLRSINIKMRLKRAAEGRALRQSLWLTHSVVNCAVAEIER VLLLCRGRGYWTGDDEPVSAETVQQQALAFARETQARNGQ PGIGGDAEILAAALRGLYEIVPSVNRDEQGRPLEGNAQAAG GFAGPMMDAESEGFQSVFDKILEPLPSWVAKMTGGTRGWE QESVQWLKSPESERLQHASGSPPAWVRRRLRTGEPWQEAHV QDQENKRKEVKGVPSLIQRLKKELGLLPLMRPPITLQFEDKR SGLTPWDRLTLRLAVAHLLSWESWNHRAADEHGRVTERLA RLETEAAPLASLIEGLREYEKIRHEELKRVAQANDENPFRIG ARGVRGWDRVREAWLGATDDTKEGRFTSVAALQTKLGGR FGDPDLFRWLAEEGREHLWGEHDPLPILARLNALSRLRRK KDHAIYTAPDARLHPRWTAYEAPGGGNLRNYSFEISGNDLA LRLPLLRRVESGLEEDSQRAEIALAPSGQFQSASWKGDGKP NRHLTYYSASHEQFSAELGGAEILYRRRHLENRKVKELEQGD IGPVWLKLVLVDVQNAPEGWFTPRGRVVTPTVHHFNTALV NRSKHAPDLVPGLRVLAVDLGVRTFAACSVFELVQGEPCN GMAFLADQERDLWARHERSFLPLPGEAVDSQLLAARRAA YNQLGLLRRDLGRLKGILRLSVKETAENRCGSLEELLASLED EWNRGNAPADVAALLSAKGCLEMPQPAWEAAIAGTYQAA ERELGNRVRDWRRTTRPRTTGEDDRRQRRGYSGGKSAWA VEYLDQVRLLQGWSLHGRSYAQIRRLDREKMGTFAGLL DHINALKQDRVKTGSDLIVQAARGYLPTGKKGWIKQYEPGR LILFEDLARYRFRTRDRPRRENARLMRWNHRQILTETELQAEI FGLLIGTTGAGFSSRFHARSGAPGCRTRLLTAEDLRSPTLAK QLELLAETQGIDPKCFRPGMQIPWDSGADFTLDSEGKLVQI HADVNAAQNLQRRFWTRFRDAYRISAVEIKQDGRTSWYPD REGVRLRGALSTIVGGDGYARLVAADDDDDGFVLEKVTRPH WRRAGAQAESGDDVGLDEVALEMAEAMDTDLERGEGRL VFFRDPSGSVIRADRWYQAKAFWGQVRSRVTRALGLRRPG ASS
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【表 1 - 1 0 8】

117	Cas12	MLDKFASLYPVTKTLRFRLLPQGRTEENMQVAKVLENDLE RSEAAAVVKGLIKKYHLQFISDTLSGSTLSWQALTETLDKFK ADHTATAELDSALAAAYRCKLAELFTKSPKYKVMATPVSIK EILKTETDPENIAALNKLNGYTYIIFDYVSTRMLTYSADAKA TSLAYRLVDENYLRFYQDISAAAEISAVLEEAGFDNAEVEAF IRTDYNTCLTSEGIASFNAAGSINQFVNVLLQQNPVLQSEP ALRRHLQPLYKMLLDEAESKIIKFEDYGQLRDAVENFRRNF QDLPQSLIDIFAGRYDYSKIYVGYKYLNEASSQIAGGYNWK LLENALEDIFYSKPYLVNGKLPVKYKTVVNKKMNQLAYSFT ELQEALDAGDSGSSITDLFGKYAELHAAYAAADGNVIFYKE YDRKSIASLKNYLDAVNAIARFIKIFAAPEVYVKDEGFYGIV DGAADKLRFDLLYNMVRNYITKKPYKKSKVALTFNSSSFG RGWDENKIYDELTTIFTYNGKYLLGVINKNDKPDAAA VSK DEGGYKRMVYKTFDIVKQLPRLSFTKAVKAHFAESDEDFIF DGPKFAKPLRVPKEIYLSFTDNGDKLADS AKKYTKAYLD MSGDYKGYEAIHKRIDYTKEFLSAYKSTSIYDLAFLKPAGK AAGSLCWTRHI
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【表 1 - 1 0 9】

118	Cas12	MSRSIFSPFTNLYPIQKTLRRELKPLNENFQHDPALSALRNSE IPQRDEQREKDYQAIKPLLDEFHNQFITESLHSLPQDRSDFI LFYQTYQKKKKNKAEISEKELKSLDEEFESRTKALRNAIGTS FSVTAELRKSNDYVSEKGKPFLTQKSYKILTEAGVLWLE KKYTSDPEKLALIRRFGNFFTYFTGFNQNRENYYATDEKST AVAYRAINENLLTFANNCSELFELSVLSLSELEKKTFFNPDSY SEYLTQSGIVFYNEMLANIRSKANLYTQEHKAKLPQPKLLY KQIWSPRGDTIPFDLIASEAEFQETLHTMIRETDQRIPEFNKLL EQIFEEKVDLSQIFFSKTSLNIISNRYFSSWHTLLEKGVLEKLF KFKKNDEESFKLPAYLSLAELKELLESAPFQMAEKADADEE KHHQASLFLQRENHLEKSHSNWELLLKSMKSDFESFWT WEGEFWSYTLAKKALQSLSALESTNQEHKNLIKMLLDNAL YAYRMLKWFKVDTSKLGFPVPEGEFYPSLDQLLQDYPLPKW YDMIRNYLTRKTYSAKLKLNFDCTLLNGRDNKEIQNLS VILRKDGKFYLAIMKKDQNKFFENSALYEGNLGTMEKMDY KLLPWANKMLPKCLMPGSDKKKYGASDQVLELYAKGSFK KSEKSFNLADLHTLIDFYKLALPKYEDWKVFNQFQATENY QDISQFYREVEQQGYLLNWRKVNEKLIKQGIKDWSLFLFQIS SKDFEGKSKTPDLQTLYWQQLFEFSTNVKLNGEAEIFFRPWS MKKEKKKLKVDNYDVFKHKRYTEDKILFHVPIITLWFGNNE VSPSAPSKFNQKLNQELIIPHFDLHVIGVDRWEKHLAFYSV VSVKTGKIVKQGTNLNLNGTDYEAKLSQKAENRLHARQNR DTIEKIADLKNQYISQVVNKLVELVLEYNVAVIVFEDLNAGFK RGRQKIEQSVYQKLELALAKKLNFIKKKEKAVGEPWSVTSA YQLAPQINTFWDIKWQRGIMLYTRANYSVTDPDPLTGWRK QYYFKKGSSEEMKAQFFKSFKNLTRDAGQEAYIFDDGTWL LYSNVERRRGKRGDHRERTQIKYDPSLELDTLFSKYQIEKSD SLFDQLKNRELQPQTFWTSFFRIIDLIMQIRNTDDEGRDIILSPI GNPQERFDSRKRYNQLPRDEKGGIIEESAFEYPTSWDANGA YNIARKGVMMLERIKENPEKPDLLIRDAEWDKKITRK
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【表 1 - 1 1 0】

119	Cas12	MKNFQDFTNLYELSKTLRFELKPIWGTCKKLIEEKNILKLDKK KRENYEKVKPYFNKIHQEFINFALRNPNFDFSQFEEKYLNWL KDKKNKDLLKEKESIDKIFLEKIWKLFENSVKDFLKENGFS IVKSEDQNLKFFRRKEIFEVLQEKYGSELETQMVNKDWEIKS IFNGWEKWLWYFDKFFNTRDNFYKTDWTSTAIATRIIKDNL KIFLENTIIFEKVKNNKIDFSEVEKNFSVSIDTFFEINNFNCF QDWIDFYNKVIWGETLENWEKLLWLNEIINKYRQDTGEKIP YFKKLQKQILSEKDWWFIDKIEDDGGFYEVLNKFNKNAAEK EWFKNIFENFYTISDKNLEKIYFNKIAFNTISHKFWSALEFE RILYEEMKKEKADWIKFEKKENKYKFPDFIQIIFIKRSLNND SENLFWKERYKSEENVDFLEKNNNNIWEQFCKILNFEFL NILKRRIDEAWEEYEVWFEISKNILWEKLENFELNQNENKWI KDFADYSLALYSFWKYFAVEKWRNWDNLNIDISDDFYGWED WYIEKFYNTGYDEIVKPYNLMRNYISKKPWEDSKKWKINFE TSSLLSWWDKNLESNWSYIFQKWNKYIWIINWSKPAKEVL EKLYSWNGEKIKRFIYDFQKPDNKNTPRMFIRSKKDSFSPAV GKYNLPVEDILEIYDNWLFKTENKDNSNYKESLSKLIDYFKL GFSKHESFKHFNFWKDSKEYENIADFYRDVEKSCYQITSEF LDFEELKKLTFKKHLYLFQIYNKDFELDESQKNWYNFRDE WQKNIHTKYFEALFLEENILRKSWAVFKLSWGWEVFFRKES IKAEKEKRKNIEVTKNRRYTEEKYFLHFPIQVNFKNEISWNF NQEINKFLANNPDINVIWDRWEKHLAYFSVINQWEILESW SFNKIENYNKNWEKLLFPEREIKEIHKDWSLIDLELVETWRK VDYVDYKLLLEYKERKRLQQRQSWKEVEQIKDLKKWYISA LVRKIADLIKHNAIVIFEDLNFRFKQIRGWIEKSIYQQLEKAL IDKLNFLVNKNEINLEKAGSILKAYQLTVPVDSLKEIWKQT WVIFYTEAAYTSKIDPIKWWRPNLYLKKQNAEINKENILKFD NIIFNSKENRFEFTYDLKKFFWKDSKFPKTVNTVCSCVERF KWNRLNNNKWGYIHYENLTDWKLANKKEQKEDEFSNFKE LFEKYFIDINWNILEQIKNLDTKNNEKFFSSFIDLFTLVCQIRN TNQNAKWDENDFILSPVEPFFDSRKSQNFWKSLPKNWDEN WAFNIARKGLIILNRISENPEKPDLLIFNADWDNFARNI
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【表 1 - 1 1 1】

120	Cas12	RPGASAALSLTPLKTLFSENFSSFMCGNWQIINDSLKTYNE NIKSKGKAKEEKVKKAIAIEYKSLADINQLVERYNNDELN RKAEEYISAINEDIKDLVDNEIEYDEKINLIENETKSEEKSKL DSIMEIMHWTKMFIIEEIEKDVFYNEIEEYDELQPLVTIYN RIRNYVTQKPYSSEKIKLNFGIPTLANGWSKTKEYDNNAIMI RDGKYLLGIFNAKNKPKDKIMEGHQSENGDYKKMIYRLL PGPNKMLPKVFMSKTGIAEYKPSQYILECYEQNKHIKSDKNF DIKFCRDLIDFFKTSINRHPEWSKFNFKFSETSEYEDISTFYRE VEKQGYKIEWTYISEKEIKELDENGQLYLFQIYNKDFSEKSK GKENLHTMYLKNLFSEENLKNIVLKLNGEAEVFFRKSSIKKP IIHKKGSVLVNKTYNENGERKSIPEEQYTEIYKYLNSIGTNEL SEKSKKLMEEGKVEYYKANYDIVKDYRYSVDKFFIHLPMTI NFKAAGFSPINNIALKNIALKDDMHIIIGIDRGERNLIYVSVID TKGNIVEQRNFNIVNGIDYKEKLKQKELDRDNARKNWKEIG KIKDLKEGYLSLVVHEIAKL VVKYNAITMEDLNQGFKRGR FKVERQVYQKFETMLINKLNYLVDKDLAVDQEGLLRGYQ LTYIPESLKVLRQCGYIFYVPAAYTSKIDPTTGFVAIFNYKG MTDKDFVTSFDSIKYDDERGLFAFEFDYENFVTHKVEMARN KWTVYTYGERIKRKFKNGSWDTAEKVDLTYQMR SILEKYEI EYNKGQDILEQIEELDEKAQNGICKEIKYLVKDIVQMRNSLP DNAAEDYDAIISPVINNNGEFFDSTRGDEDKPLDADANGAY CIALKGLYEVMQIKKNWNEETEFPRKELKIRHQDWLDFIQN KRYL
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【表 1 - 1 1 2】

121	Cas12	MQCGSLRHNSKSLDSALAYPARLTTGGNEGKTSEAHENDS LPEITRRPSRLARDFAPSNPFFPMKRIYQGQITGMQFHGAAG EQAVPANQNWEQALWDHHLFHDVNYLVLCLLALARPG NPVYAIREKLDAHNGAEPDELMVWRTFRRRGCNRPGLRDS VAKYLTGNDDEPTTEECFAAVLAGNPLGATEEGRAILNEGL AQLLGKCTGESGCRNSAKEYLPRFTKPDFKGNFEEDTARLN RAEASKRLPFYLHDPATTPNSPALDEFGVLSIALPNPKRAEL TGAEARDKLLFEFSREWSARLPDGSADWRRLEAKITALGDSL AIPGYTSGSAKGENRFQLYAMFLFCFVEKSDFTLGLLRQTTR RPVEGEEPPPSNHSATAGDPIRIARGGRGYVFRAFTSLKQW GGDTGGDLKWPKFDMAAFCEALKALHQVEAKAKQRAEER SKKQALLDYQGRIRRFKPTANSEDATPPPVLAGDPRISRLE QLLNTDLQDEYEMSEGVAVAYGLHPTIRGFREIRKRWISA VGNAPFSEAARATLIACVRSFQSENPGTVGSARLFEALAEES NWIIWREPSAAEQQSWRENADLPESAEFALDPLQALTDERE LKDEIERLSGPIRFTPADAHSRRQFYFSDVSQIDKRNRFPR LNEVEVELAVRPNGHWTNVWVTLQYSAPRLLRDQLPTADE AGGGWQQAMMAALNLRAPLKKGGEAVSFADCAALSLMPD ISPDGEKRLLLNFPVELDGEAIANQLGRSKRWETLQFGGAD DESYWLRWPKTWIDETKVRKAAPPKWWSKEPFSVLGVD LGQRDAAACALVQVSPGNCPTGVCRHVGSADGVDWWATV RSMNMLRLPGENAKVMRDGRFQEELSGSRGRSASIDELKEA GDICARLGFVADTILGANGRALSFPENDRLLFSLRSAQSRL ARLQSWSCVAHADVPPARREGILRDISEAKDDPLGLKPLAT AGNLEAIASTLREVILQERTSISAQLVRVADRILPLRGRRWE WVARPESPSNHMLRATAPDTPRRKL VAGQRGLSLARVEQ LESLRQRCQSLNRALMQVPGTPSKLGRRSRGVLPDPCPD LDRLDALKEQRVNQTAHLILAQALGVRLRIHQVSGPQRTRS DSHGEYERIPGREPVDFLVLENLDRYLASQGRSRSENSRLM KWCHRAILLKLKQLCEPYGLRVLETPAAYSSKFSSRDGTAG FRAVEVTPDDLGSRWKRHSERLADPGASLSRDEREESTRL MAFAERL KALNQDLIARQEAAARSSNQFPRPKWRTLLAPQQL GPIFVPAVGKPLQADINAAINIALRAIASPDVDDIHLRIRAAR SGDKFVVRAENTRERARWGSAAEIGLPTGAGAKEIEERRS LLTEARVNFFFDPASVAAFDHGKVRDAKLAVTSGRGLWGT LRREEWAIVGKINNDRLAAHGLGRPFAERVDL
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【表 1 - 1 1 3】

122	Cas12	MSQRDPLPSPTPRAYTLRLSTPDADNGAWRERLWKTHEVV NSGAFAFGDWLLSLRGGLDHRLVAVKVRVGRGASKTEREP TEDERRERRIVLALCWLSVESKKGAPQGRVVEDPVDALKRI LGQRGLSEADAEQWVFDCRDSLSATIRDDATWVDRSAAFD ETVQRLGSSLTREHAEQVIEFFGDIHDYLALPKNMEEDGVT SPRGGSGKEFRTQARSWLSENWGAGQKGDKAQIVDALRKC SRCIAQEKPGSTGSDLLRVLVRSLGGSPEETLRFDELRLVGVW RTGRRSTGAFALQRTVDMDRLESSEDLSEAKLTVEIDAKSP EASRSVPQWVESMRTAVEREVGMPFRSTRDLIGFVGMMLD HAARRVSATHSWIKRAEAERRKFEGDAAKLAQIPEEARQW LDQFCEDRSQELNALEPYRIRRRAVEGWESVVRTWAKADC KAEGDRVKAVRALQPEIEKFGDAALFEALAAEDALCVWLL DGKATPRPLLDYSAATDAQYRKRRFKVPAYRHPDALLHPV FCDFGESRWTFIESAHRALGRRRKAQQLVDNKTVALQKAQ ERLRKAKAESSRSRAEEKVRAAEHALEAARKKLAFQYRR ALAVCLWTGKGVESTSLRWHSKRFAKDFAGSSPEDGASTG VPVARADRLGRASANVPRGASVTISGVFEQKEWNGRLQAP RDALNAIAKVRDDETLPAADRSRRVQQMLSRLPWFVTF SAR LVPQGPWLDYASEHSALGLRVDPKYWPHAEENRQRKGMA RLILSRLPSLRVLSVDLGHRYAAACAVWETLSAQEMQRICR EMGSAPPSPDDLHLRRADGNGKQRTTVYRRIGPDTLPDG GQHPAPWARLDRQFLIKLQGEDESARKASDSEIAVVKKFEA DLGRPAMQRRSLRVDDLMSAAVRTARLALRRHGDRARIAF NLIADRRFRPGGAEEPLTDETRVDLLADTLATWHGLFSGGQ CHDERABEQWNEHIAPLLASSGASLSVPSDGDVAATPARR RRKEVRGKLVPAAELARRDLSQLSVLWVARWHQDDESW RARLRWLRDWILPRGAKADSGAIRHVGGLSVTRLATIRSLW QLQKAYRTQPEPEDPRKNVPKKGDTSLDDFGRTILDDEHL REN RVKQLASRICEAALGVGVEQPNGGAKDPKRPQERRFSP CQAVVIENLTRYRPEETRTRREN RQLNWSAGKVQYLSEA CELHGLHLREVSAAYTSRQDSRTGAPGIRCQDIPVVDVREN GPCWGRLRSAQQSSGGTAEDQLLLALYERWSEKERTWRDQ SGNVWAMDGEGRWVARNGTQLPQGSGLTPHPIRVQRRG DIFVSAAPRSPAANGIQADLNAAANIGLWALLDPDWEGRW WRLPCSAMDLPVKGSVNGSAVIHLDAPLKAAATKGAACK DVVNLWRDISVRSLTEGVWRGYDAYWNLARYRVVQTLRP QVGIGSDE
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【表 1 - 1 1 4】

123	Cas12	MFKGDAFTGLYEVQKTLRFELVPIGLTQSYLENDWVIQKDK EVEENYGKIKAYFDLIHKEFVRQSLENAWLCQLDDFYEKYI ELHNSLETRKDKNLAKQFEKVMKSLKKEFVSFFDAKWNEW KQKFSFLKKWWIDVLNEKEVLDLMAEFYPDEKELFDKFDK FFTYFSNFKESRKNFYADDGRAWAIAIRAIDENLITFIKNIED FKKLNSSFREFVNDNFSEEDKQIFEIDFYNNCLLQPWIDKYN KIVWWYSLENWEKVQWLNEKINNFKQNQNKSNKDLKFPR MKLLYKQILGDKEKKVYIDEIRDDKNLIDLIDNSKRRNQIKI DNANDIINDFINNNAKFELDKIYLTRQSINTISSKYFSSWDYIR WYFWTGELQEFVSFYDLKETFWKIEYETLENIFKDCYVKGI NTESQNNIVFETQGIYENFLNIFKFEFNQNISQISLLEWELDKI QNEDIKKNEKQVEVIKNYFDSVMSVYKMTKYFSLEKWKKR VELDTDNNFYNDNFNEYLEGFEIWKDYNLVRNYITKKQVNT DKIKLNFDNSQFLTWWDDKDKENERLGILRREWKYLLWILK KWNTLNF GDY LQKEWEIFYEKMNYKQLNNVYRQLPRLLFP LTKKLNELKWDELKKYLSKYIQNFWYNEEIAQIKIEFDIFQE SKEKWEKFDIDKLRKLEYYKKWVLALYSDLYDLEFIKYKN YDDL SIFYSDVEKKMYNLNFTKIDKSLIDGKVKSWE LYLFQI YNKDFSESKKEWSTENIHTKYFKLLFNEKNLQNLVVKLSW WADIFFRDKTENLKFKKDKNGQEILDHRRFSQDKIMFHISIT LNANCWDKYWFNQYVNEYMNKERDIKI IWDRWEKHLAY YCVIDKSWKIFNNEIWTLNELNWVNYLEKLEKIESSRKDSRI SWWEIENIKELKNGYISQVINKLTELVKYN AIIVFEDLNIWF KRWRQKIEKQIYQKLELALAKKLN YLTQKDKKDDEILWNL KALQLVPKVNDYQDIWNYKQSWIMFYVRANYTSVTCPCNC WLRKNLYISNSATKENQKKSLNSIAIKYNDWKFSFSYEIDDK SWKQKQSLNKKKFIVYS DIERFVYSPLEKLT KVIDVNKKLLE LFRDFNLSLDINKQIQEKDLDSVFFKSLTHLFNLILQLRNSDS KDNKDYISCPSCYYHSNNWLQWFEFNWDANWAYNIARKGI ILLDRIRKNQEKPDLVYSDIDWDNFVQSNQFPNTIPIQNI EK QVPLNIKI
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【表 1 - 1 1 5】

124	Cas12	MLSFNWVLFSSKMSRSIFSPFTNLYPIQKTLRRELKPLNEN FQHDPALSALRNSEIPQRDEQREKDYQAIKPLLDEFHNQFITE SLHSLEPQDRSDFILFYQTYQKKKKNKAEISEKELKSLDEEFE SRTKALRNAIGTSFSVTAE LRKSNPDYVSEK GKPFLTQKSYK ILTEAGVLWLEKKYTS DPEKLALIRRFGNFFTYFTGFNQNR ENYYATDEKSTAVAYRAINENLLTFANNCELFELSVLSLSE LEKKTFFNPDSYSEYLTQSGIVFYNEMLANIRSKANLYTQEHK AKLPQPKLLYKQIWSPRGDTIPFDLIASEAEFQETLHTMIRET DQRIPEFNKLLQIFEEKVDLSQIFFSKTSLNIISNRYFSSWHT LLEKGVLEKLFKFKKNDEESFKLPAYLSLAELKELLESAPFQ MAEKADADEEKHHQASLFLQRENHLEKSHSNWELLKS MKSDFESFWTWEGEFWSYTLAKKALQSLSALESTNQEHKN LIKMLLDNALYAYRMLKWFKVDTSKLG FVPEGEFYPSLDQ LLQDYPLPKWYDMIRNYLTRKTYSQAKLKNFDCSTLLNG RDKNKEIQNLSVILRKDGKFYLAIMKKDQNKFFENSALYEG NLGTMEKMDYKLLPWANKMLPKCLMPGSDKKKYGASDQ VLELYAKGSFKKSEKSFNLADLHTLIDFYKLALPKYEDWKV FNFQFQATENYQDISQFYREVEQQGYLLNWRKVNEKLIKQG IKDWSLFLFQISSKDFEGKSKTPDLQTLYWQQLF EFSTNVKL NGEAEIFFRPWSMKKEKKKKLV DNYDVFKHKRYTEDKILF HVPITLWFGNNEVSPSAPSKFNQKLNQELIIPHFDLHVIGVD RWEKHLAFYSVVS VKTGKIVKQGTNLNNGTDYEAKLSQK AENRLYARQNRDTIEKIADLKNGYISQVVNKLVELVLEYN VIVFEDLNAGFKRGRQKIEQSVYQKLELALAKKLN FIVKKE KAVGEPWSVTSAYQLAPQINTFWDIKWKQRGIMLYTRANY TSVTDPLTGWRKQYYFKKGSSEEMKAQFFKSFKNLTRDAG QEAYIFDDGTWLLYSNVERRRGKRGDHRERTQIKYDPSLEL DTLFSKYQIEKSDSLFDQLKNREL PQTFWTSFFRIIDLIMQIRN TDDEGRDIILSPIGNPQERFDSRKRYNQLPRDEKGGIIESAFE YPTSWDANGAYNIARKGVMMLERIKENPEKPDLLIRDAEW DKKITRK
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【表 1 - 1 1 6】

125	Cas12	MLDKFASLYPVTKTLRFLLPQGRTEENMQVAKVLENDLE RSEAAAVVKGLIKKYHLQFISDTLSGSTLSWQALTETLDKFK ADHTATAELDSALAAAYRCKLAELFTKSPKYKVMATPVSIK EILKTETDPENIAALNKLNGYTYIIFDYVSTRMLTYSADAKA TSLAYRLVDENYLRFYQDISAAAEISAVLEEAGFDNAEVEAF IRTDYNTCLTSEGIASFNAAGSINQFVNVLLQQNPVLQSEP ALRRHLQPLYKMLLDEAESKIIKFEDYGQLRDAVENFRRNF QDLPQSLIDIFAGRYDYSKIYVGYKYLNEASSQIAGGYNWK LLENALEDFYSKPYLVNGKLPVKYKTVVNKKMNQLAYSFT ELQEALDAGDSGSSITDLFGKYAELHAAYAAADGNVIFYKE YDRKSIASLKNYLDVNAIARFIKIFAAPEVYVKDEGFYGIV DGAADKLRFDLLYNMVRNYITKKPYKKSKVALTFNSSSFG RGWDENKIYDELTTIFTYNGKYLLGVINKNDKPDAAA VSK DEGGYKRMVYKTFDIVKQLPRLSFTKAVKAHFAESDEDFIF DGPKFAKPLRVPKEIYLSFTDNGDKLADS AKKYTKAYLD MSGDYKGYEAIHKRIDYTKEFLSAYKSTSIYDLAFLKPAGK AAGSLCWTRHI
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【表 1 - 1 1 7】

126	Cas12	MNRIYQGRVTKVEILNGKNADGQPQELPNWQTALWQHHEL FQDAVNYYLFCLAALASSASSPMGKLRNQLGSVWEPFGRT GRRFKGLRDSVGPYLLPDRPTPSIEEAFAAALAGNNSQPELL QLAVDALVEDLGGDAAIQQEGRGYLPRLCSPAYNGQFPRG ANSLQKEAAKIRLPTLLHNVATSRNLDALAAELEFGFFANP VPNAGPIAGQEARNKLEALAWLKAKDTRLTHSANELEKRI GVLPSVSFPTYSGGSINKEALKHRFFAYLLFQHVERSLVTF EILRDSYPTPKPSARKSSKATPDITMAQLTQFGDDPVKLARGT RGYVFRAFTSLPCWGAKAPSDILWSEFDIAAFKEALKTANQ FRLKTKERLDKADELAGE LAWMNGEKSFKPSEHSEQEPPA VLKGDPRFEVLKQLFEVELAEEHYLAEGESVIYGLHPRTLRC YRELVERWNKTVQPGEVFTEATSKKL VASTDKFQAENKERI GSVTLFKKLLERDYWCLWQTPDVQTVAAARQKAGFSSNIIED YQRYLELQTDIARLKEPIRFTPADA EQSRRLFMFSDLAGKSK HKHLPNATPYGFAVDVALAASEGGVWKETRVR LHYSAPRL RRDGLRKGVGEDLKRTAWLQPMVAALNLSEPA PQDFSKCA VSLMPDKSWKGLRHLLNFPVTLDP TVVQKAIGSQARWANQ FVAFGKGATEQKFFLRWPEEVSASQKKAGPWWDALRAFSC LSVDLGQRDAGAFALLDVRANADWGKKPSRFIGEADGRN WRAALAAAGLLRLPGEDALVWRDGKWQEELYGEKGRLAT KEEWLETNAIFSALEQNSEE WIGADPKRRSFPELNSKLLVVA RRGQSWLARLHRWLWMLGDENKRER ALRELEQERQEAW RKRAEGKDLLALKQSLTAEIQRLNGLLPEQLVFLANRCLPLR NRKAWWNQHPDKAFAEKGCHLLEMVEAPSHLPLL AGQRGI SFERIGQLEELRRRFQSLNRVLQRELGAPPKSGREL RDDLP DCCPDILAKLDRVKEQRVNQTAHLIVAQVLGVQLRKHQTP SERTERDLHGEYEIMPGRKPVDFIVLEDLSKYLSSQARGRGE NVRLMKWCHRQVTAKVKELCEPFGLPVLETPAAYSSKFCS RTGVAGFRGVEVTLKDRQSFPWSKRLEEDSAEVAELFGWL ETASAGHKTKQPRCLLAPMSLGPLFIPVTSQAPIMQADINAA INLGLRAMAAPSVHEIHVRIRSEAKDGQFRVRAQSKREKAR WGNPPPIKMLVETQRVALAREGGHPNFFVDPLKAATFDRA EVEGLGLPVASGRGLWKSVRDAEWKRCREINLERMRRWGF IMEAPRTLQVSRKEDEDDLTF
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【表 1 - 1 1 8】

127	Cas12	MAVRSVKLKL VPRDGS AESVRKRKALWATHQFVNDAAA AYAELLLEMQRQEDVCRGTDDHGKDVIEPAAHWQAKLRAR LAAKQLPPVAVAEALPLLKAFYGSRLIKSFVANDKGVAGTG NATDLNTWLSGLVDPASVAGEKTELKQLLAELPLCEAAD ADFEGAARKMLAKSDAREALLEGPGTGVGWPAAYNANPT DSVWLDMLHKAAAKARLELADTTVSELKKLGVPPLLQAAS SNRVFGSGVLNPFERMAAAQAAAALLPWETKRHEMRKRR DKFADQLNQWDTEFGASHATALAAIRAFEAEESERARRESL GNEGTYRIGGRELRDAWTLLRDWLKGHSTATAAAREDKV RELQAKQGRSFGSHRLLSWLAKPAQQWLADHSAGDVVTRI AVRNARQRKLD TARTLPIWTGADAVKHPRFANFDPPNNTN QPGFDLRAGTQKGRLTLRLSLLTERADGLLLAQDHD FQLVP SRQMAEIVLHKDGKERALS WQSQDGIGRQVGDVGG SALLF SRDHAEC LLERKQITRLERGA WPAALPVWFKLSLDIGA EHK ALLKQRFKWGVWLNSALVTRNAKDAKGVP PPVGTRVLAV DLGLRSAATVSVWQV VDAATPVVAGKWRVPLSDTLSAVH ERSAMLALPGEHVDAGVLAARRAANEKLAGLLAATSHLST VFKLGRAEQGDRRRELLERLGEGDDRRARA AVATTAERD GLRAVLGATQDAWAGAVA AVWRRLETDLAGAIAAYRKQQ REDVQLRREARHGPGASQLPKQAAAERLLGGKSAWQIEYK ERV RKLLTRWIMRQRP GDTAVRRLARKDLGKYCGLLDHL TALKEDRAKT TADLIVQAARGRVRAHKDAHGRQQDRELW LAKYAPCDLIVMEDLGRYRFATDRPPSEN RQLMQWTHREV FRLVQM QAEVEGIQVLETGA EFSSKFDARTWAPGVRCEPIT KLWVERYRNGEMPWLADK ADEWRREGIELAQLVPGQLLPT GSGEQFVA VSATGGLRVRHADLNAAQ CIALRALTG HGTA F RLTARRLG DVFVSAKGLGKRPQGALWREFGSALPPAVVVL RPAGEVRYALRPFASARDA AAAALGLQLGALRNVDATDAES DAEDGDLAELLAGADPD RATFFRDPSGDVHGGAWVQAKV FWAEVRRHVRLGLQAQGLLPAAARSSEPRQMQLPLAGALP GDDIPL
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【表 1 - 1 1 9】

128	Cas12	MSTQKNPFNQFTNLYELQKTLRFELRPVPETKKLLEKGEGK NLIQMDLEIDRLYEKEMKPMFNILHEKFINESLGLVKLDCKK LKKLENLLAEADKLRLKQIKEGRKNKNNISEVEKRLKIIIGDN SQGKNKNGEIAVLQDELRLVIVKAFNLTAADKWKKEKLNKE TLLPEKKGKRKIKIKKSGPKILQEENVLAILAYFNPDKADIIK KFAGFFTYFSGFNQNRANYTVMKALATGVANRAINRNFLIF LANRKDFARFKERLPRLAEFDNYFELENYEKYLSQTGIEEYN DQIGKIKQIVNLEHNQQQKDNKFQLKGLATLEKQIGCRTKK QREEGGDKSAPKFLEKVGLGFQVSQDDDGEYLIWECLNYIN KELAGKLKSIKDNQKFFADWRTGAYDLEKIWFRKEALNTI SGRWFGGNNWFIIGKALALTGVGKFDKRENTYKIPEFVSLA EIKTAFEMLENGVNYDFKSKSKKKEGDDTDVVKYSADNLF KEEYKKKGLIKNSLFETMLAVWQSEIKRKFEQIFDGYKLEK DDVFGRKKGEWVEPFIEFQKVSQEKFDRGVKDENGSRSIHT EVVKNLIEEGYLRFLQTKYHNLDKKGERDPRPFDGNFYAT LDEFWKDNIVVVYHKALQSTLTCKPYSEDKIKLNFENGSL GGFSDGQERSKAGVVLKNKNKFYLGILIDRGFFRTDKANPV YDNAQNNEWERLILTNLKFQTLAGKGFLGKHGVSYGEMGK DNPMMAVEYLQKFIKLKYLDKYPALNEVAHKKYTIKKEFD ADVKNALKDCFTMNFKPVDGFMIRQGLTESLFYLFIVNND ISSQAKNGKNVHTLYWEALFGDQNLKKPILALNGGAEIFYR ESQREKLEKKLDKSGKEVLDDHKRYGQDKYFLHASITINYGQ PKNIKFKEVINEKISQNAADRVNIIGIDRGEKHLIYSSVSP VLEQGSFNQIETKNKVDIKAVKAIEYGERGELKKVELVPTG KKVKYVDYQILLDYEEKRNLARRDWQTIGKIKDLKDGYL SQTVHRIYQLILKYNAVVMEDLNVEFKAKRAAKVEKSVY KNFEMALAKKLNHLILKDRRADEIGGALRAYQLTPAIPAND VGKFDKAKQWGIMFYVRANYTSTTDPLTGWRKHXYISNSE KIDNIQKFFSPGDGIQIDYDTEKQCFKFSYDHELEGGAKKHW ELFACDGLERFYWDNRERQIKKYNLYEEFEKLLGGLRKEEN INIQIDGVSEFRWKDLVFFWNLLNQIRNTDRSAQGDENDFLQ SPVWSEKYNCFYDSRKAPNNMPNNGDANGAFNIARKGQLI LERIKKCS DIPKFGNDNNGKNPENNYFISDADWDKFAQK
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【表 1 - 1 2 0】

129	Cas12	MAVKSIVKLRLLDDMPEIRAGLWKLHKEVNAGVRYYTEW LSLLRQENLYRRSPNGDGEQECDKTAECKAELLERLRARQ VENGHRGPAGSDDELLQLARQLYELLVPQAIGAKGDAQQIA RKFLSPLADKDAVGGLGIAKAGNKPRWVRMREAGEPGWEE EKEKAETRKSADRTADVLRALADFGLKPLMRVYTDSEMSS VEWKPLRKGGQAVRTWDRDMFQQAIERMMSWESWNQRVG QEYAKLVEQKNRFEQKNFVGQEHVHLVNQLQQDMKEAS PGLESKEQTAHYVTGRALRGSDKVFKEWGLAPDAPFDLY DAEIKNVQRRNTRRFGSHDLFAKLAPEYQALWREDASFLT RYAVYNSILRKLNHAKMFATFTLPDATAHPIWTRFDKLGGN LHQYTFLFNEFGERRHAIRFHKLLKVENGVAEVDVTVPI MSEQLDNLLPRDPNEPIALYFRDYGAEQHFTGEFGGAKIQC RRDQLAHMHRRRGARDVYLVNSVRVQSQSEARGERRPPYA AVFRLVGDNHRAFVHFDKLSDYLAHPDDGKLSEGLLSG LRVMSVDLGLRTSASISVFRVARKDELKPNSKGRVPFFFP GNDNLVAVHERSQLKLPGETESKDLRAIREERQRTLRLR TQLAYLRLLVRCGSEDEVGRRERSWAKLIEQPVDAANHMT DWREAFENELQKLKSLHGICSDKEWMDAVYESVRRVWRH MGKQVRDWRKDVRSGERPKIRGYAKDVVGGNSIEQIEYLE RQYKFLKSWSSFFGKVSGQVIRAEKGSRAITLREHIDHAK EDRLKKLADRIIMEALGYVYALDERGKGKWWAKYPPCQLIL LELSEYQFNDRPPSENNQLMQWSHRGVFQELINQAQVHDL LVGTMYAAFSSRFDARTGAPGIRCRRVPARCTQEHNPFP WWLNKFFVEHTLDACPLRADDLIPTGEGEIFVSPFSAEEGDF HQIHADLNAAQNLQQRLWSDFDISQIRLRCDWGEVDGELVL IPRLTGKRTADSYSNKVFYTNVTGVTYERERGGKKRRKVFAQ EKLSEEEAELLVEADEAREKSVVLMRDPSGIINRGNWTRQK EFWSMVNQRIEGLVVKQIRSRVPLQDSACENTGDI
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【表 1 - 1 2 1】

130	Cas12	MSTQKNPFNQFTNLYELQKTLRFELRPVPETKKLLEKGEGK NLIQMDLEIDRLYEKEMKPMFNILHEKFINESLGLVKLDCKK LKKLENLLAEADKLRLKQIKEGRKNKNNISEVEKRLKIIIGDN SQGKNKNGEIAVLQDELRLVIVKAFNLTAADKWKKEKLNKE TLLPEKKGKRKIKIKKSGPKILQEENVLAILAYFNPDKADIIK KFAGFFTYFSGFNQNRANYTVMKALATGVANRAINRNFLIF LANRKDFARFKERLPRLAEFDNYFELENYEKYLSQTGIEEYN DQIGKIKQIVNLEHNQQQKDNKFQLKGLATLEKQIGCRTKK QREEGGDKSAPKFLEKVGLGFQVSQDDDGEYLIWECLNYIN KELAGKLKSIKDNQYQFFADWRTGAYDLEKIWFRKEALNTI SGRWFGGNNWFIIGKALALTGVGKFDKRENTYKIPEFVSLA EIKTAFEMLENGVNYDFKSKSKKKEGDDTDVVKYSADNLF KEEYKKKGLIKNSLFETMLAVWQSEIKRKFEQIFDGYKLEK DDVFGRKKGEWVEPFIEFQKVSQEKFDRGVKDENGSRSIHT EVVKNLIEEGYLRFLQTKYHNLDKKGERDPRPFDGNFYAT LDEFWKDNIVVVYHKALQSTLTCKPYSEDKIKLNFENGSL GGFSDGQERSKAGVVLKNKNKFYLILIDRGFFRTDKANPV YDNAQNNEWERLILTNLKFQTLAGKGFLGKHGVSYGEMGK DNPMMAVEYLQKFIKLKYLDKYPALNEVAHKKYTIKKEFD ADVKNALKDCFTMNFKPVDFGMIRQGLTESLFYLFIVNKD ISSQAKNGKNVHTLYWEALFGDQNLKKPILALNGGAEIFYR ESQREKLEKKLDKSGKEVLDDHKRYGQDKYFLHASITINYGQ PKNIKFKEVINEKISQNA DRVNIIGIDRGEKHLLYSVVSPEG VLLEQGSFNQIETKNKVDIKAVKA EYGERGELKKVELVPTG KKVKYVDYQILLDYEEKRNLARRDWQTIGKIKDLKDGYL SQTVHRIYQLILKYNAVVMEDLNVEFKAKRAAKVEKSVY KNFEMALAKKLNHLILKDRRADEIGGALRAYQLTPAIPAND VGKFDKAKQWGIMFYVRANYTSTTDPLTGWRKHKYISNSE KIDNIQKFFSPGDGIQIDYDTEKQCFKFSYDHELEGGAKKHW ELFACDGLERFYWDNRERQIKKYNLYEEFEKLLGGLRKEEN INIQIDGVSEFRWKDLVFFWNLLNQIRNTDRSAQGDENDFLQ SPVWSEKYNCFYDSRKAPNNMPNNGDANGAFNIARKGQLI LERIKKCS DIPKFGNDNNGKNPENNYFISDADWDKFAQK
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【表 1 - 1 2 2】

131	Cas12	MAIRSIKLLKLTHTGPEAQNLRKGIWRTHRLNEGVAAYM KMLLLFRQUESTGERPKEELQEELICHIREQQQRNQADKNTQ ALPLDKALEALRQLYELLVPSSVGQSGDAQIISRKFLSPLVDP NSEGGKGTSKAGAKPTWQKKKEANDPTWEQDYEKWKKRR EEDPTASVITTELEYGIRPIFPLYTNTVTDIAWLPLQSNQFVR TWDRDMLQQAIERLLSWESWNKRVQEEYAKLKEKMAQLN EQLEGGQEWISLLEQYEENRERELRENMTAANDKYRITKRQ MKGWNELYELWSTFPASASHEQYKEALKRVQQRLRGRFGD AHFFQYLMEEKNRLIWKGNPQRIHYFVARNELTKRLEEAKQ SATMTLPNARKHPLWVRFDARGGNLQDYLLTAEADKPRSR RFVTFSQLIWPSESGWMEKKDVEVELALSQFYQQVKLLKN DKGKQKIEFKDKGSGSTFNHGLGGAKLQLERGDLEKEEKNF EDGEIGSVYLVNVIDFEPLQEVKNRQVQAPYQGVQLIRPN EFPKVTTYKSEQLVEWIKASPQHSAGVESLASGFRVMSIDLG LRAAAATSIFSVEESSDKNAADFSYWIEGTPLVAVHQRSYM LRLPGEQVEKQVMEKRDERFQLHQRVKFQIRVLAQIMRMA NKQYGDRWDELDSLKQAVEQKKSPLDQTDRTFWEGIVCDL TKVLPRNEADWEQAVVQIHRKAEEYVGKAVQAWRKRF DERKGIAGLSMWNIEELEGLRKLLISWSRTRNPQEVNRFER GHTSHQRLLTHTQNVKEDRLKQLSHAIVMTALGYVYDERK QEWCAEYPACQVILFENLSQYRSNLDNSTLMKWAH RSIPKYVHMQAEPYGIQIGDVRAEYSSRFYAKTGTPGIRCKK VRGQDLQGRRFENLQKRLVNEQFLTEEQVKQLRPGDIVPDD SGELFMTLTDGSGSKEVVFLQADINAAHNLQKRFWQRYNE LFKVSCRVIVRDEEEYLVPKTKSVQAKLGKGLFVKKSDTAW KDVYVWDSQAKLKGKTTFTTESESPQLEDFQEIIIEAAEAK GTYRTLFRDPSGVFFPESVWYPQKDFWGEVKKLYGKLRE RFLTKAR
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【表 1 - 1 2 3】

132	Cas12	MRKKLFKGYILHNKRLVYTGKAAIRSIKYPLVAPNKTALNN LSEKIIYDYEHLFGPLNVASYARNSNRYSLVDFWIDSLRAGV IWQSKSTSLIDLISKLEGSKSPSEKIFEQIDFELKNKLDKEQFK DIILLNTGIRSSSNVRSLRGRFLKCFKEEFRDTEEVACVDKW SKDLIVEGKSILVSKQFLYWEEFEGIKIFPHFKDNHDLPKLTF FVEPSLEFSPHLPLANCLERLKKFDISRESLLGLDNNFSAFSN YFNELFNLLSRGEIKKIVTAVLAVSKSWENEPELEKRLHFLS EKAKLLGYPKLTSSWADYRMIIGGKIKSWHSNYTEQLIKVR EDLKKHQIALDKLQEDLKKVVDSSLREQIEAQREALPLLD MLKEKDFSDDELYRFILSDFKSLLNGSYQRYIQTEEERKED RDVTKKYKDLYSNLRNIPRFFGESKKEQFNKFINKSLPTIDV GLKILEDIRNALETVSVRKPPSITEEYVTKQLEKLSRKYKINA FNSNRFKQITEQVLRKYNNGELPKISEVFYRYPRESHVAIRIL PVKISNPRKDISYLLDKYQISPDWKNSNPGEVVDLIEIYKLT GWLLSCNKDFSMDFSSYDLKLFPEAASLIKNGSCLSGYYLS KMIFNCITSEIKGMITLYTRDKFVVRYVTQMIGSNQKFPLLC LVGEKQTKNFSRNWGVLEEKGDLGEEKNQEKCLIFKDKTD FAKAKEVEIFKNNIWRI RTSKYQIQFLNRLFKKTKEWDLMN LVLSEPSLVLEEEWGVSWDKDKLLPLLKKEKSCEERLYYSL PLNLVPATDYKEQSAEIEQRNTYLGLDVGEFGVAYAVVRIV RDRIELLSWGFLKDPALRKIRERVQDMKKKQVMAVFSSSST AVARVREMAIHSLRNQIHSLALAYKAKIYEISISNFETGGNR MAKIYRSIKVSDVYRESGADTLVSEMIWGKKNKQMGNHIS YATSYTCCNCARTPFELVIDNDKEYEKGDEFIFNVGDEKK VRGFLQKSLLGKTIKGKEVLKSIKEYARPPIREVLLEGEDVE QLLKRRGNSYIYRCPCGYKTDADIQAALNIACRGYISDNAK DAVKEGERKLDYILEVRKLWEKNGAVLRS AKFL
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【表 1 - 1 2 4】

133	Cas12	MSTQKNPFNQFTNLYELQKTLRFELRPVPETKKLLEKGEGK NLIQMDLEIDRLYEKEMKPMFNILHEKFINESLGLVKLDCKK LKKLENLLAEADKLRLKQIKEGRKNKNNISEVEKRLKIIIGDN SQGKNKNGEIAVLQDELRLVIVKAFNLTAADKWKKEKLNKE TLLPEKKGKRKIKIKKSGPKILQEENVLAILAYFNPDKADIIK KFAGFFTYFSGFNQNRANYTVMKALATGVANRAINRNFLIF LANRKDFARFKERLPRLAEFDNYFELENYEKYLSQTGIEEYN DQIGKIKQIVNLEHNQQQKDNKFQLKGLATLEKQIGCRTKK QREEGGDKSAPKFLEKVGLGFQVSQDDDGEYLIWECLNYIN KELAGKLKSIKDNQYQFFADWRTGAYDLEKIWFRKEALNTI SGRWFGGNNWFIIGKALALTGVGKFDKRENTYKIPEFVSLA EIKTAFEMLENGVNYDFKSKSKKKEGDDTDVVKYSADNLF KEEYKKKGLIKNSLFETMLAVWQSEIKRKFEQIFDGYKLEK DDVFGRKKGEWVEPFIEFQKVSQEKFDRGVKDENGSRSIHT EVVKNLIEEGYLRFLQTKYHNLDKKGERDPRPFDGNFYAT LDEFWKDNIVVVYHKALQSTLTCKPYSEDKIKLNFENGSL GGFSDGQERSKAGVVLKNKNKFYLILIDRGFFRTDKANPV YDNAQNNEWERLILTNLKFQTLAGKGFLGKHGVSYGEMGK DNPMMAVEYLQKFIKLKYLDKYPALNEVAHKKYTIKKEFD ADVKNALKDCFTMNFKPVDGFMIRQGLTESLFYLFIVNKD ISSQAKNGKNVHTLYWEALFGDQNLKKPILALNGGAEIFYR ESQREKLEKKLDKSGKEVLDDHKRYGQDKYFLHASITINYGQ PKNIKFKEVINEKISQNAADRVNIIGIDRGEKHLIYSSVSP VLEQGSFNQIETKNKVDIKAVKAIEYGERGELKKVELVPTG KKVKYVDYQILLDYEEKRNLARRDWQTIGKIKDLKDGYL SQTVHRIYQLILKYNAVVMEDLNVEFKAKRAAKVEKSVY KNFEMALAKKLNHLILKDRRADEIGGALRAYQLTPAIPAND VGKFDKAKQWGIMFYVRANYTSTTDPLTGWRKHXYISNSE KIDNIQKFFSPGDGIQIDYDTEKQCFKFSYDHELEGGAKKHW ELFACDGLERFYWDNRERQIKKYNLYEEFEKLLGGLRKEEN INIQIDGVSEFRWKDLVFFWNLLNQIRNTDRSAQGDENDFLQ SPVWSEKYNCFYDSRKAPNNMPNNGDANGAFNIARKGQLI LERIKKCS DIPKFGNDNNGKNPENNYFISDADWDKFAQK
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【表 1 - 1 2 5】

134	Cas12	MAQASSTPAVSPRPRPRYREERTLVRKLLPRPGQSKQEFREN VKKLRKAFLQFNADVSGVCQWAIQFRPRYGKPAEPTETFW KFFLEPETS LPPNDSRSPEFRRLQAFEAAAGINGAAALDDPA FTNELRDSILAVASRPKTKEAQR LFSRLKDYQPAHRMILAKV AAEWIESRYRRAHQNWERNYEEWKKEKQEWENHPELTP EIREAFNQIFQQLEVKEKRVRICPAARLLQNKDNCQYAGKN KHSVLCNQFNEFKKNHLQGKAIKFFYKDAEKYLRCGLQSLK PNVQGP FREDWNKYLR YMN LKEETLRGKNGGRLPHCKNL GQCEFNPH TALCKQYQQQLSSRPDLVQHDELYRKWRREY WREPRKPVFRYPSVKRHSIAKIFGENYFQADFKNSVVGRLR DSMPAGQYLEFAFAPWPRNYRPQPGETEISSVHLHFVGTRP RIGFRFRVPHKRSRFDCTQEELDELRSRTFPRKAQDQKFLEA ARKRLLET FPGNAEQELRLLAVDLGTD SARAAFFIGKTFQQ AFPLKIVKIEKLYEQWPNQKQAGDRRDASSKQPRPGLSRDH VGRHLQKMRAQASEIAQKRQELTGTPAPETTTDQA AKKAT LQPFDLRGLTVHTARMIRDWARLNARQIIQLAEENQVDLIV LESLRGFRPPGYENLDQEKRRVAFFAHGRIRRKVTEKAVE RGMRVVTVPYLASSKVCAECRKKQKDNKQWEKNKKRGLF KCEGCGSQAQVDENAAARVLGRVFWGEIELPTAIP
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【表 1 - 1 2 6】

135	Cas12	MAVRSVKLKL VPRDGS AESVRKRKALWATHQFVNDAAA AYAELLLEMQRQEDVCRGTDDHGKDVIEPAAHWQAKLRAR LAAKQLPPVAVAEALPLLKAFYGSRLIKSFVANDKGVAGTG NATDLNTWLSGLVDPASVAGEKTELKQLLAELPLCEAAD ADFEGAARKMLAKSDAREALLEGPGTGVGWPAAYNANPT DSVWLDMLHKAAAKARLELADTTVSELKKLGVPPLLQAAS SNRVFGSGVLNPFERMAAAQAAAALLPWETKRHEMRKRR DKFADQLNQWDTEFGASHATALAAIRAFEAEESERARRESL GNEGTYRIGGRELRDAWTLLRDWLKGHSTATAAAREDKV RELQAKQGRSFGSHRLLSWLAKPAQQWLADHSAGDVVTRI AVRNARQRKLD TARTLPIWTGADAVKHPRFANFDPPNNTN QPGFDLRAGTQKGRLTLRLSLLTERADGLLLAQDHD FQLVP SRQMAEIVLHKDGKERALS WQSQDGIGRQVGDVGG SALLF SRDHAEC LLERKQITRLERGAWPAALPVWFKLSLDIGA EHK ALLKQRFKWGVWLNSALVTRNAKDAKGVP PPVGVTRVLAV DLGLRSAATVSVWQV VDAATPVVAGKWRVPLSDTLSAVH ERSAMLALPGEHVDAGVLAARRAANEKLAGLLAATSHLST VFKLGRAEQGDRRRELLERLGEGDDRRARA AVATTAAERD GLRAVLGATQDAWAGAVA AVWRRLETDLAGAIAAYRKQQ REDVQLRREARHGPGASQLPKQAAAERLLGGKSAWQIEYK ERV RKLLTRWIMRQRP GDTAVRRLARKDLGKYCGLLDHL TALKEDRAKTTADLIVQAARGRVRAHKDAHGRQQDRELW LAKYAPCDLIVMEDLGRYRFATDRPPSEN RQLMQWTHREV FRLVQM QAEVEGIQVLETGA EFSSKFDARTWAPGVRCEPIT KLWVERYRNGEMPWLADK ADEWRREGIELAQLVPGQLLPT GSGEQFVAVSATGGLRVRHADLNAAQ CIALRALTG HGTA F RLTARRLG DVFVSAKGLGKRPQGALWREFGSALPPAVVVL RPAGEVRYALRPFASARDA AAAALGLQLGALRNVDATDAES DAEDGDLAELLAGADPD RATFFRDPSGDVHGGAWVQAKV FWAEVRRHVRLGLQAQGLLPAAARSSEPRQMQLPLAGALP GDDIPL
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【表 1 - 1 2 7】

136	Cas12	MNRIYQGRVSKIEIKDSEGNFRNVPVGSPDTCPLWRHHRIFQ DAVNYYLVALGALAGTGSENAFVGLGSKDRVIHDLYSRLF DSWERFPRDMHGASSLRDSLRRITLPGLSERASLQDAFDAILS GNEANARERVLSLLSLIQDLGGDIQKGSKRYFPFFCEPATKA TFPRARVGLLKVEGKDFVPRLLWSSDLEIAPDQVVEQLKFE YFANPNESVQPIEGNEARVRLIEALDNPQLGIELPIILSDLRK RVHLIETDIRIPRYFFGGAGAELRKFRDLFLIAAYVTPDPSIL RALRNSFKEPSASKSSKKKDETEEEVENLLRSLGDDPLILARG ERGFVFPSTSLPTWVGANAQKPIWRDFDIAAFAEALKSLNQ FTAKTEEREKLLKAEETLHYMLGISDAIPRSSDSETEEQAPS RPGKDPRWPLVAQLEKELGENLSEGTWQLSRSAMRGLRDII GLWRKHPGASVVTLQKDVKTYQADEKHKREIGSVQFLLL CEERYHALWQTETDDERGDSEENDDPARILSDAIEVHQIRR EVERFREPIRLTPAEPVFSRRLFMFSDLTDKLAKVKFGETTEE NSEVKSQFVEAAIALKEGENLKEARVRITFSAPRLHRDELG GAESRWLQPITAALGFSNPAPSVKFDSAVALMPDHMDDGRI RHLLNFPVNFDSAHLHQSIGKADLWKSQFNQTKDKNLHLH WAGTARDTTRKNTWWENRTIENGFTVLSNDLGQRSAGAW ALLKVTCSRPDTKHPVRSIGHDGTREWFATVLATGIHRLPGE DQRILKNGKWATEQSGKKGRNATFSEYEAACVLAKNLGCE SVENWLGMSGEKSYPALNDQLVKIANRRITRLGTYHRWSCF SPEKFEDPARRANVIGGQLAELSAHQDENVTVSADILKSGDF EGFRHRAGAAFEALRTELEVHLVNLANLTAPLRQKVWSWQ KRPDSSGYGDLLMVDLDDCHPKIRGQRGLSMARLEQLEGL RRLFLRYNRS�DRSPGIPAKFGREDVGRTSGEPCQALLVKID RMKEQRVNQTAHLILAQALGVRLCPHRIEENERKSRDLHGE YEKIPGREPVDFIVIEDLSRYLSSQGRAPSENSRLMKWAHRA VRDKLKMLAEPPFGIPVVETVPAYSSRFHALNGQAGSRLHE LHELEAYQQSLINLAAKTDQNRDRSKAAGELFEQFQALA KLNERRRAEGKKVPRTLTYPKSGGPLFLASRDGDTIHADV AAINLGLRAIAAPACIDIHRRRLRATKEKEVYRPRVGNAREKS AFSKDDIIQPSGAPSKKFASSSPNFFYEPEDLKQANGEPLFD RAMFGEYSLVSGVSLWSMVNNAIYIRCVELNRTRLHGKDP DDQIPM
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【表 1 - 1 2 8】

137	Cas12	MADDLSTQRAYTLRLQGTDPEDQSWRDALWMTHEAVNAG GRAFGDWLLTLRGGIAHELADTPVKGKKDITDELKKRRIL LALSWLSVESRRGAPDKFIVAGGEEPAGSRNEKVLQALKEIL KRRGLSAEESESWMSDCRASLSAAIRDDAVVWNRSAAFDD AQVRIGASLTREDIWDMLDPFFGSREAYLTPAKKKKEDEDS SEGTGEEKAKDLVQKAGQWLSSRFGTGKGANFDAMAEVY SKISEWAGTAQEGVSGKEGIKNLADALAAFSPVSQNLEGVL KLISGPGYKSATRNLGELDSLPPVSRDHLSALHEKAAEDT VKCKESTGTKRRPYADAILNDVEKRCGFTYLTDSNRSVS ILDTSEFPSDYKWGTARHSEFAVILDHAARRISVAHSWIKLA EAERDRCEEDAAKVYDLPDKVKEWLDTFCSNRSDISGAQG EGYRIRRKAIEGWKEVVASWGRSSCITAEDRVAAAARALQD DPEIDKFGDIQLFEILAQDEALCVWHKDGDVAKSPDAQMLI DYVLASDAESKKRRFKVPAYRHPDALLHPIFCDFGNSRWDI TYDIHGARGKKKAKRGSKKEEAMPRGVAMKLWTGSDVLS VSLRWQSKKLAADLALDQEAEEVTDTAAVSRADRLGRAAA GIDRGAGVTIAGLFEEAHWNGRLQAPRQQLAIAAVRDNQ KLSSEERERRIAFMKDRIRWLVTFSAKLRPQGPWHSYAPTQ GLQSDPKYWPHSEINKKRKGQAKLILSRLPGLRILSVDLGHR FAAACAVWETMSSEAIQEACRLANHQLPAPADLYLHLKRT VQKNLIDGEKTVEESTVYRRIGADRLPDGTAHPAPWARLDR QFLIKLQGEKVKREASNEEVWQVHLMESALGLSFPLIDRLV YAGWGGTEKQAARLEALREKGWKPTGTPADQDEEGGGYK PSLAVDELMFSAVRTLRALALKYHGDRARIAFALTADYKPMF GDTRYFFSEAKDRSSGADAAEREAKHKDYLLDMLLLWHD LAFSRKWRDEEAKELWNLHIAALPGYQAPAAPIQEEAGQGR KKAREEARAKMTPAAEALLADGTLREKLHGLWKERWEKD DAQWKKHLRWMKDGLPRGGRAATPSIRYVGGLSLTRLAT LTEFRRKVQVGFYTRLFPSGEKREIKEAFGQTALDALERLRE QRVKQLASRIAEALGAGRVSRTALKQDPKRPEARVDAAC HAVIENLEHYRPEETRTRRENRLMNWASSKVKKYLSEAC QLHGLFLREVPAGYTSRQDSRTGAPGMRCQDVTVKTLNSP FWQKQCVQAQKNKSTARDRLCALKEAVAQGGMEEEKKM GPIRVPPVPGGEVFSADAASPAAGLQADLNAAANIGLRAL LDPDWPGKWWYVPCDRKTAYPAKEKVEGSAAVDVKQALP FVLPEEKENKGKTKGGKKGKGEVMNLWRDVSAEPLMTGQ WLDYTAYRKEVENRVIQVLTAQLKARNPLRFGNLGDEEEIP Y
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【表 1 - 1 2 9】

138	Cas12	MAIRSIKLLKLTHTGPEAQNLRKGIWRTHRLNEGVAAYM KMLLLFRQUESTGERPKEELQEELICHIREQQQRNQADKNTQ ALPLDKALEALRQLYELLVPSSVGQSGDAQIISRKFLSPLVDP NSEGGKGTSKAGAKPTWQKKKEANDPTWEQDYEKWKKRR EEDPTASVITTELEYGIRPIFPLYTNTVTDIAWLPLQSNQFVR TWDRDMLQQAIERLLSWESWNKRVQEEYAKLKEKMAQLN EQLEGGQEWISLLEQYEENRERELRENMTAANDKYRITKRQ MKGWNELYELWSTFPASASHEQYKEALKRVQQRLRGRFGD AHFFQYLMEEKNRLIWKGNPQRIHYFVARNELTKRLEEAKQ SATMTLPNARKHPLWVRFDARGGNLQDYLLTAEADKPRSR RFVTFSQLIWPSESGWMEKKDVEVELALSQFYQQVKLLKN DKGKQKIEFKDKGSGSTFNHGLGGAKLQLERGDLEKEEKNF EDGEIGSVYLVNVVIDFEPLQEVKNRQVQAPYQGVQLIRPN EFPKVTTYKSEQLVEWIKASPQHSAGVESLASGFRVMSIDLG LRAAAATSIFSVEESSDKNAADFSYWIEGTPLVAVHQRSYM LRLPGEQVEKQVMEKRDERFQLHQRVKFQIRVLAQIMRMA NKQYGDRWDELDSLKQAVEQKKSPLDQTDRTFWEGIVCDL TKVLPRNEADWEQAVVQIHRKAEEYVGKAVQAWRKRF DERKGIAGLSMWNIEELEGLRKLLISWSRTRNPQEVNRFER GHTSHQRLLTHTQNVKEDRLKQLSHAIVMTALGYVYDERK QEWCAEYPACQVILFENLSQYRSNLDNSTLMKWAH RSIPKYVHMQAEPYGIQIGDVRAEYSSRFYAKTGTPGIRCKK VRGQDLQGRRFENLQKRLVNEQFLTEEQVKQLRPGDIVPDD SGELFMTLTDGSGSKEVVFLQADINAAHNLQKRFWQRYNE LFKVSCRVIVRDEEEYLVPKTKSVQAKLGKGLFVKKSDTAW KDVYVWDSQAKLKGKTTFTTESESPQLEDFQEIIIEAEAK GTYRTLFRDPSGVFFPESVWYPQKDFWGEVKKLYGKLRE RFLTKAR
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【表 1 - 1 3 0】

139	Cas12	MPVRSINLKIVISRNTQGEKSRQSIWTTTHAAVNDVRYEE QLLIMRGLGYHISDKDVVSKESIQQERLSRIRRAQLENGLPEP LGTDAELNSLVRKFYEFIVPSSVKEDGNAQQANGFLSPLTDP ISIGYLSIFEKLGTPDWVGQLKAGDPQAVENAKKWSATSAG IKRLSETGAPPKWKKLFLTGDPSWPQSFSSEDIDKKIKEIEGAP KVICQLMEMGVLPFPAYFADKLEGSDGSLSRWDRLAFRLA VGHMLSWESWCIKSAEDHFERKRRVESFSEKHTTPSLIICFE TLEKYQKERQEKELGQNRSLPMQRPFRITRRQIRGWEDLRD KWLKNTTRTYDSLKSIASKEQTKKGGRFGDPHLFLWLAKPE NHAVWDADEDALSIFAKMNAMRGLLERSRETAYMTLPDPI EHPRSIQWEAEGGSNFKNYVITHSPVEGLHVQLPLLCKSESG KLIDQTFEFPLAPSDQFKVAQISKTKSEVTITHQSVLDEEYRS KVGADLLMDWPYLKNRRFESVEHGDIGPVFLKLSLDIERIL PDGWTPKRPQAISHFSSASGNSKHKLSVVSGLRVLSVDLGIR SFGACSVFELSEHKPTSGMSFEIEGLNLWANHERSFMLNLPD EDVGNKGRQLQKTKDAELRAMRRVLGRYRKIYALAGIDPE DRKDILELLCQDQDIFEFERTIYKGLVTSTSVSQPLWEGKIKE SLKALRNAFGRKVVREWRRANRLNSNLKYAGKTMWAIQHL EDTRRFLHSWSHLGRFSGEIRRADRVKRGVFATRLLQHLD VKRDRLKTGADLLVQSARGFLRDNQGNWKKSYAPCQVILF EDLSRYLMQTDRPRENSQLMKWSHR SIPLEVAMQGELYGI HVCDTSAAFSSRYHARLATPGIRCHALRKEDLSNQFLIESLQ KENPDIDFGICKAGDLIPRGGGEIFVSCDGNGGISRIHADINA AQNLQRRFWLRHGEAIRIPARKITLKGDEIWVPRSIGKRLQG AMSGCGYLIPTGHESGSCRWERITASKWESISRSSVAQKEEV NEDLLDIALLEEEALELSNEYTTFFRDPSGITLPSDLWFPMKT FWGMTRAKIKSAIKQ
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【表 1 - 1 3 1】

140	Cas12	MTVKSIVKLRLDNMPEIRAGLWKLHTEVNAGVRYYTEWL SLLRQENLYRRSPNGDGEQECYKTAEECKVELLERLRARQV ENGHRDPAGSDELLQLARQLYELLVPQAIGAKGDAQQIAR KFLSPLADKDAVGGLGIAKAGNKPRWVRMRDAGEPGWEE EKAKAEARKSTDRTADVLRALADFGKPLMRVYTDSDMSS VQWKPLRKGAVRTWDRDMFQQAIERMMSWESWNQRVG EAYAKLVEQKSFEQKNFVGQEHVQLVNQLQQDMKEAS HGLESKEQTAHYLTGRALRGSDKVFEKWEKLDPDAPFDLY DTEIKNVQRRNTRRFGSHDLFAKLAEPKYQALWREDASFLT RYAAYNSILRKLNHAKMFATFTLPDATAHPIWTRFDKLGGN LHQYTFLFNEFGEGRHAIRFQKLLTIEHGVAKEVDDVTVPIS MSAQLDDLLPGESNEPTELSFRDHGTDQHFTGEFGGAKIQY RRDQLDHVHRRRGARDVYLNLSVRVQSQSEARGERPPYA AVFRLVGDTHRAFAHFDKLSNYLAHPDDGKLGSEGLLSGL RVMSVDLGLRTSASISIFRVARKDELKPNSEGRVPFFFPIKGN DNLVAVHERSQLLKLPGETESKDLRAIREERQRILRQLRTQL AYLRLLVRCGSEDVGRRERSWAKLIEQSVDAANHMTPDWR EAFEGELQKLKSLYGICGDREWTEAVYESVRRVWRHMGKQ VRDWRKDVRSGERPKIRGYQKDVVGGNSIEQIEYLERQYKF LKSWSSFFGKVSGQVIRAEKGSRFATTLREHIDHAKEDRLKK LADRIIMEALGYVYALDAERGKGTWVAKYPPCQLILLEELS EYRFNNDRPPSENNQLMQWSHRGVFQELLNQAQVHDLVVG TMYAAFSSRFDARTGAPGIRCRRVPARCAREQNPEPPFWWL NKFVAEHKLDGCPLRADDLIPTGEGEFFVSPFSAEEGDFHQI HADLNAAQNLRRLWSDFDISQIRLRCDWGEVDGEPVLIPR LTGKRTADSYGNKVFTNTGVTYYERERGGKRRKAFAQEE LSEEEAELLVEADEAREKSVVLMRDPSGIINRGDWTRQKEF WSMVNQRIEGLVKQIRSRVCLPESACENTGDI
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【表 1 - 1 3 2】

141	Cas12	MKNFQDFTNLYELSKTLRFELKPIGGTKKLIEEKNILKLDKK KRENYEKVKPYFNKIHQEFINFALRNPNFDFSQFEEKYLNWL KDKKNKDLLKEKESIDKIFLEKIGKLFENSVDKFLKENGFESE VKEEDQNLKFFRRKEIFEVLQEKEYGSELETQMVNKGDEIKSI FNGWEKWLG YFDKFFNTRDNFYKTDGTSTAIATRIIKDNLKI FLENIVAFGKIKNKKIDFSEVEKNFSVSIIDTFFEINNFNCFLO DGIDFYNKVIGGETLENGEKLGKGLNEIINKYRQDTGEKIPYF KKLQKQILSEKDGVFIDKIEDDGGFYEV LKNFYKNAAEKEG FLKNIFENFYTISDNLEKIYFNKIAFNTISHKFGSALEFERIL YEEMKKEKADGIKFEKKENKYKFPDFIQIIFIKRSLENYDSEN LFWKERYKSEENV DGFLEKNNNNLWGQFCKILNFEFLNIL KRRIDEAGEEYEVGF EISKNILGEKLENFELNQENKGIKDF ADYSLALYSFGKYFAVEKGRNWDLNIDISDDFYGGEDGYIE KFYNTGYDEIVKPYNLMRNYISKKPWEDNKKWKINFETSSL LSGWDKNLESNGSYIFQKGNKY YLGIINGSKPAKEILEKLYS GDGEKIKRFIYDFQKPDNKNTPRMFIRSKKDSFSPAVEKYNL PINDILEIYDNGLFK TENKGNPNYKESLRKLIDYFKLGFSRHE SFKHFNFWKDSKSYENIADFYRDVEKSCYKIDFEFLNFEEL KKLTFEKHLYLFQIYNKDFELDESLQEKGYNFKGEGQKNIH TKYFEALFLEENISRKSGAVFKLSGGGEVFFRKKSIKAKKEK RNSVEVIKNKRYTECKYFLHFPIQVNFKEEISGNFNQEINKFL ANNP DINVIGIDRGEKHLAYFSVINQKGEILESGSFNKIENYN KNGEKLFPEREIKEIHKDGLIDLELVETGRKVDYVDYKLL LEYKERKRL LQRQSWKEVEQIKDLKKGYISALVRKIADLIK HNAIVIFEDLNFRFKQIRGGIEKSIYQQLEKALIDKLNFLVNK NEINLEKAGSILKAYQLTVPVDSLKEIGKQTGVIFYTEAAYT SKIDPITGWRPNLYLKNNNSKINKENILKFDNIVFNSKENRFE FTYDLKKFFGKDSKFPKTVNTVCSCVERFKWNRNLNNNK GGYIHYENLTDGKLANKEQKEDEFSNFKELFEKYFIDINGNI LEQIKNLDTKNNEKFFSSFIDLFTLVCQIRNTNQNAKGDEND FILSPVEPFFDSRKSQNF GKSLPKNGDENGAFNIARKGLIILN RISENPEKPDLLIFNADWDNFARNI
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【表 1 - 1 3 3】

142	Cas12	MAQAEAPRRLRAYKFALDPTEAQLREFEQHAGSARWAYNHANAI LSRYSDTLRNRWNAWIAQHHGLSREQLYALPDRERTAIQAAARAA VKAENAQLAAELRIIDHRKRVTHKGKPSVEPGEQPAEDAPERAY QLWRERVELARLHAEDPQAYRAERKRILDEIRPLVNATKRKLIEQG AYRPTAMDISTLWREIRDLPPDEGGSPWWPEVSIYAFTSGFAHAET AWKNYLESLAGRRAGRPVGKPRFKKKRRSRRSFTLYGSVKLVTYR RIQVPSIGSVRLHGSARKLHRLERRGGIISITISQGGHRWYASVL VDELDTPGRETQRGPSRRQRDRGAVGVDLGVHHLVALSDPNEKT LDNPRHLRKARKRLLKAQRAMSRRRGPDKRTGQEPSRRWVKARN RVARLHHELAVRRAGHLHEITKRLATSYELVAIEDLNVAGMTRSA RGTDIDQPGRGVRAKAGLNRSILDTSPAEFRRQLQYKASWYGATVA VIDRWAPTSRTCSSCGAVKAKLSLAERTFFCEHCGMELDRDINAA RNILAFQASAYPGEGKALNACGGSVSPGSQSVVQAGADEAGRPAR KPRRSSRGSDPPATPTTRA
143	Cas12	MKRIAKFRHDKPVKREAWSKGYRVHKNRIINKVTRSIKYPLVVKD EWKKRLIDDAAHDYRWLVGPINYSWCRDPNQYSILEFWIDFLCV GGVFQSSHSNICRLAIQLSGGSVFEEQWKDLSPFVRANLIQGIKPAE FIGFLTAEFRSSSNPKNFISKFFEGSNEDLESLTNEFASIVDFIKADI SLLRKSLPSCCKKIAPNLWEKAVGSHSTNELLKLLTKYTRVMLVAEP SHSDRVFSQTVLQSNDDQDDPELTGPLPSHKVKGASYLFIPEFIREVN LDKISKLDLSAKSKLAVEQVKKSELTSDFKQIENQSEAYFGLSTSF NELSNFLGILIRTLRANAPEAILKDQIALCAPLKDILKITLDWLCDRA QALPENPRFETNWAEYRSYLGGKIKSWFSNYENFFEIPQAASSQON NNREKKLGNRSAIRALNLKKEAFEKARETFKGDKGTLKIDLAYR LLGSISPEVLQCDEGLKLYQQFNDELLVLNETINQKFQDAKRDIA KKEKESFEKLQRNLSSPLPRIPEFFGERAKKGYQKARVSPKLARHL LECLNDWLARFAKVEESAFSEKEFQRILDWLRTSDFLPVFIRKSKD PPSWLRYIARVATGKYVFWVSEYSRKRVQIIDKPIAQNPLKELISWF LLNKDAFSRDNELFKGLSSKMVTLARIMAGILDRGEGLKELQAM TSKLDNIGLLHPSFSVPVTDLSLKDAAFYRAFFSELEGLLNIGRSRLII ERITLQSQQSKNKKTRRPLMPEPFINEDKEVFLAFPKFETKNKVKG TRVVYNPDEVNWLLSPIRSSKGQLSFMFRCLSEDAKIMTTSGGCS YIVEFKKLLEAQEEVLSIHDCDIIPRAFVSIPFTLERESEETKPDWKP NRFMGVDIGEYAVAYCVIEKGTDSIEILDCGIVRNGAHRVLKEKVD RLKRRQRSMTFGAMDTSIAAARESLVGNYRNRLHAIALKHGAKLV YEYEVSAFESGGNRIKKVYETLKKSDCTGETEADKNARKHIWGET NAVGDQIGAGWTSQTCAKCGRSFGADLKAGNFGVAVPVPEKVED SKGHYAYHEFPFEDGLKVRGFLKPNKIISDQKELAKAVHAYMRPP LVALGKRKLKPNARYRRGNSSLFRCPFSDCGFTADADIQAAYNIA VKQLYKPKKGYPKERKWQDFVILKPKEPSKLFDKQFYRPN

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【表 1 - 1 3 4】

144	Cas12	MAQAEAPRRLRAYKFALDPTEAQLREFEQHAGSARWAYNHANAI LSRYSDTLNRWNAWIAQHHGLSREQLYALPDRERTAIQAAARAA VKAENALAAELRIIDHHRKRVTHKGKPSVEPGEQPAEDAPERAY QLWRERVELARLHAEDPQAYRAERKRILDEIRPLVNATKRKLIEQG AYRPTAMDISTLWREIRDLPPDEGGSPWWPEVSIYAFTSGFAHAET AWKNYLESAGRRAGRPVGKPRFKKKRRSRRSFTLYGSKLVTYR RIQVPSIGSVRLHGSARKLHRALEERRGGIISITISQGGHRWYASVL VDELDITPGRETQRGFSRRQRDRGAVGVDLGVHHLVALSDPNEKT LDNPRHLRKARKRLLKAQRAMSRRRGPDKRTGQEPSRRWVKARN RVARLHHELAVRRAGHLHEITKRLATSYELVAIEDLNVAGMTRSA RGTIDQPGRGVRAKAGLNRSILDTSPAEFRRQLQYKASWYGATVA VIDRWAPTSRTCSSCGAVKAKLSLAERTFFCEHCGMELDRDINAA RNILAFASAYPGEGKALNACGGSVSPGSQSVVQAGADEAGRPAR KPRRSSRGSDPPATPTTRA
145	Cas12	MAIRSIKLKLKTHTGPEAQNLKGIWRTHRLNEGVAYYMKMLLL FRQESTGERPKEELQEELICHIREQQQRNQADKNTQALPLDKALEA LRQLYELLVPSSVGQSGDAQIISRKFLSPLVDPNSEGGKGTSKAGA KPTWQKKKEANDPTWEQDYEKWKKRREEDPTASVITILEEYGIRP IFPLYTNTVTDIWLPLQSNQFVRTWDRDMLQQAIERLLSWESWN KRVQEYAKLKEKMAQLNEQLEGGQEWISLLEQYEENRERELREN MTAANDKYRITKRQMKGWNELYELWSTFPASASHEQYKEALKRV QQRLRGRFGDAHFFQYLMEEKNRLIWKGPNQRIHYFVARNELTKR LEEAKQSATMTLPNARKHPLWVRFDARGGNLQDYLLTAEADKPR SRRFVTFSQLIWPSSESGWMEKKDVEVELALSQFYQQVKLLKNDK GKQKIEFKDKGSGSTFNHGLGGAKLQLERGDLEKEEKNFEDGEIGS VYLVNVIDFEPLQEVKNRQVQAPYGGVQLLIRRPNEFPKVTYKSE QLVEWIKASQHSAGVESLASGFRVMSIDLGLRAAAATSIFSVEESS DKNAADFSYWIEGTPLVAVHQRSYMLRPLGEQVEKQVMEKRDER FQLHQRVKFQIRVLAQIMRMANKQYGDRWDELDSLKQAVEQKKS PLDQTDRTFWEGIVCDLTKVLPRNEADWEQAVVQIHRKAEEYVG KAVQAWRKRFAADERKGIAGLSMWNIEELEGLRKLISWSRRTN PQEVNRFERGHTSHQRLTHIQNVKEDRLKQLSHAIVMTALGYVY DERKQEWCAEYPACQVILFENLSQYRSNLDNSTKENSTLMKWAH RSIPKYVHMQAEPYGIQIGDVRAEYSSRFYAKTGTGIRCKKVRGQ DLQGRRFENLQKRLVNEQFLTEEQVKQLRPGDIVPDDSGELFMTLT DGSGSKEVVFLQADINAHNLQKRFWQRYNELFKVSCRIVVRDEE EYLVPKTKSVQAKLGKGLFVKKSDTAWKDVYVWDSQAKLKGKT TFTEESPEQLEDQEIIEEAEAKGTYRTLFRDPSGVFFPESVWYP QKDFWGEVKKLYGKLRERFLTKAR

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【表 1 - 1 3 5】

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【表 1 - 1 3 6】

148	Cas12	MNRIYQGRVSKVEIPNPGDKGKPWQPLPNWQDILWQHHEL FQDAVNYYLLALLSLARDSANPATPIRKRMDDPASEHQIWT SFRRRGQMRSGMRDSVAKYLCPVKTEPTLDECFAAVLEGN KENPDVLDLALQELLDECDGDGAIQQEGRSMLPRFCSPSYK GDFPQSAAAKDKKSAKEWLPTFLHSAENASNLKLVRQRLK FELFANRDLTGRILDAVESRKRLTEMLGWLTERNPSLAAER ERLQKIIAALPDTFNLPAWRGGSVNKEALKQRFYAWLIFEH VESSRITFDILRDSFPTPKEKRKSVSETIQSEKPSLELSDDPIKL ARGTRGYVFRAFTSLPCWGADNANLLAWKEFDVAAFKEAL KALHQVESKSEERNKERERLLQRHSVMRGSIKWKPSPESEE KEPDVLAGDPRIERLEKLLKTELASEYEMSEGQTVEYGLQP RTIRGFRDLRKEWNKIVKPGEPFTEQKKGNLVTALRSYQIEN PNVIGSVRLYEALLEKGNWLWQEADSATVEKWAKQKFAS DPLEALTEERQLLRDIERLKQPIRFTPADAVHSRRQFYLAEK GDLSVKNRFDPNQNTLQVPIAIKNDHVKQFVKIHFSAPR AVRDQLIDETMEESKEARWQQPMMEALGLSLKLTKNNAEV SLSECTAVSLMPEELASGDRRILLNFPITLETAPMVKALGKA SLWDGQFAAYGDDNFYLRWPKDKWPAEKESNAWYRRLTE FSLLSVDLGQRDAGAFVIGATTGKPTRPASRFIGEANGQS WHASVRATGVLRLPGEDAHVFRSGQWQEELYGERGRSAD ATEWTEAKRICETLGLKFDEILGGDPQWFSFPELNDRLFAV RRAQTRLARLQSWSWMIADETRRENIREAILAADDDELSLK AAAEKSLWPVLAEKLASEVNRLRLNIPQQLVLLANRILPLRG RRWEWIKRDDTSGCHVLRETNP GTD TTSKKVCGQRGLSMK RLEQLDELRRRFQSLNRALMQTPGQTAGLGKSKRGIELPDP CPDLLDKTEQLREQRVNQTAHLILAQALGVRLRTPQKGDAL REQNNVHGEYETFRLPVDFIVLEDLSRYLSSQGRGRNENSRL MKWCHRAILLKLKQLCESYGLKILETNAAYSSRFCSRTGVA GFRAVELTPDARKEFRWRKHLNRLEKAASGEIKLDREARAE SEHVKRLFDMLDQLNAGRKEAGKPLRTLLAPIAGGQIFIPM QGHATQADINAAINLGLRAIAAPDCHAIHVRI RTERKDKTLR VRTGSNREKVRWEGKNPEIQMNKAADLASLTGDRQPNFFP DPSAIACYDRAKIEGVQLPFASGRGLWGTMNIELQWTRVNQ LNNDRAEKKWNLTRSLPEQSSEEDYIPM
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【表 1 - 1 3 7】

149	Cas12	MAVKSIVKLMLGHLPEIREGLWHLHEAVNLGVRYYTEWL ALLRQGNLYRRGKDGAQECYMTAEQCRQELLVRLRDRQK RNGHTGDPGTDEELLGVARRLYELLVPQSVGKKGQAQMLA SGFLSPLADPKSEGKGTSGRKPAPWMGMKEAGDSRWVE AKARYEANKAKDPTKQVIASLEMYGLRPLFDVFTETYKTIR WMPLGKHQGVRAWDRDMFQQSLERLMSWESWNERVGAE FARLVDRRDRFREKHFTGQEHLVALAQRLEQEMKEASPGFE SKSSQAHRITKRALRGADGIIDDWLKLSEGEVPDRFDEILRK RQAQNPRRFGSHDLFLKLAEPVFQPLWREDPSFLSRWASYN EVLNKLEDAKQFATFTLSPCSNPVWARFENAEGTNIFYDF LFDHFGKGRHGVRFQRMIVMRDGVPTVEGIVVPIAPSRQL DALAPNDAASPIDVFVGDPAAPGAFRGQFGGAKIQYRRSAL VRKGRREEKAYLCGFRLPSSQRTGTPADDAGEVFLNLSLRV ESQSEQAGRNPYPYAAVFHISDQTRRVIVRYGEIERYLAEHP DTGIPGSRGLTSGLRVMSVDLGLRTSAAISVFRVAHRDELTP DAHGRQPFFFIHGMDHLVALHERSHLIRLPGETESKKVRSI REQRLDRLNRLRSQMASLRLLVRTGVLDEQKRDRNWERLQ SSMERGGGERMPDWWDLFQAQVRYLAQHRDASGEAWGR MVQAAVRTLWRQLAKQVRDWRKEVRRNADKVKIRGIARD VPGGHSLAQLDYLERQYRFLRSWSAFSVQAGQVVRAERDS RFAVALREHIDNGKKDRLKKLADRILMEALGYVYVTDGRR AGQWQAVYPPCQLVLEELSEYRFSNDRPPSENSQLMVWS HRGVLEELIHQAQVHDVLVGTIPAAFSSRFDARTGAPGIRCR RVPSIPLKDAPSIPIWLSHYLKQTERDAAALRPGELIPTGDGE FLVTPAGRGASGVRVVHADINA AHNLQRRLWENFDLSDIRV RCDRREGKDGTVVLIPLRLTNQVRKERYSGVIFTSEDGVSFTV GDAKTRRRSSASQGEGDDLSDEEQELLA EADDARERSVVLF RDPSGFVNGGRWTAQRAFWGMVHNRIETLLAERFSVSGAA EKVRG
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【表 1-138】

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【表 1 - 1 3 9】

151	Cas12	MRRQHHGGQNARDWRRKVAAAALRQKESVFTYKFGLSVN DGDFFDAAAARTYDITEGIERGSLIGLVCAVHLSGFRLFSKV AETRQFLNRSRYPENEFQAALAAHTEIENPSVTVQSIESVFVT PPRKQDGVARLWSADELAKRLFQTWNNRSPREGERNHPEL LLAQGIARAVTKAFSGWKELADNAVHALTCADNYLATLGN RFPKLSDLPLTAGSTQTGTAFDPESPFLNMTGNEDIWLHQ VVAVCAGRLKRYMPEIDPSSRKFA SRLTDSIVSSQNNGLSW LFGNGLRFLRQSSIAQIAETLSVSQNEHRRVEQLKEFADAIPV NPFFATDGYAEFRGSVGGKISSWVSNYWKRICELTVLHSQP PDITIEGLLASENATLFSGQHTAAAGLVALSARLPSQVRDA GKALFVLSGDGVPRADDIATVEDVAGELAELTGQLAMLDN RIQQEIERAQDANDEGRVGS LASLRPNPTKELKEPPKLNRI GGTADAAGELARLETSLNDLIRARREHFYRLAEWTGNTASL DPLPALAERERKALTDRGMDPTLAEADEYALRRLHRIAGM ARRLSPNEAKRVRETMTPLFLKKREANLYFHN RAGALYRHP FSNSRHQPYSIDLNRARATDWLAWLEERAREMLGLLGSGAP ANHEYLRDLLSIETFVFTTRLSGLPAQVPGYLAKPKSDLTNIP PLLAAQLDVDEVSRDVALRAFNLFN SAINGLSFRAFRDSFIV RTKFLRLGHDEL FYVPKARAWKPPADYRSAKGKISKGLALP AVKRNEAGSILPRETTQGLSRAKFPEGSHALLSQAPHDWV ELDLRHDKMPQLAGLPVKMNADGLKGWRARRRPTFRLAG PPSFKTWLDRALTSTAVKLGDYTLILDQSFQSLRVEDGEV RLSAEPAGIKAEIAPVIDARPPPETEAEALFDNIIGIDLGERRI GYAVFSLPALLKSGNPTRVKPTVVGSVAIPAFRRLMAAVRR HRGSRQPNQKVSQTYSTALQQFRENVVGDVCNRIDTLCERY RAFPVLESSVANFETGANQLKLIYGTVLRRYTFSNVDAHKS ARSAYWYSANRWQHPYLFVREWNKAQRTFTGS AKPLAIYP GVTIHPAGTSQICHRCGRNALRALRNMPDR TIRVGKDGLIVL ADSTIRLLERADYSDRELKTFKRRKQRPPLNMPVPEGARPR DQLERVLRNMRQQPQSEMSPDTTQARFTCVYTDCGFEGH ADENAAVNIGRRFLERIDIEASSRT
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【表 1 - 1 4 0】

152	Cas12	MQEIKRINKIRRLVKDSNTKKAGKTGPMKTLLVRVMTPL RERLENLRKKPENIPQPISNTSRANLNKLLTDYTEMKKAILH VYWEFQKDPVGLMSRVAQPAPKNIDQRKLIPVKDGNERLT SSGFACSQCCPLYVYKLEQVNDKGKPHNTNYFGRCNVSEH ERLILLSPHKPEANDELVTYSLGKFGQRALDFYSIHVTRESN HPVKPLEQIGGNSCASGPVGKALSDACMGAVASFLT KYQDI ILEHQKVIKKNEKRLANLKDIASANGLAFPKITLPPQPHTKE GIEAYNNVVAQIVIWVNLNLWQKLKIGRDEAKPLQRLKGF SFPLVERQANEVDWDMVCNVKKLINEKKEDGKVFQNL AGYKRQEALLPYLSSEEDRKKKGKKFARYQFGDLLHLEKK HGEDWGKVYDEAWERIDKKVEGLSKHIKLEERRSEDAQS KAALTDWLRAKASFVIEGLKEADKDEFRCCELKLQKWYGD LRGKPF AIEAENSILDISGFSKQYNCAFIWQKDGVKKLNLYLI INYFKGGKLRFKKIKPEAFEANRFYTVINKKSGEIVPMEVNF NFDDPNLIHLPLAFGKRQGREFIWNDLLSLETGSLKLANGRVI EKTLYNRRTRQDEPALFVALTFERREVL DSSNIKPMNLIGID RGENIPAVIALTDPEGCPLSRFKDSLGNPTHILRIGESYKEKQ RTIQAAKEVEQRRAGGYSRKYASKAKNLADDMVRNTARD LLYYAVTQDAMLIFENLSRGFGRQGKRTFMAERQYTRMED WLTAKLAYEGLPSKTYLSKTLAQYTSKTCSNCGFTITSADY DRVLEKLKKTATGWM TTINGKELKVEGQITYYNRYKRQNV VKDLSVELDRLSEESVNNDISSWTKGRSGEALSLLKKRFSHR PVQEKFVCLNCGFETHADEQAALNIARSWLFLRSQEYKKYQ TNKTTGNTDKRA FVETWQSFYRKKLKEVWKPAV
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【表 1 - 1 4 1】

153	Cas12	MGKQSTNSSGLKATSGAPSIKPVTTQRAYTLRLRGIEGDKT WRDSLWATHEAINLGAKAFGDWLLTLRGGLEHTLADATVA GGKGKPARPPSADERRDRRVLLALSWLTVEDERGAPKAPG LIVAYGDDCKSAKDSQDGRDRKVEDALRDILIKRSVAPGAV ESWVNDCVVSLKARIRDDAVVWNRSAAFDALRASWRGLT CPNARTVLEQFFGPVADWITLARAADDGEGDTGGPTAAGS SNDTEFKLVARSFLENFGTGLKSSKSDISDALMQATRLAA LRGGSPGSVWVSHLCTEFGLLAADDEARAKALRVIRGWT GRRSKGRLALATAASKASLAQVDIELLIKLSSEEAEKLAGS TKLPLPWVNDLMAALERSIGFGFVTERNLIDFEGVMLDHAA RRVSIACSWIKLAELERRQFEEDAKKLDQVRTQHADAFL DTLGCRRGSESGSAGGASVIRKRAVLGWNEVVGDWARQ GCKSVQERIDAARLLQGELEKFGDIRLFEELAANDAQVVWQ NAEGETDPTILARYSAGSVAKANQQRFKVPAYRHPDPLRHP VFGDFGKSRWKIDFAVHESDRAQSGGKRVRSLDAAWQSDV RNMALWTGKRVEMVPLRWSSKRLSKDLGISDLSLKDPT VVTRGDRLGRAAVGPGDPVRVASVFAEDNWNGLQAPRV ELNRVARLTQSGNLVQARRLDRLSWLVSFSPKLAPSGPFID YAAAHGIEPHKKSGEYWPNSAMNKKERKHHKSLIYSRLPSL RVLSVDLGHFAAACAVWESMSAAQMRLAASKGKVVRGG IAEGALFIHISTVADGTVRTTVYRRIGEDALPDGSPHPAPW AKLERQFLIKLQGEETPSRMAALDELVMADWERALGYQPV TASSTKQSNVAGLMGRTVRLFMHASRRHFDRARIAHNL AEHRTKPGGVPESLTEETRIELLIDTLALWHGLFAGDRWRDP RAQKEWETSGPLSLKLPGRGDDDETAFGGPGRKAAMVVYR NELKPHAERMAHSDLSNLSKCWTDRAWQDDREWTAKSGR LRSLRRWITPRGLRPVSGDSAQLIERKAAAALRARHVGGLS MQRINTLTDLYRLLKSFKNRPEPSNLRKNIPEKG DARLIGFN QRLLDVRDRLREQRVKQLASRIVEAALGIGRIKIRRVAAAGSP RPTLRVDAACHAVVTENLSNYQPAELQTRRENRLMAWAS SKVHKYLAESCQLHGLHLREVQPNYTSRQCSRTGAAGLRG VAVSATDLLTNPWWMRDVAQAKARIEKALKNGRNGAVAD QLLVSAEAWALRIPERDRHDKADESVKAFHAERVILPRKG GDLFVAESARCNGKGHVPALQADLNAAANVGIRALLDPDW PGKWWVPCVGGTYSPSEKTSAGKVLHIDQLPHEMVDP PQVAPKSSAPQPKSSRAAKVKAKEFRAIENRWRTCSSELLSQ GKWIPSGEYWSKVEAAVCLVLNDQIT
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【表 1 - 1 4 2】

154	Cas12	MAAFQRSYTMNLKPATSEQDKFILWNRLFLTHWSVNEGAK IFGELFLNLRGGLSPELDIFDLKVKDDKKKKAFFVMGRRRL LALGWLSVEDNLSAGEHPFRIREIPVGRNMGKSQASTLLTEI LKNKGIKDEAVIKEWIDDCPSLIANIREDAVWINRASSFNSI TPCPTKDEVWIVLSGLLGLRFLDLSLEEVKGKETEYLYDLGE KETQSKSDPSKKARELFGNLFTQNPVLMKNSRDKKDTFAKE FYLAFFKEFKDYEKLKEKIESWRKEKEFPLIENPVAEKYPPEV TFTGSPCTVSKRYRKLLVSLELWPSSQDENGNIPTKTEKTEDK THNQVLLDYLLKACNEGNKGTQKIITPVWANNLKALELKL MNEIIRIGESSSTELQRLMIKMAARRISQTLWIKINEQTKHD AYQKKNKAFFKLSEIDKNGEACKWLENYELFRDSDSGGEE YHISLRAISCWKQILEEWQKNDSPKALREKVKEVQAEEEFK GDARLFEDLADDNARSVWLLPDGNKTPDILNWWCEYRTAE IDESRFKIPCYCHPHFHPVYVEYGKSNPKVIFAMKNNKVK KGHIEHGWNPQNPRSIALSLFNNGNRESSLVPIWESKRLWK DLGGEATQIGDIPRSDRMGLSGKRESVKPKAPFQKEVWNAR LQSDRRTLEKLEKYWNPESMKWIDDGKFLIQSKWFITFGPD METAEGPWKLYLKEKYVDNKILGNRSKENQKRGYRAKKLL SGYPAGMRILSVDLGHRYAASCAVWETITKKQITEELAYQP DNNSLFEHCKTIDKKIKNTVYRRIGEDSIDAPWAKLEKQFTI KLQGEDKSCYLLRSDEKELFRSILSKLSCLNNDTGHNILEMIE NLLRIVKAKIYRQGILARISYSMTAQYKPGKGGQKSPLSDED KIHLYSENLAAWSAIMGNQEWNEVDISDWYKTYISHLVSGP KPKEGNRKSDDRDKIIEYFLPAARKLYDDNETRIKIHDLFKEL WDENNKQLSAVLKEIKKILPKGIRYFDKNTDNPSKWKNQ SKLKQITHRGGLSMQRIVAIEEYYKLAKAYKNHPEPDDLTK NIPLPGDNSSAGFNQRIRDTLERMKEQVRVKQIASRIVESALG LGIEGYKKRPLTPENKPCQAIVIEDLSHYRPDELQTRRENRR LMQWSSSKVKKYLKEACEMHDVRLVEISPEYTSRQDSRTG AAGLRICIDINIREFLKDSSRWQNKINTIQKKPANKKSNLDQY LIELNESLGNKYKDKVIPSDNFVRIPRKGGDVVFSSSKESPV KGIQADLNAAANIGLKALLDPDWAGAWWYILIEVKSNHVP YGEKYKGSECLRAWKFSGLENQVMKNNMNLWRDLQSQFS GEDKWMSYKEYNELTEKRVINILRERAGLELIKE
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【表 1 - 1 4 3】

155	Cas12	MEDYSGFVNIYSIQKTLRFELKPVGKTLEHIEKKGFLKKDKI RAEDYKAVKKIIDKYHRAIYIEEVFDSVLHQKKKKDKTRFST QFIKEIKEFSELYYKTEKNIPDKERLEALSEKLRKMLVGAFK GEFSEEVAEKYKNLFSKELIRNEIEKFCETDEERKQVSNFKSF TTYFTGFHSNRQNIYSDEKKSTAIGYRIIHQNLPKFLDNLKIE SIQRRFKDFPWSDLKKNLKKIDKNIKLTEYFSIDGFVNVLNQ KGIDAYNTILGGKSEESGEKIQGLNEYINLYRQKNNIDRKNL PNVKILFKQILGDRETksFIPEAFDDQSVLNSITEFAKYKL DKKKKSIIAELKKFLSSFNRYELDGIYLANDNSLASISTFLFD DWSFIKKSVSFKYDESVGDPKKKIKSPLKYEKEKEKWLKQK YYTISFLNDAIESYSKSQDEKRVKIRLEAYFAEFKSKDDAKK QFDLLERIEEAYAIVEPLLGAEYPRDRNLKADKKEVGKIKDF LDSIKSLQFFLKPLLSAEIFDEKDLGFYNQLEGYYEIDSIGHL YNKVRNYLTGKIYSKEKFKLNFENSTLLKGWDENREVANL CVIFREDQKYYLGVMDKENNTILSDIPKVKPNELFYEKMVY KLIPTPHMQLPRIIFSSDNLsiYNPSKSILKIREAKSFKEGKNFK LKDCHKFIDFYKESISKNEEDWSRFDKFSKTSSYENISEFYRE VERQGYNLDFKKVSKFYIDSLVEDGKLYLFQIYNKDFSIFSK GKPNLHTIYFRSLFSKENLKDVCCLKNGEAEMFFRKKsINYD EKKKREGHHPELFEKLKYPILKDKRYSEDKFQFHLPISLNFK SKERLNFNLKVNEFLKRNKDINIIGIDRGERNLLYLVMINQK GEILKQTLDSMQSGKGRPEINYKEKLQEKEIERDKARKSW GTVENIKELKEGYLSIVIHQISKLMVENNAIVVLEDNLIGFKR GRQKVERQVYQKFEKMLIDKLNFLVFKENKPTEPGGVLKA YQLTDEFQSFEKLSKQTGFLFYVPSWNTSKIDPRTGFIDFLHP AYENIEKAKQWINKFDSIRFNSKMDWFEFTADTRKFSENLM LGKNRVWVICTTNVERYFTSKTANSSIQYNSIQITEKLKELF VDIPFSNGQDLKPEILRKNDAVFFKSLLFYIKTTLSLRQNNGK KGEEKDFILSPVVDKGRFFNSLEASDDEPKDADANGAYHI ALKGLMNLLVLNETKEENLSRPKWIKNKDWLEFVWERNR
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【表 1 - 1 4 4】

156	Cas12	MKRIAKFRHDKPVKREAWSKGYRVHKNRIINKVTRSIKYPL VVKDEWKKRLIDDAAHDYRWLVGPINYSWCRDPNQYSIL EFWIDFLCVGGVFQSSHSNICRLAIQLSGGSVFEQEWKDLSP FVRANLIQGIKPAEFIGFLTAEFRSSSNPKNFISKFFEKSNEDL ESLTNEFASIVDFIKAKDISLLRKSLPSCCKIAPNLWEKAVGS HSTNELLKLLTKYTRVMLVAEPSHSDRVFSQTVLQSNQDD PELTGPLPSHKVGKASYLFIPEFIREVNLDKISKLDLSAKSKL AVEQVKKLSELTSDFKQIENQSEAYFGLSTSFNELSNFLGILI RTLRNAPEAILKDQIALCAPLDKDILKITLDWLCRAQALPE NPRFETNWAERYSYLGGIKSWFSNYENFFEIPQAASSQQN NNREKKLGNRSAIRALNLKKEAFEKARETFKGDKGTLKID LAYRLLGSISPEVLQCDEGLKLYQQFNDELLVLNETINQKFQ DAKRDIAKKEKESFEKLQRNLSSPLPRIPEFFGERAKKGYQ KARVSPKLARHLLLECLNDWLARFAKVEESAFSEKEFQRILD WLRTSDFLPVFIRKSKDPPSWLRYIARVATGKYFFWVSEYS RKRVQIIDKPIAQNPLKELISWFLLNKDAFSRDNELFKGLSSK MVTLARIMAGILRDRGEGLKELQAMTSKLDNIGLLHPSFSVP VTDSLKDAAFYRAFFSELEGLLNIGRSRLIERITLQSQQSKN KKTRRPLMPEPFINEDKEVFLAFPKFETKNKVKGTRVVYNP DEVNWLLSPIRSSKGQLSFMFRCLSEDAKIMTTSGGCSYIVE FKKLLEAQEEVLSIHDCDIIPRAFVSIPFTLERESEETKPDWKP NRFMGVDIGEYAVAYCVIEKGTDSIEILDCGIVRNGAHRVLK EKVDRLKRRQRSMTFGAMDTSIAAARESLVGNYRNRLHAI ALKHGAKLVYEYEVSAFESGGNRIKKVYETLKKSDCTGETE ADKNARKHIWGETNAVGDQIGAGWTSQTCAKCGRSFGADL KAGNFGVAVPVPEKVEDSKGHYAYHEFPFEDGLKVRGFLK PNKIISDQKELAKAVHAYMRPPLVALGKRKLPKNARYRRG NSSLFRCPFSDCGFTADADIQAAYNIAVKQLYKPKKGYPKE RKWQDFVILKPKEPSKLFDKQFYRPN
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【表 1 - 1 4 5】

157	Cas12	MAIRSIKLLKLTHTGPEAQNLKGIWRTHRLNEGVAAYM KMLLLFRQUESTGERPKEELQEELICHIREQQQRNQADKNTQ ALPLDKALEALRQLYELLVPSSVGQSGDAQIISRKFLSPLVDP NSEGGKGTSKAGAKPTWQKKKEANDPTWEQDYEKWKKRR EEDPTASVITTL EEYGIRPIFPLYTNTVTDIAWLPLQSNQFVR TWDRDMLQQA IERLLSWESWNKRVQEEYAKLKEKMAQLN EQLEGGQEWISLLEQYEENRERELRENMTAANDKYRITKRQ MKGWNELYELWSTFPASASHEQYKEALKRVQQRLRGRFGD AHFFQYLMEEKNRLIWKGNPQRIHYFVARNELTKRLEEAKQ SATMTLPNARKHPLWVRFDARGGNLQDY YLTAEADKPRSR RFVTFSQLIWPSESGWMEKKDVEVELALS RQFYQQVKLLKN DKGKQKIEFKDKGSGSTFNHGLGGAKLQLERGDLEKEEKNF EDGEIGSVYLVNVVIDFEPLQEVKNGRVQAPYGGVQLIRPN EFPKVTTYKSEQLVEWIKAS PQHSAGVESLASGFRVMSIDLG LRAAAATSIFSVEESSDKNAADFSYWIEGTPLVAVHQRSYM LRLPGEQVEKQVMEKRDERFQLHQRVKFQIRVLAQIMRMA NKQYGDRWDELDSLKQAVEQKKSPLDQTDRTFWEGIVCDL TKVLPRNEADWEQAVVQIHRKAEEYVGKAVQAWRKRF AA DERKGIAGLSMWNIEELEGLRKLLISWSRRTNPNQEVNRFER GHTSHQRLLTHIQNVKEDRLKQLSHAIVMTALGYVYDERK QEWCAEYPACQVILFENLSQYRSNLD RSTKENSTLMKWAH RSIPKYVHMQAEPYGIQIGDVRAEYSSRFYAKTGTPGIRCKK VRGQDLQGRRFENLQKRLVNEQFLTEEQVKQLRPGDIVPDD SGELFMTLTDGSGSKEVVFLQADINA AHNLQKRFWQRYNE LFKVSCRVIVRDEEEYLVPKTKSVQAKLGKGLFVKKSDTAW KDVYVWDSQAKLKGKTTFTTESE SPEQLEDFQEIIIEAEAK GTYRTLFRDPSGVFFPESVWYPQKDFWGEVKRKLYGKLRE RFLTKAR
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【表 1 - 1 4 6】

158	Cas12	MTHAKKIPFPVLKRSTLRKARQRIAAGSITAGERPFNSTVTR VVPVKDPVSDQVWAVAREAAAMTLRGFGQGSFLDMLIHLHA DGFRLFPSGREREAFFLKDLFDPTFDDGARRAFGDVMPGF TANSLREILGAPARKCGKVTSEILLPRLSKGLGVKKSAAAPP EVLSSLAALCEAFPTWSLLTAVDGGVGKVIDDVLRTHGSR LPSLEKAWSTNLPEVPKGLGVPTLAFDDQAPAQSEQTPTGR FAGVVARYLAETFASNPEATAGDASKAVQAKVTTPNGNAL SWLFAVGRRAMCSTTLDELAIGLNITSPRGRHALSSLKERM MALPALSVLGERAYPDSRATLQGTVDSLIANYVNRLFELSSS ATSIAQTKLILPAAIQGD TAVFDGMPFSAEDVGALFEQLPSEI AKLEHAVKVLVGKERTSTLGYQKAVDDVDEFGVWASSVD AVIGQINARLKTLERAQEPLGKLMGDGKLRVNIHEPEGP AVEIIPVLDQELQDVLTS CRTAFADLEARYPMTVAKAQRHA EAEVRNALELASRKEGGLSLASADVPALAKRKILEPIISIARR SSPAMATAVLT ECLRQKLIVKGTGSESLRGYVLSGEQVIYA HPLSRRRSIVRLDREGLQNFDALEFLDALQKDATQRTNVRE SLIVEMARQSLLLSALPDRIEIGAISWQTPSQNHAPWANLR PVNGTVGRSETIKSFTAVFHSRISGLLYRLNRQKFMEKYDLR CFIGSTLLFSPKNADWAPPPQYRHGRFSALLARSDFPWEGAE GTHANAVRLAKFLIDETR NATDLQQAIAAKALLAQLPHDW VVCCDFD GAPS YE GAFVSAGEVSAWAKRSGYLLTPPRHFA GAFLEGFKSTKISPHGLTFERMLERDGD SVIETGRRVTA AFPI TQEVAPAAQPWKPRHLAGLDLGEAGLG VCLKNLDNGHEQT LLLKTRKTRLLAHS AEHYRRKDQPRQVFRKQYNQSSENA IK AAIGEVCGLIDNLIARYDAVPVFESQAAAARGSNRMVARVY AGVLQRYTYVVGNGAADATRTSHWL GANRWSYSFGADV I PKVRDLSP EVLRSIKK PENVFRDALGFPGVL ANAWRTSMICS VCGTDPIGALEEIAANQISFVTDNEGEGSLDLGDGRKVT LR VEVPTSSALTKREASRRKRRAPWEAKVGT VWTLTRKSHRD DLLTTIRSLRRPSSTFQGSTTKQWEFHCPCCGQIQQADVNA ASNLVRRYFVRASDNARARQHWADDSKRLAFIASMG PDRS AREEKVS
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【表 1 - 1 4 7】

159	Cas12	MNRIYQGRVTKVEKLKNGKSPDDREELKDWQTALWRHHE LFQDAVSYYTLALAAMAEGLPDKHPINVLKRMEEAWEFF PRKTVTPAKNLRDSVRPWLGLSESASFGDALKKILPPAPENK EVRALAVALLAEKARTLKPQKTSASYWGRFCDDLKKKPNW DYSEEELARKTGSGDWVAGLWSEDALNKIDELAKSLKLSSL VKCVPDGGINPEGARNLVKEALDHLEGVSNGTKKEKNDPG PAKKTNNWLRQHASDVNRNFIHKNKNQFSSLPNGLITERAR GGGININKTYAGVLFAFPCPFTFDYVRAAVPEPKVKKVDQ EKKSEQSATWTELEKRILRIGDDPIELARKNNKPIKFAFTALE KWSDQNSKSCWSDFDKCAFEEALKTLNQFNQKTEEREKRR SEAEAEELKYMMDENPEWKPKKETEGDDVREVPILKGDPRY EKLVLKFGDLDEEGSEHATGKIYGPSRASLRGFGKLRNEWV DLFTKANDNPREQDLQKAVTGFQREHKLDMGYTAFFLKLC ERDYWDIWRDDTEVEVKKIREKRWVKSVVYAAADTRELA EELERLQEPVRYTPAEPQFSRRLFMFSDIKKGKQGAHIREGL VEVSLAVKDQSGKYGTCTVRLHYSAPRLIRDHLSDGSSSM WLQPMMAALGLSSDARGCFTRDSKGNVKEPAVALMSDFV GRKRELRLMLLNFPVDLDISKLEENIGKKARWEKQMNTAYE KNKLKQRFHLIWPGMELKETQEPGQFWWDNPTIQKEGMYC LAIDLQRRRAADYALLHAGVNRDSKTFVELGQAGGQSWFT KLCAAGSLRLPGEDTEVIREGKRQIELSGKKGRNATQSEYD QAIALAKQLLHNENSAELESAAARDWLGDNAKRFSFPEQND KLIDLYYGALSRYKTWLRWSWRLTEQHKELWDKTLDEIRK VPYFASWGELAGNGTNEATVQQLQKLIADAAVDLRNFLEK ALLHIAAYRALPLRENTWRWIENGKDGKGKPLHLLVSDGQSP AEIPWLRGQRGLSIARIEQLENFRRAVLNRLLRHEIGTKPE FGSSTCGESLPDPCPDLDKIVRLKEERVNQTAHLIAQSLGV RLKGHSLFTEEREKADMHGEHEVIPGRSPVDFVLEDLSRY TTDKSRSRSENSRLMKWCHRKINEKVKLLAEPFGIPVIEVFA SYSSKFDARTGAPGFRAVEVTSEDRPFWRKTIEKQSVAREVF DCLDNLVGKGLNGIHLVLPQNGGPLFIAAVKEDQPLPAIRQ ADINAAVNIGLRAIAGPSCYHAHPKVRLIKGESGTDKGKWL PRKGKEANKRENAQFGNVDDLLEVKNRLDIDSDVLKGDN TNLFHDPLNIACYGFATIQNLQHPFLAHASAVFSRQKGAVA RLQWEVCRAINSRRLEAWQKKAEKAAVKR
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【表 1 - 1 4 8】

160	Cas12	MSHELAEQSPSPKNKEPTCEESDAIRKNRRILLALSWLSVED DCSAPTGTFRVASGKDSEAERKNKVLTAFRSILTARRMRSQ DVESWIADCAASLSAKIREDAVWINRSACFDQRALDLKVL REYAKAAVMSFFGPLDEYFKLPDEADDTKPAVGGDGPDFR TLARQWVSTNFGTGKKSDSEIAQNLRLKADANLAPFSGKP KAALIAHLSVELDGSTADIDGLCRAIGWNTGRPSKGRVAIER LPDPPTETSIQTMQQKFREEAEAKASSKGLRQVPEWMPAFQ KSIERDCGMPFKLGEGRDHIGEFVMLDHAARRVSIGHSWI KRAEAERRRFEADAQRLNHIPAAAKDWLDQFVQFRSGSSG AAAAGGEYRIRRRRAIEGWDEIHKRWKRAACKSPEDRVAAAR EVQADPEIEKFGDIQLFEALAADDAECVWRGDGNGTPDPLK DYVAATDALDKMRRFKVPA YRHPDPLAHPVFGDFGNSRGD IRFAVHEAAKATRGTGKRIAKDQKEWIRERHGLRMGLWDGQ SVRTADLRWSSKRLVDDLALRNHVTTTTRTG PVS RADRLGR AAAGLGADAAACVAGLFELPDWNGRLQAPRAQLDAIAACV AANGGKWDDKARKLRDRIEVLVSFSAKLECCGPFMEYASQ NGIQPNGKGEYYPHAERNKGRTGHAKLILSRLPGLRVLA VD LGHRFAAACAVWEALS KIAFDAETK GREVVSGGRAADDLY CHTRHLDCAGKARTTIYRRIGPDKLPDGS DHPAPWARLDRQ FLIKLQGEERPARAAGPAETA AVQQIETDLGRARGQEDLPPR PVDSLMREAVRTIRIALRRHGDAARIA YAFKPGAKRLKPGG GAQDHTPETHADAILEALLRWHELATGARWRDPWAETQW KDWVQPHISATLPELANDADRWERKRHRAALEQVLRPVAQ MLIQRPTDALHQVWSKHWAEDE LKWPSRLRWLRNWLLPR GPRARSGAARNVGGLSLLRIATLRELYQTQKAYAMRPEPDD PRKRIAGRND DRYDELGRSVLQVIERLREQRVKQLASRIVEA ALGVGRAKPTRGRQRPQSRVDVPCHAVIIESLRNYRPDELQ TRRENRAIMNWSAGKVRKYLEEACQLHGLHLREVMPNYTS REDSRTGLPGVRCVDVPVDPKLGKPKAYWWSVLSTARKK SIGDAASHDKQGDATSRFIVELAGCLDRLKADGKPLPKTVR VPRIGGDLFVAAPPTSCTAPAHQHPACD GARALQADLNAA ANIGLRALLDPDFPAKWWYVPCIDDQRGLALPRADKVLGS ACFPGDPATFGSLLKTRTAAGPAVDGQAAPDRKPRTGTHRP GSAKSRS LGDGKATTNYWSDRSARDLRPADEGGHWQPTNV YWNWVRKRALLGLYSFNGLSPPSDDRP
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【表 1 - 1 4 9】

161	Cas12	MAIRSIKLLKLTNTGPEAQNLRKGIWRTHRLNNEGVAYYM NMLLLFRQESTDKKTKQEIHEELIRHIRAQQQRNHADEKTQ ALPLEKALEALRKLYELLVPSSVGQSGDSQIISRKFLSPLVDP NSEGGKGTSKAGAKPAWQKKKEANDPTWKQDYEKWKKR REEDPTASVITTELEYGIRPLFPLYTNTVAEIAWLPLKSGQFV RTWDRDMFQQAIEGMLSWESWNRRVQEEYAKLEGKMAQL NEQLEGGEWIRLLEQYEEKREQELRENMTAANDKFRITKR QMKGWKELYEVWSTFLPSASQEYKEAIKRVQQRLRGKFG DFHFFQYLSEENRLIWKGPNQRIHYFVARNELTKKLEKAK QSARRTLDPANKHPLWVRYDARGGNLQDYLLTAESDKPRS RRFVTFSQLIWPSESGWLEKKDVQAEALSRQFYQQVTFLK NDKGKQEIEFKDKGSGTTFSGHLGGAKLQLERSVLENKERK FEEGEIGKAYLNVAIDFKPLQEVKNRVRQAPYQVQLRLRLP NAFPKVRTYKSEELVEWIKASQHLGVSLSAGFRVMSIDL GLRAAAATSIFSVEESSDKNATKLAYWIEGTPLVAVHQRSY MLRLPGEQVEQHVWEKRDERGDQHKRVRVFQIRRLAEIIRLA NKQYGDRWDELNRLDEAVSKEKSPLDQADRTFWEGIVSDL TTALPLNDADWTEAVVQIHRKAELYVGKVVQAWRKRFNA DERKGIAGLSMWSIEELDGLRKLLISWSRRTRNPQEVNRFEP EHTGHKRLLTHIQNVKKDRLKQVSHAIVMTALGYTYDEKK QKWCAKYPACQVILFENLSQYRSNLDRSAKENSTLMKWAH RSIPKYVHMQAEPYGIQIGDVRAEYSSRYYAKTGTPGIRCKK LREHDVKGWRLDHLKKRLVNEQFLTEAQVEQLKAGDIIPD DSGELFMTMTDGSGGKEIVFLQADINAAQNLQKRFWQRNS ELFKVSCRVIVRDEAEYLVPQAKKVQEKLKGKGVFVKKSDT AWKEVYVWDSQAKLKGKTTTFTEESPEQLEDLQEMIEEAE EAKGTYRTLFRDPSGVFFPDFVWNTPKDFWGEVKKLYGK LRERLLTKVR
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【表 1 - 1 5 0】

162	Cas12	MNRIYQGRVTKVEVPDGKDEKGNIKWKKLENWSDILWQH HMLFQDAVNYYTLALAAISGSAVGSDEKSIILREWAVQVQN IWEKAKKKATVFEGPQKRLTSILGLEQNASFDIAAKHILRTS EAKPEQRASALIRLLEEIDKKNHNVVCGERLPFFCPRNIQSK RSPTSKAVSSVQEQKRQEEVRRFHNMQPEEVVKNAVTLDIS LFKSSPKIVFLEDPKKARAELLKQFDNACKKHKELVGIKKAF TESIDKHGSSLKVPAPGSKPSGLYPSAIVFKYFPVDITKTVFL KATEKLAMGKDREVTNDPIADARVNDKPHFDYFTNIALIRE KEKNRAAWFEFDLAAFIEAIMSPHRFYQDTQKRKEAARKLE EKIKAIIEGKGGQFKESDSEDDDDVDSLPGFEGDTRIDLRLKLV TDTLGWLGESETPDNNEGKKTEYSISERTLRIFPDIQKQWSE LAEKGETTEGKLLEVLKHEQTEHQSDFGSATLYQHLAKPEF HPIWLKSGTEEWHAENPLKAWLNYKELQYELTDKKRPIHFT PAHPVYSPRYFDFPKKSETEEKEVSKNTHSLTTSLASEHIKNS LQFTAGLIRKTNVGKKAIKARFSYSAPRLRRDCLRSENNENL YKAPWLQPMMLRALGIDEEKADRQNFANTRITLMAKGLDDI QLGFPEANSQELQKEVSNGISWKGQFNWGGIASLSALRWP HEKKPKNPPEQPWWGIDSFSCLAVDLGQRYAGAFARLDVS TIEKKGKSRFIGEACDKKWKYAKVSRMGLLRPLGEDVKVWR DASKIDKENGFAFRKELFGEKGRSATPLEAEETAELIKLFGA NEKDVMPDNWSKELSFPEQNDKLLIVARRAQAAVSRLHRW AWWFDEAKRSDDAIREILESDDTDLKQKVNKNEIEKVKETIIS LLKVQKQELLPTLLTRLANRVLPLRGRSWEWKHHQKNDGF ILDQTGKAMPNVLIRGQRLSMDRIEQITELRKRFQALNQSL RRQIGKKAPAKRDDSIPDCCPDLEKLDHMKEQRVNQTAH MILAEALGLKLAEPKDKKELNETCDMHGAYAKVDNPVSFI VIEDLSRYRSSQGRSPRENSRLMKWCHRAVRDKLKEMCEV FFPLCERRKAGSAWVSLPPLLETPAAYSSRFCRSRGVAGFRA VEVIPGFELKYPWSWLKDKKDKAGNLAKEALNIRTVSEQLK AFNQDKPEKPRTLLVPIAGGPIFVPISEVGLSSFGLKPQVVQA DINAAINLGLRAISDPRIWEIHPRLRTEKRDGRLFAREKRKY GEEKVEVQPSKNEKAKKVKDDRKNYFADFSGKVDWGFG NIKNESGLTLVSGKALWWTINQLQWERCDFDINKRHIEDWSN KQKQ
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【表 1 - 1 5 1】

163	Cas12	MGEENNFSQFTGLYELSKTLRFELKPVWETEKLLIENQVFPK DKIVYESYKKIRPYLDKLHLQFIEESLSSVKLDFNEIEKKFLE WDKEKDKTTKNKLKEEIFWKNKKWWLNSNLRKDMVSYFN LNWKKWINNFENKTIVNEKWKEEKIKIKWEWYKILLSDSNL NILSFFTQEKEDWNVLIEKYIENPNFKENDWEKKFILEKQN LFKSFKWFTTYFTNFNHSRENFYKDDWKSRIATRIIDENLI FFLKNKKAFADEKYKNNSEITVKFNEKLLNFWEKLEDFSLDF YNRCYTWKQIEYYNQLIWELNSVVNHEKQAKFSEYTQNKK VSENNKFNKYDFPIFKELYKQILSEKATEQKFIEINDFKELKQ NLQELIEKNKQKNKFAINLTKSLIEKIDEYDFEKIYISKLSLNT ISSKFFWSNKWFFIQENLEKNIWKKKNWKIDLPDFIKLSDI KTALENFNKILFEDKENKENIFKEEFDNITENNIFIKFMKIYEN EFINLIEWKKNNKWDYEIWYNKSLLDLEKNILNISDFSDDK EEKEKQIEYIKKYLDSSLNIYRVMKYFALEKGKESVEWETF DDIFYNEFKKFYIDNEIISYYNEFRNYLTCKPYSSNKLKLNFE NWTLDGWDKNKEPDNYWTILRKNWKYFLALQIKWKNNIF YKKKWSWVIDIEEAYKIDLWDEFYEKMDYKFLPDPKKMLP KVIFAKSNVKLFNPSKEILQIKENETFKTWDFKVNDFYKIV DFYKENIIKYPDWKIFNFKFSDTKTYNNLSDFYKEIELWSYD LNFRKVSCKYILKSIEEKNIYLFYINKDFADWKTWSENHT MYFKWLFEENNINNIVLKLNWQAEIFRREASLKEKEVNRA KENKEKSHNIIENARYTKDKLFFHCPIKLNFAKHNEKINQEL KYISDNKEINIIWIDRWEKHLAYYSVINRDWNIIKDKNWNLV KWSLNIVWNNQNYHDKLETREKERQDARWSWKTWNIKD LKQGYISQVVHKLAEVIEHNAIIVFEDLNSWFKRWRQKIER QVYQKLEKALIEKLNLYTFKDKNFWENWHYLKAYQLTAPF ETFEKVWKQTWVIFYTDPSTSTCPACWFRKDLYLKYSNL KNALWDIEKIDSIFDWKRFIFEYNNKKVFTDRDRKRNISSEE SWIKWWKTIDNNITEFLEILFKKSNIDYTSWNNLILDIQEINE KELYKWVFDNFNAILNIRNSTIKDNSRTWDFICCPACDFDSR KENKIWIENWDDNWAFNIARKWIIILNKIDSYLNEKWSLDKI LWWDIMIVKQIDWDDFTHKK
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【表 1 - 1 5 2】

164	Cas12	MAQASSTPAVSPRPRPRYREERTLVRKLLPRPGQSKQEFREN VKKLRKAFLQFNADVSGVCQWAIQFRPRYGKPAEPTETFW KFFLEPETS LPPNDSRSPEFRRLQAFEAAAGINGAAALDDPA FTNELRDSILAVASRPKTKEAQLFSRLKDYQPAHRMILAKV AAEWIESRYRRAHQNWERNYEEWKKEKQEWENHPELTP EIREAFNQIFQQLEVKEKRVRICPAARLLQNKDNCQYAGKN KHSVLCNQFNEFKKNHLQGKAIKFFYKDAEKYLRCGLQSLK PNVQGPFRDWNKYLRYMNLKEETLRGKNGGRLPHCKNL GQCEFNPH TALCKYQQQLSSRPDLVQHDELYRKWRREY WREPRKPVFRYPSVKRHSIAKIFGENYFQADFKNSVVGRLR DSMPAGQYLEFAFAPWPRNYRPQPGETEISSVHLHFVGTRP RIGFRFRVPHKRSRFDCTQEELDELRSRTFPRKAQDQKFLEA ARKRLLETFFPGNAEQELRLLAVDLGTDSARAAFFIGKTFQQ AFPLKIVKIEKLYEQWPNQKQAGDRRDASSKQPRPGLSRDH VGRHLQKMRAQASEIAQKRQELTGTPAPETTTDQAACKAT LQPFDLRGLTVHTARMIRDWARLNARQIIQLAEENQVDLIV LESLRGFRPPGYENLDQEKRRVAFFAHGRIRRKVTEKAVE RGMRVVTVPYLASSKVCAECCRKKQKDNKQWEKNKKRGLF KCEGCGSQAQVDENAARVLGRVFWGEIELPTAIP
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【表 1 - 1 5 3】

165	Cas12	MGEENNFSQFTGLYELSKTLRFELKPVWETEKLLIENQVFPK DKIVYESYKKIRPYLDKLHLQFIEESLSSVKLDFNEIEKKFLE WDKEKDKTTKNKLKEEIFWKNKKWWLNSNLRKDMVSYFN LNWKKWINNFENKTIVNEKWKEEKIKIKWEWYKILLSDSNL NILSFFTQEKEDWNVLIEKYIENPNFKENDWEKKFILEKQN LFKSFKWFTTYFTNFNHSRENFYKDDWKSRIATRIIDENLI FFLKNKKAFADEKYKNNSEITVKFNEKLLNFWEKLEDFSLDF YNRCYTWKQIEYYNQLIWELNSVVNHEKQAKFSEYTQNKK VSENNKFNKYDFPIFKELYKQILSEKATEQKFIEINDFKELKQ NLQELIEKNKQKNKFAINLTKSLIEKIDEYDFEKIYISKLSLNT ISSKFFWSNKWFFIQENLEKNIWKKKNWKIDLPDFIKLSDI KTALENFNKILFEDKENKENIFKEEFDNITENNIFIKFMKIYEN EFINLIEWKKNNKWDYEIWYNKSLLDLEKNILNISDFSDDK EEKEKQIEYIKKYLDSSLNIYRVMKYFALEKGKESVEWETF DDIFYNEFKKFYIDNEIISYYNEFRNYLTCKPYSSNKLKLNFE NWTLDGWDKNKEPDNYWTILRKNWKYFLALQIKWKNNIF YKKKWSWVIDIEEAYKIDLWDEFYEKMDYKFLPDPKKMLP KVIFAKSNVKLFPNPSKEILQIKENETFKTWDFKVNDFYKIV DFYKENIHKYPDWKIFNFKFSDTKTYNNLSDFYKEIELWSYD LNFRKVSCKYILKSIEEKNIYLFYINKDFADWKTWSENHT MYFKWLFEENNINNIVLKLNWQAEIFRREASLKEKEVNRA KENKEKSHNIIENARYTKDKLFFHCPIKLNFAKHNEKINQEL KYISDNKEINIIWIDRWEKHLAYYSVINRDWNIIKDKNWNLV KWSLNIVWNNQNYHDKLETREKERQDARWSWKTWNIKD LKQGYISQVVHKLAEVIEHNAIIVFEDLNSWFKRWRQKIER QVYQKLEKALIEKLNLTFKDKNFWENWHYLKAYQLTAPF ETFEKVWKQTWVIFYTDPSTSTCPACWFRKDLYLKYSNL KNALWDIEKIDSIFDWKRFIFEYNNKKVFTDRDRKRNISSEE SWIKWWKTIDNNITEFLEILFKKSNIDYTSWNNLILDIQEINE KELYKWVFDNFNAILNIRNSTIKDNSRTWDFICCPACDFDSR KENKIWIENWDDNWAFNIARKWIIILNKIDSYLNEKWSLDKI LWWDIMIVKQIDWDDFTHKK
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【表 1 - 1 5 4】

166	Cas12	MATAINYPTTQRAYTLRLRGIDPQDQSWRDALWATHEAVN RGAKVFGEWLLTLRGGLDHLADAPVKVRGGTTRLPSDEE RRDRRVLLALSWLSVEDAHGAPPDASLIVAKGTDSDACRAR KLADALIAILQARSVAASEIGDPSKPPEDQPGTWLGDCMGS SAAIRDDAVVWNRSKAFDAATQSCPSLTRDEIWDFFLEPFAS PDAYLKPERAESDEGDSTSAATEDKAKDLVQKAGGWLSKR MGAGGGANFQDLARAYQAIAQWASSAQPGQSAQQAVGSL AGYLSQHGFSTANDATGVLAVISGPYKSATRNHITAIATS PEITPDLSKLQELATKDKAGCSSKIGGKGRPYATMILQQV EAACGFTYLQSDGPARHREFSVMLDHAARRVNVVAHSWIKN AEAERRQFESDARRIKKVPQDALNWLRGYCEERGGASGSLE GYRIRRRRAIDGWDQVVIRWSRSDCQSADDRIAAARQLQDDP EIDKFGDIQLFEALAAEEALCVWKPDPGNPTAQPLKDFVAAT EADAKKKRKFVPAYRHPDPLRHPVFTDFGNSRWGIEYSAHR APAKCDELGQQVDRLTQAVAEQRNLGDATAAQRASRESK LAEAQSKLVAAQTEFAAINDPHRVELKLWNGQAVAAIPMR WSSKRLIADLSLRRATQPSSDQRIGVTRADRLGRAAGNADD GRPVTITGLFQQDHWNGRLQAPRAQLDAIAKHVDKHGWD AKARRQIARIRWVVSFSAELSQQGPWFEFCHRFEGEDAPARP FVSRHGEYAVKHRDNDQRKGHAKLILSRLPGLRVLAVDLG HRYAAACAVWEAISSDQMRQACAAANAPAPHPLAMYIHLK STTAKGKPTTTIYRRIGPDKLPDGTTPHPAPWARLDRQFLIKLP GEDRPARAASPDEIKAVEDFEDSVGRVRTAVDPPRKRGVDL LMHDAVRTARLALARHGRRARIAFQLISQVRILPGGRPQTL DDAGRRDLLNDTLADWYALATDSRWTDAARQLWNERLA ALNGGFTIDPPADASQPEAERTRAQRRQAEQELRHRLASLV EALFCNPTLCQQLHQA WTDNRNADDQQWRSRLKWL SRWL LPRGGSRRDGSRRHVGGLSLTRISTLIDFRRKVQVG YFTRLR PDGSRAEIGPFGQSTLDAIQRLKDQRIKQLTSRIVEAALGIG VEQDRIWDAAKRWRTVKRPREPRYHVDDQGVQQRDPFRF QACHAVVIEDLSHYRPEETRTRREN RATMDWKS AETRKRRL ADHCQLYGLHLRDVNPQYTSRQDSRTGAPGCRCVDVSVAD FLTKPAWRKQVAQARGKVASNRGDARDRLLVLDHQLTT ANSLRGEMDSLIPVNGGEVFSADPRSPLAAGIQADLNAA ANIGLRALMDPDFLGTWWYVPCDPSTKKPHIEKVKGSI LAT VGALQATSEEAAPPRGRGGTRSAAPREVINLWRDPSAVR IQDATAGEVWDVTPVYWSIVKDRVVDVLRQRNTKSGD
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【表 1 - 1 5 5】

167	Cas12	MAVRSVKLKL VPRDGS AESVRKRKALWATHQFVNDAAA AYAELLLEMQRQEDVCRGTDDHGKDVIEPAAHWQAKLRAR LAAKQLPPVAVAEALPLLKAFYGSRLIKSFVANDKGVAGTG NATDLNTWLSGLVDPASVAGEKTELKQLLAELPLCEAAD ADFEGAARKMLAKSDAREALLEGPGTGVGWPAAYNANPT DSVWLDMLHKAAAKARLELADTTVSELKKLGVPFLLQAAS SNRVFGSGVLNPFERMAAAQAAAALLPWETKRHEMRKRR DKFADQLNQWDTEFGASHATALAAIRAFEAEESERARRESL GNEGTYRIGGRELRDAWTLLRDWLKGHSTATAAAREDKV RELQAKQGRSFGSHRLLSWLAKPAQQWLADHSAGDVVTRI AVRNARQRKLD TARTLPIWTGADAVKHPRFANFDPPNNTN QPGFDLRAGTQKGRLTLRLSLLTERADGLLLAQDHD FQLVP SRQMAEIVLHKDGKERALS WQSQDGIGRQVGDVGG SALLF SRDHAEC LLERKQITRLERGA WPAALPVWFKLSLDIGA EHK ALLKQRFKWGVWLNSALVTRNAKDAKGVP PPVGVTRVLAV DLGLRSAATVSVWQV VDAATPVVAGKWRVPLSDTLSAVH ERSAMLALPGEHVDAGVLAARRAANEKLAGLLAATSHLST VFKLGRAEQGDRRRELLERLGEGDDRRARA AVATTAAERD GLRAVLGATQDAWAGAVA AVWRRLETDLAGAIAAYRKQQ REDVQLRREARHGPGASQLPKQAAAERLLGGKSAWQIEYK ERV RKLLTRWIMRQRP GDTAVRRLARKDLGKYCGLLDHL TALKEDRAKTTADLIVQAARGRVRAHKDAHGRQQDRELW LAKYAPCDLIVMEDLGRYRFATDRPPSEN RQLMQWTHREV FRLVQM QAEVEGIQVLETGA EFSSKFDARTWAPGVRCEPIT KLWVERYRNGEMPWLADK ADEWRREGIELAQLVPGQLLPT GSGEQFVAVSATGGLRVRHADLNAAQCI ALRALTG HGTA F RLTARRLG DVFVSAKGLGKRPQGALWREFGSALPPAVVVL RPAGEVRYALRPFASARDA AAAALGLQLGALRNVDATDAES DAEDGDLAELLAGADPD RATFFRDPSGDVHGGAWVQAKV FWAEVRRHVRLGLQAQGLLPAAARSSEPRQMQLPLAGALP GDDIPL
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【表 1 - 1 5 6】

168	Cas12	MAAFQRSYTMNLKPATSEQDKFILWNRLFLTHWSVNEGAK IFGELFLNLRGGLSPELGIFDLNKDKDDRKKKALVMGRRRL LALGWLSVEDNLSAGDHPFRIREIPVGRNMEIKQATTLLTEI LKNKGVKDEAVIKEWIDDCTPSLIANIREDAVWINRAKSFYS MNPCPTKDEVWKILSYVLNTSFLDLSLNDSSERDNTKNKKG TKENEKDVSNKSKELYGWLFTKNPNKMREAGENKDKFINN FRENFTFTDYANLKVEIELWRKNNISNTLLITQKAKYPPEV KEANHPSKFSVGYRKLLVHLELWPSSKDENGDPKGIEGKD KSHNQILLDYLLEVCNEGKNTTKKVIVPAWADGIKTELESK ASIKVGDSTSSVLQRLMIKMAARRISQTLWIKINEQVRHDA YQKKNAFKLLCEIDKNGEACKWLENYELFRRDDSGGEEY HISARAISCWKQILEEWQKNDSSKALREKVKVQAEDKFG DARLFEDLADDNARSVWLLPDGNKTPDILNWWCEYRTADI DESRFKIPCYCHPHPFKHPVYVEYGKSNPQVIFSLKHKARK NRIDNGWNPKNPRILALLLLDIVRQKSTLAPFVWESKRLWK DLGGDATVTYKIPRSDRMGLSSIGNIDYARPEVPFLKEKWN ARLQSDRRTLEKLEKYWNPESMKWIDDGKFLIQSKWFITFG PDMETAEGPWKLYLKENINDNNYLGNRSKENQKRGYRAK KLLSGYPAGMRILSVDLGHRYAASCAIWETITKKQITEELAY QPDKNSVFEHSCKTIDKKIKNTVYRRIGDDSIDAPWAKLEKQ FTIKLQGEDKSCYLLRSDEKELFRSILSKLSCLNNDTGHNILE MIENLLRIVKAKIYRQGILARISYSMTAQYKPGKGGQKSPLS DEDKIHYLSENLAAWSALMGNQEWNEDGISDWYKKYISHL VSGPKPKEGNRKS DRDKIIEYFLPAARKLYDDNETRINIHD FKELWDENNKQLSAVLKEIKIILPKGIRYFDKNNDSSSRWK NNQSKLKQITHRGGLSLRRIVAIEGYKLAAYKNHPEPDN LTKNIPLPGDNSSAGFNQRIRDTLERMKEQVRVKQIASRIVES ALGLGIEGYKKRPLTPESKPCQAIVIEDLSHYRPDELQTRREN RRLMQWSSSKVKYLSEACEMHDVLLVEISPEYTSRQDSRT GVAGLRCIDINIREFLKDSSSWQNKIKTIQMKPTNKKSNLDQ YLIELNESLGERYKDKVIPSDKFVRIPRKGGDIFVSSSKESPV KGIQADLNAAANIGLKALLDPDWAGAWWYILIEAKSNHVIP YGKKYKGAECRLDFKFSGLNQVMKNNMNLWRDLQSQFS SEDKWMSYKEYNELTEKRVINILRERAGLELIEE
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【表 1 - 1 5 7】

169	Cas12	MPTRTINLKMVLGRKDDTAELRRALWTTHEHVNLAVAEVE RVLLRCRGRSYWTLDRRGDPVHVPESQVAEDALAMAREAQ RRNGWPVVGEDDEILLALRYLYEQIVPSCLLDDLKGKPLKGD AQKIGTNYAGPLFSDTCRRDEGKDVACCGPFHEVAGKYL GALPEWATPISKQEFDGKDASHLRFKATGGDDAFFRVSIEK ANAWYEDPANQDALKNKAYNKDDWKKEKDKGISSWAVK YIQKQLQLGQDPRTEVRRKLWLELGLLPLFIPVFDKTMVGN LWNRLAVRLALAHLLSWESWNHRAVQDQALARAKRDELA ALFLGMEDGFAGLREYELRRNESIKQHAFEPVDRPYVVSGR ALRSWTRVREEWLRHGDTQESRKNICNRLQDRLRGKFGDP DVFWHLAEDGQEALWKERDCVTSFSLNDADGLLEKRKGY ALMTFADARLHPRWAMYEA PGGSNLRTYQIRKTENGLWA DVVLLSPRNESA AVEEKT FNVRLAPSGQLSNVSFDQIQKGSK MVGRCRYQSANQQFEGLLGGAEILFDRKRIANEQHGATDL ASKPGHVWFKLTLDVRPQAPQGWLDGKGRPALPPEAKHFK TALS NKSKFADQVRPGLRVLSVDLGVR SFAACSVFELVRGG PDQGT YFPAADGRTVDDPEKLWAKHERSFKITLPGENPSRK EEIARRAAMEELRSLNGDIRRLKAILRLSVLQEDDPRTEHLR LFMEAI VDDPAKSALNAELFKGFGDDRFRSTPDLWKQHCHF FHDKA EKVV AERFSRWRTETRPKSSSWQDWRERRGYAGG KSYWAVTYLEAVRGLILRWNMGR TYGEVNRQDKKQFGT VASALLHHINQLKEDRIKTGADMIIQAARGFVPRKNGAGWV QVHEPCRLILFEDLARYRFR TDRSRRENSRLMRWSHREIVNE VGMQGE LYGLHVD TTEAGFSSRYLASSGAPGVR CRHLVEE DFHDGLPGMHLVGELDWLLPKDKDRTANEARRLLGGMVR PGMLVPWDGGELFATLNAASQLHVIHADINAAQNLQRRFW GRCGEAIRIVCNQLSVDGSTRYEMAKAPKARLLGALQQLKN GDAPFHLTSIPNSQKPENSYVMTP TNAGKKYRAGPGEKSSG EEDELALDIVEQAEELAQGRKTFFRDPSGVFFAPDRWLPSEI YWSRIRRRIWQVT LERNSSGRQERAEMDEMPY
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【表 1 - 1 5 8】

170	Cas12	MVTRALNLKL VVPRRPGELTKAEALWSTH DIVNRATSYYES QLLLCRQQDYQTRELTVSAGDQAPDL DALIANARDNRNRYR GLEKPQVVREKLRNLYEAIVPPAIGKTGTAQAVGAFVSPLL DADSRGFTEIFDKIEALPNWVDGVR AEEDALEAAADWLKS PQGKERLRPTGAPPTWIKLAKKKDAGWAAAFVADIDKKLK EVEGTPTLMQELRALGV MPLFPSFFASRIAGHKGAVSTWDR LALRLAVAHLLSWESWVELAAKEHAARVAKLEKFRDDNIL GEIADAVEALRLYEKERT EELQKKAQLDAEEVRTTSRTIRG WVDLREKWLKTDASPDALISLVAAEQKRKSGKFGDPQLFR WLAKPENHFVWNKPDFDPPSLFASLRMIEGLVERSKETAW MTLPDARLHPRSSQWEPHGGGNLKTFRLEQGEGGSLSVTL P LLRKSGDDSYVEEEHAFSLAGSKQIPNASLDVRRNKYCLSY RTPTGEEAEAVVGSADLLLDWYFLQQRSEHRPEEGDIGPAF LKLALDITPIDPVWGEREKT PAIHFFKTASGKNTRHADGVAP GFRMLAVDLGIRTLATCSVFELKATAPAGRLSFPIAHLDLHA VHERSFTLTLDGEDPDRDAERWRENKSAELRRLRMGLTRY RNIRNMREDAPDEREVLLEDLQEKVQEHGWAFEEPLLRELA KHKDTPEPIWEAELTKALAQFRSDFGVIVGEWRRSNRARST DSHAGKSMWAIDHLTNSRRFLMSWSLLSKPGQIRRLDRDK QGVFAKHLLDHLEGLKADRLKTGSDLIVQAARGFRRDKRG NWHKAYKPCHGILFEDLSRYRMRTDRPRRENSQLMKWAH RAVPKEVGMQAEVYGIRVEDTGAAFSSRFHAASHTPGIRMH PICQKDLENEWLLDEIEKQNSGVKRRELKLGQLVQLNGGEL FACVTASGVKTLHADINAAQNLQRRFFTRHGDAFRIVARKV LVDEEEVWVPRSLGKRLLGALGSHGKLVPTGHESGSCR FEE ITTRAWSKLSGEKLSDDR VGNEEDQIIASIEEEALERTGEVV VFFRDPSGQVLPRDLWYPSKTFWSIVKSTTLSKLKAAP
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【表 1 - 1 5 9】

171	Cas12	MEDKQFLERYKEFIGLNSLSKTLRNSLIPVGSTLKHIEYGIL EEDSLRAQKREELKGIMDDYYRNYIEMHLRDVHDIDWNE FEALTEVKKNQTDDAKKCLEKIQEKRRKEIYQYLSDDAVFS EMFKEKMISGILPDFIRCNEEYSEEEKEEKLKTVALFHRFTSS FNDFFLNRKNVFTKEAIAITAIGYRVVHENAEIFLENMVAFQ NIQKSAESQISHIERKNEHYFMEWKLSHIFTADYYMMLMTQ KAIEHYNEMCGVVNQHMKEYCQKEKKWNLYRMKRLHK QILSNASTSFKIPEKYENDA EVYESVNSFLQNVMEKTVMERI AVLKNNTDNFDLSKIYITAPYYEKISNYLCGSWNTIADCLTH YYEQQIAGKGARKDQKVKA AVKADKWKSLSEIEQLLKEYA RAEEVKRKPEEYIAE IENIVSLKEVHLLEYHPEVNLIENEKYA TEIKDVLDNYMELFHWMKWFYIEEAVEKEVNFYGELDDL YEEIRDIVPLYNKVRNYVTQKPYSDTKIKLNFGTPTLANGWSK SKEYDYNAILLQKDGKYYMGIFNPVQKPEKEIIEGHSHPLEG NEYKKMVYYYLPSANKMLPKVLLSKKGMEIYQPSEYIINGY KERRHIKSEEKFDLQFCHDLIDYFKSGIERNPDWKVFGFHFS D TDYQDISGFYREVEDQGYKIDWTYIKEADIDRLNEEGKL YLFQIYNKDFSEKSTGRENLHTMYLKNLFSEENIREQVLKLN GEAEIFFRKSSVKKPIHKKGTMLVNRTYMEEMHGESVKKNI PEKEYQEIYNMNRWKGELSAEAEKYLKKAVCHETKKDI VKDYRYSVDKFFIHLPTINYRASGKEALNSVAQRYIAHQND MHVIGIDRGERNLIYVSVINMQGEIIEQKSFNVVNKYNKEK LKEREQNRDEARKNWKEIGQIKDLKEGYLSGVIHEIAKMMI KYHAIVAMEDLNYGFKRGRFKVERQVYQKFENMLIQKLN LVFKDRSADEDGGVLRGYQLAYIPDSVKKLGRQCGMIFYVP AAFTSKIDPATGFVDIFNHKAYTTDQAKREFILSFDEICYDVE RQLFRFTFDYANFATHNVT LARNNWTIYTNGTRTQKEFVNR RVRDKKEVFDPTKMLKLELEGVEYQSGANLLPKLEKISD PHLFHELQRIVRFTVQLRNSKNEENDVDYDHVISPV LNEEGK FFDSSKYENKEEKESLLPVDADANGAYC IALKGLYIMQAI QKNWSEEKALSPDVLRLNNNDWFDYIQNKRYR
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【表 1 - 1 6 0】

172	Cas12	MAQASSTPAVSPRPRPRYREERTLVRKLLPRPGQSKQEFREN VKKLRKAFLQFNADVSGVCQWAIQFRPRYGKPAEPTETFW KFFLEPETSPPNDSRSPEFRRLQAFEAAAGINGAAALDDPA FTNELRDSILAVASRPKTKEAQRLFSRLKDYQPAHRMILAKV AAEWIESRYRRAHQNWERNYEEWKKEKQEWENHPELTP EIREAFNQIFQQLEVKEKRVRICPAARLLQNKDNCQYAGKN KHSVLCNQFNEFKKNHLQGKAIKFFYKDAEKYLRCGLQSLK PNVQGPFPREDWNKYLRYMNLKEETLRGKNGGRLPHCKNL GQCEFNPHLTALCKQYQQQLSSRPDLVQHDELYRKWRREY WREPRKPVFRYPSVKRHSIAKIFGENYFQADFKNSVVGRLR DSMPAGQYLEFAFAPWPRNYRPQPGETEISSVHLHFVGTRP RIGFRFRVPHKRSRFDCTQEELDELRSRTFPRKAQDQKFLEA ARKRLLETFFPGNAEQELRLLAVDLGTD SARAAFFIGKTFQQ AFPLKIVKIEKLYEQWPNQKQAGDRRDASSKQPRPGLSRDH VGRHLQKMRAQASEIAQKRQELTGTPAPETTTDQAACKAT LQPFDLRGLTVHTARMIRDWARLNARQIIQLAEENQVDLIV LESLRGFRPPGYENLDQEKRRVAFFAHGRIRRKVTEKAVE RGMRVVTVPYLASSKVCAECCRKKQKDNKQWEKNKKRGLF KCEGCGSQAQVDENAAARVLGRVFWGEIELPTAIP
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【表 1 - 1 6 1】

173	Cas12	MAVKSIVKLRLSECPDILAGMWQLHRATNAGVRYYTEWV SLMRQEILYSRGPDGGGQCYMTAEDCQRELLRRLNRQLH NGRQDQPGTDADLLAISRLYEILVLQSIGKRGAQQIASSF LSPLVDPNSKGGRGGEAKSGRKPAWQKMRDQGDPRWVAAR EKYEQRKAVDPSKEILNSLDALGLRPLFAVFTETYSRSGVDW KPLGKSQGVRTWDRDMFQQALERLMSWESWNRRVGE EYA RLFQQKMKFEQE HFAEQSHLVKLARALEADMRAASQGFEA KRGTAHQITRRALRGADRVFEIWKSIP EEALFSQYDEVIRQV QAEKRRDFGSHDLFAKLAEPKYQPLWRADETFLTRYALYN GVLRDLEKARQFATFTLPDACVNPIWTRFESSQGSNLHKYE FLFDHLGPGRHAVRFQRLLVVESEGAKERDSVVVPVAPSGQ LDKLVLREEEKSSVALHLHDTARPDGFMAEWAGAKLQYER STLARKARRDKQGMRSWRRQPSMLMSAAQMLED AKQAG DVYLNISVRVKSPSEVRGQRRPPYAALFRIDDKQRRVTVNY NKLSAYLEEHPDKQIPGAPGLLSGLRVMSVDLGLRTSASISV FRVAKKEEVEALGDGRPPHYYPHGTDDLVA VHERSHLIQM PGETETKQLRKLREERQAVLRPLFAQLALLRLLVRCGADE RIRTRSWQRLTKQGREFTKRLTPSWREALELELTRLEAYCG RVPDDEWSRIVDRTVIALWRRMGKQVRDWRKQVKS GAKV KVKG YQLDVVGGNSLAQIDYLEQQYKFLRRWSFFARASGL VVRADRESHFAVALRQH IENAKRDRLKKLADRILMEALGY VYEASGPREGQWTAQHPPCQLIILEELSAYRFSDDRPPSENS KLMAWGH RGILEELVNQAQVHDVLVGTVYAAFSSRFDART GAPGVRCRRV PARFVGATVDDSLPLWLTEFLDKHRLDKNL LRPDDVIPTGEGEFLVSPCGEEAARVRQVHADINA AQNLQR RLWQNFDITELRLRCDVKMGGE GTVLVPRVNNARAKQLFG KKVLVSQDGVTF FERSQTGGKPHSEKQTDLTDKELELIAEA DEARAKSVVLFRDPSGHIGKGHWIRQREFWSLVKQRIESHT AERIRVRGVGSSLD
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【表 1 - 1 6 3】

175	Cas12	MIKKSNFWQFTGLYELSKTLRFELKPVWETLNILEKDWVSQ KDKEVEENYNKIKVFFDSLHREFVKQSLENWYLELLENFYN SYIELNKNIENKKNKSLQKLFKSSKELKKELVSFFEWKWN DWKQKYSFLKKWWIDVLNEKEVLDLMWEFYPKEKELFKK FDKFFTYFSNFKESRKNFYADDWRAWAIATRVIDENLITFIK NIEDFKKFKNNFSDFIENGFSWDWKIKINWFTLEEKQVFDLDF YNNCLLQDWIDNYNKKILWWFSEENWNKIQWINEKINLFKQ NQNKTNKSDVKFPRFKLLYKQILSEKEKLIFVDEIENDEKLIN FIKESKNNNLIKVEKAIEITENFIKNNETFELDKIYLSKISINTIS NKFFSSWDYILKEGFDKWEIKEFISFEDLKNAFGKIKYENLE DIFKSNIYITDYIAINWEDLYKNFLNIFLYEFKQNONEINFYNSE LEKLFLEKFEKTETQVQIIKNYFDSVLSLYKMTKYFALEKGG KKIEDLETDNNFYNDFFVYYEDFEIWKDYNLVRNFITKKQV KTDKFKLNFENSQFLTGWDDKEKERLWIILKKDEKYYLWI LKNNKIFNSYNYESWDFYEKMSYKQLNNVYRQLPRFAFSK AKREVYWITPELEQIKEEFDIFQKNKEKWEKFDIEKLKKLIN CYKKWFIKTYENEFDLEKIKNTDYLDLATFYDEIEQKTYKID FNKISENFINAKVNSWELYLFIYNKDFSETKKAWSKENIHT KYFKLLFDEKNLEKLVIKLSWWAEMFFREKTEKLKTKLDKS WKEVLEHRRYSKDKIMLHLSITLNANKWDSFWFNKMOVNEY LNKNEDIKIIWIDRGEKHLAYYSVIDKNWKIEEIDTLNIIKSSD WKITNYLEKLEKIESSRKDSRVSWWEIENIKELKNGYISQVV NKLAELIHKYNAIIVFEDLNIWFKRWRQKIEKQIYQKLELALA KKLNYLTQKDKNDNEVLWNLKALQLVPKVNDYQDIANYK QSGIMFYTRANYTSTTCPCCWFRKNYISNSDTKEKQKKDFE KIDIKFDGEKFIFSIEHQDKKAKQKSNKTNFSVNSNFSRFBY NSKKMLVEEVNLNLELQNLFKDIDLKWDINKQILEKDSYFY KSLTYFNLILQLRNSDSKNDIDYITCPSCNYHSDWDFQGLE YNADANWAYNIARKWIIMLDRIEKNFEKPDLYVSDIDWDNF TQK
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【表 1 - 1 6 4】

176	Cas12	MIKKSNFWQFTGLYELSKTLRFELKPVWETLNILEKDWVSQ KDKEVEENYNKIKVFFDSLHREFVKQSLENWYLELLENFYN SYIELNKNIENKKNKSLQKLFKSSKELKKELVSFFEWKWN DWKQKYSFLKKWWIDVLNEKEVLDLMWEFYPKEKELFKK FDKFFTYFSNFKESRKNFYADDWRAWAIATRVIDENLITFIK NIEDFKKFKNNFSDFIENGFSWDWKIKINWFTLEEKQVFDLDF YNNCLLQDWIDNYNKKILWWFSEENWNKIQWINEKINLFKQ NQNKTNKSDVKFPRFKLLYKQILSEKEKLIFVDEIENDEKLIN FIKESKNNNLIKVEKAIEITENFIKNNETFELDKIYLSKISINTIS NKFFSSWDYILKEGFDKWEIKEFISFEDLKNAFGKIKYENLE DIFKSNIYITDYIAINWEDLYKNFLNIFLYEFKQNONEINFYNSE LEKLFLEKFEKTETQVQIIKNYFDSVLSLYKMTKYFALEKGG KKIEDLETDNNFYNDFFVYYEDFEIWKDYNLVRNFITKKQV KTDKFKLNFENSQFLTGWWDKDEKERLWIILKKDEKYYLWI LKNNKIFNSYNYESWDFYEKMSYKQLNNVYRQLPRFAFSK AKREVYWITPELEQIKEEFDIFQKNKEKWEKFDIEKLKKLIN CYKKWFIKTYENEFDLEKIKNTDYLDLATFYDEIEQKTYKID FNKISENFINAKVNSWELYLFIYNKDFSETKKAWSKENIHT KYFKLLFDEKNLEKLVIKLSWWAEMFFREKTEKLKTKLDKS WKEVLEHRRYSKDKIMLHLSITLNANKWDSFWFNKMOVNEY LNKNEDIKIIWIDRGEKHLAYYSVIDKNWKIEEIDTLNIIKSSD WKITNYLEKLEKIESSRKDSRVSWWEIENIKELKNGYISQVV NKLAELIHKYNAIIVFEDLNIWFKRWRQKIEKQIYQKLELALA KKLNYLTQKDKNDNEVLWNLKALQLVPKVNDYQDIANYK QSGIMFYTRANYTSTTCPCCWFRKNYISNSDTKEKQKKDFE KIDIKFDGEKFIFSYEIIQDKKAKQKSNKTNFSVNSNFSRFBY NSKKMLVEEVNLNLELQNLFKDIDLKWDINKQILEKDSYFY KSLTYFNLILQLRNSDSKNDIDYITCPSCNYHSDKDWFQGLE YNADANWAYNIARKWIIMLDRIEKNFEKPDLYVSDIDWDNF TQK
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【表 1 - 1 6 6】

179	Cas13	MGAIKNKHIFAAAYANLAIDGLIKTLNFIAKKLDTQKQLSSW DIKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKK GERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPG GYDIPSSLNCIYDSAINIIKERFQAEEKEMEHLRRYTRKKGRV VLKTEDDHFYITLANNNDLSEKGYAFFISMFLERKYSYLFL KKLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQ DRALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPY GLPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYFH NGYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALN VKSIDISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGK DTYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHK SHCPLSVKDIIERSIHKSTKQKHPEERSELMLRRVMKAIFWT DSKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWL QPSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLI NSSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQ GKLNIQCHPLRDLQREPKNPQDKEEAIFLPRGLFNEAIINCLK KSKLKQLIESPTREKSPALNVSYLIQNYFRTYFEDQSQEFYA QPRNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVA EANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTK EYLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDI KIKDYGKLFYIHHDTRISLKNKVLKVKRNNSSISSSVKIQPYE NYKRECLDFEEAQIPIIHSFEIAMVSMFDPDLKKATPGNYY DFNELITEYEKRTKQKIGSSFLIKTRNMFLHDKYEAECIKEIS DDFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 1 6 7】

180	Cas13	MARDNFLNTIKLLADKMKLGAISGFGKDGNEVNDINKLFGD KNTYANIENVVEFYFPWIKALEGRFSLDKGDRNLNDMKMF YKSVLTAFFTAVDSLRNKYTHYSHKDLNIREIKIECTLGCKD YCIGLLNALDCIYDSAVNLLKLRFMVGEDEV AHLRRCKAV NKKVVVRTEKDGFFYYRLSDNGGVTEKGVIFIASMFLNRKY GFLFLKQLEGFKRSDEKRYRLTLEAFLAFSNIKPVDRLKSDK LDRASLGLDMLNELTKIPKELSETLSVDCLYKYLASDGEDD LRSRIRYQDRFVPLALEFISQSDEFKDFRFYTYVGNYVYKGY IKRLIDGTDKERYLSDRLCGFYKSVNDASSDAIAQKYGVEIK DSNEPDYMLPDSFRPHVLRATPHFVINNNNIGIKICGNDCLPI VNGKGVESPEPDYWL SIYELPAMLFYAYLREKNGKRFKDY KSIRELIEGVEKKADEKNDRDKGALMARHIDKEIHW TQTKL DEVKRLEEKKVAAYGKKGRVVLKSGRMADLLAHDMVRLQ PATKGSDKITGVNFQALQVSLAYFKRDILADVFSRAMLTTG NHRHPFLYRIDVSHCSSLRDFYVAYLGERRKYFEDVAKKIA KNKLNTPCHILRRLQREGSGEEAGKDV KPKFLPRGIFTDSIK NCLEQSKLNIYIRNARNNDVKPAINAAYLILMY YKEIEKGEFQ GFYGEKRRYDILEEGKPLDLAERKKALASIKPAKIDVSEAN MPMSKEEHLMRKRYHAVCN NESAIRMYQVQDILLLLMAK DIFKKALSEGVMSSKIGLENLNGIFDAPVNFVKNFDNIKLT TGIKIKNYGKVCRLGTDFKFNSLIKAFHKVYSKSVEMDYS YLKEEEFEKYRLNMVKLCREVERGITEDLHLSLDGKSHLSF NDDVIKPYNDKYNVFN GDDLTFFINARNMFMHGDYKYECV KYVVSEHFKGSLNDVSFAKETYGHFCNLLES MRKKTGLRID I
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【表 1 - 1 6 8】

181	Cas13	M K K K I S L K E Q R N T K K A E N K L K Y Q K A Q A E R A A A A Q Q T A A G A E S E E N P C F D V V K D T K R K A L N P L H V E I E A P S A K K S S V K A N G L K S L L L T D G K T V M T S F G R G S E A N V E K R F D E T G T K T F D R D P E L F S A K P L E T G Y R I Q R F N A S P K D A G L A Y R P A G V R P D Q I G A K A A L E K R Y F G K E T P G D N I H V Q I A Y Q I Q D I E K L L A V Y I S N I I Y A V N N V T G V S A M K D S K G R P V D L L G D Y G I L G E E G L T K R L Q R I P E Q A D E E A K A L Q A F L C S E R L S Y F G K E F C L V R N S P K Q P D K E E K R Q Y K L M R V L C L L G E L R Q F L V H G K K K E K E F A W L Y R L D R Q L S Q E Y R K L L G E F Y D A Q V D K V N K S F L T N S T V N L E V L F R A L K T G T D P E R K T V T Q E Y Y Q F T V R K E D G N L G F S L K T L R E I L L S A Y K H E V R D K E Y D S I R H K L Y Q L F S F A L Y H Y Y K T G V G A E R R E A F V A K L R A V M T A E A K Q R A Y A D E A A E I W N D E G S G I R A A F L E I L E A V D F G S A V K G I K A R S S V A G D K R F A E W L E E V R I R P E G V S C F T K L M Y L L T R F L D G K E I N E L L T G L I N K L E N I Q S F L D V M Q Q E H A E T G L S D A F S F F E Y S G E I A A E L R M T R S F A R M A A A D P E A K R F M V V D G A K L L G F N P K D T E S E D E G I I R A I Y G D A C A E Y L Q F S E E E K E A F Y V Q E G L Y G K E R E K F S P Y A Y F H T D T S L R N F I A K N V V E S A R F R Y V I R Y V S P E I A R K Y A R Q E A L V R F A L H R V P L L Q L R R Y Y Q S C C G P K K D P D A A E C V D F L A G V V N R V D F A N F T D V R T G D S S K S E Q E K K Q K Y Q A I V G L Y L T V V Y W I V K N L V N V N S R Y V M A F H I L E R D T V L L E G K R L F V G G M K A E D P F L L T D G Y V S R Q D A Y V R K R I G E N K R A N R H G L N C V L E N R N A L G S D P A S T D A A A S L I W S Y R N A A A H L T A V A A A Q E Y V S E L R E I H S Y F E V Y H Y A M Q R Y L K S G A E F A E L V S K N G P A S G K I A A W A N A V D R C H S F C K D W L W L L N V P F A Y N P A R Y K N L S I A N L F D K N E A A P V T E D A S E Q K E D E
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【表 1 - 1 6 9】

182	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYPHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDNLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISLKNKVL SKVKRNNSISSSVKIQPYEN YKRECLDFEEAQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 1 7 0】

183	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPRG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRNYTLVNNGL SEKGYAFFISKFLERKYSYLFLKKLSGFKRGDLSQYRLTLEV FTALSTKPPVERLRRTTKDTKQDRALDILNELSRPIELYQTLE PKYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFL DKQADFKEIGFYTYLGNYPFHNGYQKTRVDRETKDRYINFQL AGFCKNIQDISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQS TPHYIVNGNNGIKVLPEGKDTYPTIDEKGAKMPIADFWLSK YELPAMLFYTYLRNNNIHKSHCPLSVKDIIERSIHKSTKQKHP EERSELMLRRVMKAIFWTDSKLNEVERIKSQKSAFGKRQHE ILKAGRIAETLVRDMLWLQPSKNNGRDKVTEPNFQAIQVSL AYFGIRRNDLTEIFTRAGLINSSNHPFLAQIGTNYTSLIEFYI AYLKERKVYFSRIQKKILQGKLNQCHPLRDLQREPKNKPQEK EEAIFLPRGLFNEAIINCLKKSKLKHLIESPTREKSPALNVSYL IHNYFRAYFEDQSQEFYAQPRNYRLFDKLSPNKGKSKSYLSL EQRIKKMEELRPSKIPVAEANKLLEKEDRLYRKNYNEICDNE SIIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLENVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHHDTRISLNKVL KVVRNNSISSSVKIQPYENYKRECLDFEEAQIQIPIIHSFEIAM VSMFPDLKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTR NMFLHDKYEAECIKEISDDFVYAKKIIAEFKMKIENIKLEDLS NDSSA
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【表 1 - 1 7 1】

184	Cas13	CILDFFTQDKAIAEYQLGVEFLQKNLPVIRYLYLPTSHKRFE NVPKNQLISEQRNYFKNSLKV LKNLIRDYRNFYTHHFHKPIP VFPETYKLLDDLFLAVANDVKKHRMKT DASKQLLKGLIE ELAQLEKLKLEDLKKLREGKKVNLNDKEAITNAILNDSFS HLLPKENTISKYYS AVPTEDIDTENGVTISESGIIFLLGLFLTK KQSEDLRSRVKGFKAKLIVNPENPINKKNNLSLKY MATHWVF GYLGFKGLKNRFTTTFTKDTLLAQIVDELSKVPDELYQVLPE ELKNEFLED MNEYLKEENSESLDKATVIHPVIRKRYENKFA YFALRFLDEFVDFPTLRFQLHLGNYVHDKREKPIEGTKYVTE RIVKEKIKAF AKLSEAAQLKQKYFEEKENHQSIGLQLYPNPS YNFVGNNIPIHLNLNEHFFPKEVKIVAGRLKKNSSYKSDHP EEYKVRTDNKIKPDAILQDLGKPEKLAPVAMLSL NELPALL HLVLTKKTPEEIEIIIAQKIAERYNVLTNYKAGDDISKGQITK NLLKAKQKKEVNLDKLQLAIEKEIAVTNDKLQTIALHIKERN DPKQKRKYVFTNKEIGLQVTWLANDLKRFPK GSRQNWR GQHHSQLQKSLAFYDIQPKEPLSLEEVD FKN EAYLWNN GIRRSFDKRDFISFYTSYLN NRKETFQRFKDQLNGIRSNKKIL DKFIKQQHLWNL FHKRLYVIDTIEEQVEKLLVKPMQFPKGV FDHKPTYIKGKSIQENPECFADWYVAWNQHTDYQKFYSWD RDYKSAYLSGEQE KTEKRFIRVQGSKINKVKQ QDVLLAKM ASIIFNELYLPEDA EHLDLNLSDIYKTQTERKAEIEAALIQSH KTTGDNSANIIKSTSAWTLTPYCSKNIYEPQVKL KELGKFK KFIASQKVQTLFEYKPQKIWNKTELEE VLELKANSYEVIRRD YLLKSIQEF EK YMIKKLPTLIDTNEHPNFNKYLT TFLKSLELV SEEDAKWLISKKDFDTPIDELKKQSKIMEKAFLLMIRNKF SHNQLPRKIYYDEIYKNVPNAV SINFNELFLEYTNQTILEFK
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【表 1 - 1 7 2】

185	Cas13	NRRDMEASPGRLARYIVLKTLYERAFFRWLEAREAETLNGWIGR AADRATVAARHINKDENAAARMAGLVRLADGKGIADFTDRLAA ETASEYRVQRGYSDPAVARKQAKHIEDLRCDVVGQAFEAYLA DVARKLAWTMNDPPGGPLPDEKKASLETAAPPAEDAGAEAEED WLARLYFLLHMLPVEEVGGLRHQLRKWSVLEREPSVLEREFDA DVEAIERILGLYLDMHDAKFEGGDGVAGAEALTDLFTSPAQFRR VCPEDGAGNGGHVPWRGLREMLRFGGGEPRLMWAFRKWPIGD GMVDGLNALEATVAEAHKQREDLHAKWAGKKGFSRKDKDEYR AALETVVVHRHLAAHVQLVNHARLHRLAMAVLARLADYAGLW ERDLYFTTLALIRLENGKPEDVFRSRELEWLREGRIVDALKEKK NADGSEPAVGTAQRLFGKGILTGGGTVSVRDILLHFNMLQRKA NEPFNLTTAVNDTRKLMAYDRKLKNAVSRSHIELLAREGLDLAW EMKDHQLAGAVLKTRQAVHLGGAKVGGGPITEDLHGPEFTAMA AALFGGEARAATDAEAATGRPDRRERKSGGASPRPARPAKTL APTPLLPAAGERVEGVVVEEKTRKGGWKA AVEIGGPRIVGDIFN SGEVPSDAEPGLEAEFVVRVANPANASFMWLSPDVEERLKAAAA PRRGGRPAGRQR
186	Cas13	MGAIENKHIFAAAYANLAIDGLIKTLNFIKKLDTQKQLSSWDIKH VITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKGERQSDK LCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGGYDIPSSLNCI YDSAINIIFERFQAEKEMEHLRRYTRKKGRVVLKTEDDHFYTL ANNNDLSEKGYAFFISMFLERKYSYLFLKKLSGFKRGDSLQYRLT LEVFTALSTKPPVERLRTTKDTKQDRALDILNELSKIPIELYQTLEP KYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFLDKQA DFKEIGFYTYLGNFYHNGYQKTRVDRETKDRYINFQLAGFCKNIQ DISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQSTPHYIVNGNNIG IKVLPEGKDTYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNN NIHKSHCPLSVKDIIERSIHKSTKQKHPEERSELMRLRRVMKAIFWT DSKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQPSK NNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLINSSNPHP FLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQGKLNQCHPLR DLQREPKNPQEKKEAIFLPRGLFNEAIIINCLKSKLKHILIESPTREK SPALNVSYLIQNYFRAYFEDQSQEFYAQPRNYRLFDNLSPNKGKS KSYLSLEQRIKKMEELRPSKIPVAEANKLLEKEDRLYRKNYNEIC DNESIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLENVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHHDTRISSLNKVLKVK RNNSSSSVKIQPYENYKRECLDFEEAQIPIIHSFEIAMVSMFPD LKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYE AECIKEISDDFVYAKKIIAEFKMKIENIKLEDFSNSSA

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【表 1 - 1 7 3】

187	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDLTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPRG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRNYTLVNNGL SEKGYAFFISKFLERKYSYFLKKLSGFKRGDSLQYRLTLEV FTALSTKPPVERLRRTTKDTKQDRALDILNELSRPIELYQTLE PKYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFL DKQADFKEIGFYTYLGNFYHNGYQKTRVDRETKDRYINFQL AGFCKNIQDISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQS TPHYIVNGNNGIKVLPEGKDTYPTIDEKGAKMPIADFWLSK YELPAMLFYTYLRNNNIHKSHCPLSVKDIIERSIHKSTKQKHP EERSELMLRRVMKAIFWTDSKLNEVERIKSQKSAGFKRQHE ILKAGRIAETLVRDMLWLQPSKNNGRDKVTEPNFQAIQVSL AYFGIRRNDLTEIFTRAGLINSSNHPFLAQIGTNYTSLIEFYI AYLKERKVYFSRIQKKILQGKLNQCHPLRDLQREPKNKPQEK EEAIFLPRGLFNEAIINCLKKSKLKHLIESPTREKSPALNVSYL IHNYFRAYFEDQSQEFYAQPRNYRLFDKLSPNKGKSKSYLSL EQRIKKMEELRPSKIPVAEANKLLEKEDRLYRKNYNEICDNE SIIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLENVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHHDTRISSLNKVLS KVVRNNSISSSVKIQPYENYKRECLDFEEAQIQIPIIHSFEIAM VSMFPDLKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTR NMFLHDKYEAECIKEISDDFVYAKKIIAEFKMKIENIKLEDLS NDSSA
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【表 1 - 1 7 4】

188	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFKFQFYTYLGNYPHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDNLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISLKNKVLKVKRNNSSSSSVKIQPYEN YKRECLDFEEAQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 1 7 5】

189	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDLTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPRG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRNYTLVNNGL SEKGYAFFISKFLERKYSYFLKKLSGFKRGDSLQYRLTLEV FTALSTKPPVERLRRTTKDTKQDRALDILNELSRPIELYQTLE PKYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFL DKQADFKEIGFYTYLGNYPFHNGYQKTRVDRETKDRYINFQL AGFCKNIQDISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQS TPHYIVNGNNGIGIKVLPEGKDTYPTIDEKGAKMPIADFWLSK YELPAMLFYTYLRNNNIHKSHCPLSVKDIIERSIHKSTKQKHP EERSELMLRRVMKAIFWTDSKLNEVERIKSQKSAGFKRQHE ILKAGRIAETLVRDMLWLQPSKNNGRDKVTEPNFQAIQVSL AYFGIRRNDLTEIFTRAGLINSSNHPFLAQIGTNYTSLIEFYI AYLKERKVYFSRIQKKILQGKLNQCHPLRDLQREPKNKPQEK EEAIFLPRGLFNEAIINCLKKSCLKHLIESPTREKSPALNVSYL IHNYFRAYFEDQSQEFYAQPRNYRLFDKLSPNKGKSKSYLSL EQRIKKMEELRPSKIPVAEANKLLEKEDRLYRKNYNEICDNE SIIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLENVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHHDTRISSLNKVLS KVKRNNSSISSSVKIQPYENYKRECLDFEEAQIQIPIIHSFEIAM VSMFPDLKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTR NMFLHDKYEAECIKEISDDFVYAKKIIAEFKMKIENIKLEDLS NDSSA
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【表 1 - 1 7 6】

190	Cas13	MEEANRYIYGAYFNMARDNFLNTIKLLADKMKLGATSGFG KDGNEVNDINELFGDKNTYANIENVVEFYFPWIKALEGRFS LDKGDRNLNDMKMFYKSVLTAFFTAVIDSLRNKYTHYSHK DLNIREIKIECTLGKDYCIGLLNALDCIYDSAVNLLKLRFM AGEYEVAHLRRCKAVNKKVVVRTEKDGfYYRLSDNGGVT EKGVIASMFNLRKYGFLFLKQLEGFKRSDEKRYRLTLETF LAFSNIKPVDRKSDKLDRASLGLDMLNELTKIPRELSETLS VDCLYKYLTSDGEDDLRSRIRYQDRFVPLALEFISQSDEFKD FRFYTYVGNVYKGYIKRLIDGTDKERYLSDRLCGFYKSVN DASSDAIAQKYGVEIKDSNEPDYMLPDSFRPHVLRATPHFVI NNNNIGIKICGNDCLPIVNGKGVESPEPDYWLSIYELPAMLF YAYLREKNGKLLKDYKSIRELIEDVEKKADEKNDRDKGAL MARHIDKEIWTQTKLDEVKRLEEKVAAYGKKGRVVLKS GRMADLLAHDMMVRLQPATKGSDKITGANFQALQVSLAYFK RDILADVFSRAMLTGTGNHRHPFLYRIDVSHCSSLRDFYVAYL GERRKYFEDVAKKIAKNKLNTPCHILRRLQREGSGEEAGKD VKPKFLPRGIFTGSIKSCLEKSALNINIRNARNDVKPAINAAY LILMYEKEIEKGEFQGFYGEKRRYDILEEGKPLDLDERKKAL ASIKPAKIDVSEANMPMSKEEHLMRKRYHAVCNNEAIRM YQVQDILLLLMAKDIFKKALSEGVMSSKIGLENLNGIFDAPV NFVKNFDNIKLTTATGIKIDYGVKVCRLGTDFKFNSLVKAFH KVYSKSVEMDYSYDLKEEEFEKYRLNMVKLCREVERGITE DLHLSLDGKSHLGFNDVVIKPYNDKYNVFNNGDGLTFFINAR NMFMHGDKYKCYVYVSEHFKGSLNDVSFAKETYGHFC NLLESMRKKKTGLRIDI
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【表 1 - 1 7 7】

191	Cas13	MGAIKNKHIFAAAYANLAIDGLIKTLNFIAKKLDTQKQLSSW DIKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKK GERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPG GYDIPSSLNCIYDSAINIIKERFQAEEKEMEHLRRYTRKKGRV VLKTEDDHFYITLANNNDLSEKGYAFFISMFLERKYSYLFL KKLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQ DRALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPY GLPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYFH NGYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALN VKSIDISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGK DTYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHK SHCPLSVKDIIERSIHKSTKQKHPEERSELMLRRVMKAIFWT DSKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWL QPSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLI NSSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQ GKLN IQCHPLRDLQREPKNPQDKEEAIFLPRGLFNEAIINCLK KSKLKQLIESPTREKSPALNVSYLIQNYFRTYFEDQSQEFYA QPRNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVA EANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTK EYLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDI KIKDYGKLFYIHHDTRISLNNKVL SKVKRNNSSISSSVKIQPYE NYKRECLDFEEAQIQUIIHSFEIAMVSMFDPDLKKATPGNYY DFNELITEYEKRTKQKIGSSFLIKTRNMFLHDKYEAECIKEIS DDFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 1 7 8】

192	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFKFQFYTYLGNFYHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDNLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISLKNKVLKVKRNNSISSSVKIQPYEN YKRECLDFEEAQIQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 1 7 9】

193	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEIEHLRRYTRKKGRVVL KTEDDHFYITLVNNNDLSEKGYAFFISMFLERKYSYLFLKK LSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQDR ALDILNELSRIPIELYQTLEPKYREMYNETLQPTDAEDPYGLP DRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYPFHNGY QKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVKSI DISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGKDTYP TIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSHCP LSVKDIIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKL NEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQPSK NNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLINSSN PHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQGKLN QCHPLRDLQREPKNPQDKKEAIFLPRGLFNEAIIINCLKSKL KQLIESPTREKSPALNVSYLIQNYFRITYFEDQSQEFYAQPRN YRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEANK LLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEYLPS DLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKIKDY GKLFYIHHDTRISSLNKVL SKVKRNNSSISSVKIQPYENYKRE CLDFEEAQIQIPIIHSFEIAMVSMFPDLKKATPGNYYDFNELI TEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISDDFVY AKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 1 8 0】

194	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDSDLQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFKFQFYTYLGNYPHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDNLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISLKNKVLKVKRNNSISSSVKIQPYEN YKRECLDFEEAQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 1 8 1】

195	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDLTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFETFALHFLDKQPDFKEIGFYTYLGNYFHNG YQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVK SIDISTDSIPDINSFEPYLVSMPHYIVNGNIGIKVLPEGKDT YPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSH CPLSVKDIIERSIHKSTKQKHPEERSEMLRRVMKAIFWTDS KLNEVERIKSQKSAFGKRQHEILKAGRIAEMLRDMLWLQP SKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLINS SNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQGK LNIQCHPLRDLQREPKNPQEKEEAIFLPRGLFNEAIINCLKKS KLKQLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQP RNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEA NKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEY LPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKI KDYGKLFYIHHDTRISSLNKVLKVKRNNSSISSSVKIQPYEN YKRECLDFEEAQIQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 1 8 2】

196	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDLTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPRG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRNYTLVNNGL SEKGYAFFISKFLERKYSYLFLKKLSGFKRGDLSQYRLTLEV FTALSTKPPVERLRRTTKDTKQDRALDILNELSRPIELYQTLE PKYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFL DKQADFKEIGFYTYLGNFYHNGYQKTRVDRETKDRYINFQL AGFCKNIQDISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQS TPHYIVNGNNGIKVLPEGKDTYPTIDEKGAKMPIADFWLSK YELPAMLFYTYLRNNNIHKSHCPLSVKDIIERSIHKSTKQKHP EERSELMLRRVMKAIFWTDSKLNEVERIKSQKSFAFGKRQHE ILKAGRIAETLVRDMLWLQPSKNNGRDKVTEPNFQAIQVSL AYFGIRRNDLTEIFTRAGLINSSNHPFLAQIGTNYTSLIEFYI AYLKERKVYFSRIQKKILQGKLNQCHPLRDLQREPKNKPQEK EEAIFLPRGLFNEAIINCLKKSKLKHLIESPTREKSPALNVSYL IHNYFRAYFEDQSQEFYAQPRNYRLFDKLSPNKGKSKSYLSL EQRIKKMEELRPSKIPVAEANKLLEKEDRLYRKNYNEICDNE SIIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLENVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHHDTRISSLNKVLS KVVRNNSISSSVKIQPYENYKRECLDFEEAQIQIPIIHSFEIAM VSMFPDLKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTR NMFLHDKYEAECIKEISDDFVYAKKIIAEFKMKIENIKLEDLS NDSSA
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【表 1 - 1 8 3】

197	Cas13	MGAIENKHIFAAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEIEHLRRYTRKKGRVVL KTEDDHFYITLVNNNDLSEKGYAFFISMFLERKYSYLFLKK LSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQDR ALDILNELSRIPIELYQTLEPKYREMYNETLQPTDAEDPYGLP DRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYPFHNGY QKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVKSI DISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGKDTYP TIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSHCP LSVKDIIERSIHKSTKQKHPEERSELMRRVMKAIFWTD SKL NEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQPSK NNGRDKVTEPNFQAIQVSLAYFGIRNDLTEIFTRAGLINSSN PHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQGKLN QCHPLRDLQREPKNPQDKEEAIFLPRGLFNEAIIINCLKSKL KQLIESPTREKSPALNVSYLIQNYFRITYFEDQSQEFYAQPRN YRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEANK LLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEYLPS DLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKIKDY GKLFYIHHDTRISSLNKVL SKVKRNNSSISSVKIQPYENYKRE CLDFEEAQIQIPIIHSFEIAMVSMFPDLKKATPGNYYDFNELI TEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISDDFVY AKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 1 8 4】

198	Cas13	MGAIENKHIFAAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRTTKDQD RALDILNELSRIPIELYQTLEPKYREMYNETLQPTDAEDPYGL PDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNFYHNG YQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVK SIDISTDSIPDINSFEPYLQSTPHYIVNGNIGIKVLPEGKDT YPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSH CPLSVKDIIERSIHKSTKQKHPEERSELMRRVMKAIFWTDS KLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQP SKNNGRDKVTEPNFQAIQVSLAYFGIRNDLTEIFTRAGLINS SNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQGK LNIQCHPLRDLQREPKNPQEKEEAIFLPRGLFNEAIINCLKKS KLKQLIESPTREKSPALNVSYLILNYFRTYFEDQSSEFYAQPR NYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEAN KLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEYLP SDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKID YGKLFYIHHDTRINSLNKVLSKVKRNNSSSSSVKIQPYENYK RECLDFEEAQIQIPIIHSFEIAMVSMFDPDLKKATPGNYYDFNE LITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISDDFV YAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 1 8 5】

199	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRRTTKDQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFEIGFYTYLGNYPHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISLKNKVLKVKRNNSISSSVKIQPYEN YKRECLDFEEAQIQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 1 8 6】

200	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSKKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRRTTKDQD RALDILNELSRIPIELYQTLEPKYREMYNETLQPTDAEDPYGL PDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNFYHNG YQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVK SIDISTDSIPDINSFEPYLQSTPHYIVNGNNIGIKVLPEGKDT YPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSH CPLSVKDIERSIHKSTKQKHPEERSELMRRVMKAIFWTDS KLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQP SKNNGRDKVTEPNFQAIQVSLAYFGIRNDLTEIFTRAGLINS SNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQGK LNIQCHPLRDLQREPKNPQEKEEAIFLPRGLFNEAIINCLKKS KLKQLIESPTREKSPALNVSYLILNYFRTYFEDQSSEFYAQPR NYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEAN KLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEYLP SDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKIKD YGKLFYIHHDTRINSLNKVLSKVKRNNSSSSSVKIQPYENYK RECLDFEEAQIQIPIIHSFEIAMVSMFDPDLKKATPGNYYDFNE LITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISDDFV YAKKIIAEFKMKIENIKLEDFSNDSSA
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【表 1 - 1 8 7】

201	Cas13	MKHVFAAYFSDARLNIMASLNDVREKSGLKRYKNEAENVQ NFEGIFPKNIASDIRDKRITLLRIRFPFIETIVDPGRGKENPASK YGELSWLFLQVNDMRNVFIHSTGSEEEIDYQHHKKIFNALR KVYDCGLRTVKSRLFQLENDTTMPLLRCDNRGRPKPFNKFSL ALCTSPERNGNKKQSDVLHDFGRVLLCSLFLEKRQISGLVSH FWDKNGYGTDWNDSEQTHIRELLYVNRIRLPSQRLRTDSTLT SVTLDTISELARCPRLFELLDADGQENFRVGRSPKNPQNRN DDPSYLLLRGHQSRFIPLAMRHLDLDFDSKCKLRFAYDLGQYY HSVRLKPAESFIDGNPGIRRLGQKIIAFGRLLKDFEDAEPKPEIW KKLEENGQKFAEEEEELLKRASITGSPEELKPYIIKTFPHYHL YRDKIGFCIDWEEKKDQKVYPNLGVRGEDSKSTDSGGIKK RENRLSRHQFWISPNKIIDLAFYHYLQTEIKQEITASVKTGR KKCPYPSVENILKEYYEGMVVLIELKEQGPPWPTEIPQISE RRAECHRWINKEIIKAENFTISLADLPKAIRRHLLKVLDSRETS VSDIIKRTKTMIEETCKKQKEIEYLLKYPKKRGKKGFRPIKH GNIADFLTEDLLRFQPKDSSKKNNGGKLTSKNYQILQKAIAYY DKPYCIVDLLKKSGLLEGEFKHPFLCKIITEENHEQYSTLIDF YQKYLEERKAFLEGFIDTFVAGSSIPGWLRLRKPSTFESWLD QQLDEDEKLCQPLVPKSLFYQMLLKMTAEKLDLTPEMLC KKGTQRFIRDSQEVEVKPSVSWFIRQYMEHRDDTAQEMYM FKRRHELDFDFHDKKKTTKKLHEEKTCCLEKVRQEELESV HKGIEKLKKLLRTRYKRSEKKIRHFSTMDMVLYLLAKKNFEK LILCDETS GPDWSLKTLET KILSTKIKYELNVP GTDR TIVHRA CAIKKTGELRLLVRDRRLPSLLDYYPKTEKSIDQEEIKVELA DYSCKRIEAMKLISDLEQKIEESCNRGFCKPVPDKLKKIFGA KKHGTLLYALYHRFHEEKDKSVDEQGFNKDCFAHARQIRN AFAHNEYVPVSEQFNQIVRQVNETSQPHNHNSPVNHPKIADQ LVKELDKLYKPWRNFLKRIAG
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【表 1 - 1 8 8】

202	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDLTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPRG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRNYTLVNNGL SEKGYAFFISKFLERKYSYLFLKKLSGFKRGDLSQYRLTLEV FTALSTKPPVERLRRTTKDTKQDRALDILNELSRPIELYQTLE PKYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFL DKQADFKEIGFYTYLGNYPFHNGYQKTRVDRETKDRYINFQL AGFCKNIQDISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQS TPHYIVNGNNGIKVLPEGKDTYPTIDEKGAKMPIADFWLSK YELPAMLFYTYLRNNNIHKSHCPLSVKDIIERSIHKSTKQKHP EERSELMLRRVMKAIFWTDSKLNEVERIKSQKSFAFGKRQHE ILKAGRIAETLVRDMLWLQPSKNNGRDKVTEPNFQAIQVSL AYFGIRRNDLTEIFTRAGLINSSNHPFLAQIGTNYTSLIEFYI AYLKERKVYFSRIQKKILQGKLNQCHPLRDLQREPKNKPQEK EEAIFLPRGLFNEAIINCLKKSKLKHLIESPTREKSPALNVSYL IHNYFRAYFEDQSQEFYAQPRNYRLFDKLSPNKGKSKSYLSL EQRIKKMEELRPSKIPVAEANKLLEKEDRLYRKNYNEICDNE SIIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLENVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHHDTRISSLNKVLS KVKRNNSISSSVKIQPYENYKRECLDFEEAQIQIPIIHSFEIAM VSMFPDLKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTR NMFLHDKYEAECIKEISDDFVYAKKIIAEFKMKIENIKLEDLS NDSSA
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【表 1 - 1 8 9】

203	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDLTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPRG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRNYTLVNNGL SEKGYAFFISKFLERKYSYLFLKKLSGFKRGDLSQYRLTLEV FTALSTKPPVERLRRTTKDTKQDRALDILNELSRPIELYQTLE PKYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFL DKQADFKEIGFYTYLGNFYHNGYQKTRVDRETKDRYINFQL AGFCKNIQDISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQS TPHYIVNGNNGIKVLPEGKDTYPTIDEKGAKMPIADFWLSK YELPAMLFYTYLRNNNIHKSHCPLSVKDIIERSIHKSTKQKHP EERSELMLRRVMKAIFWTD SKLNEVERIKSQKS AFGKRQHE ILKAGRIAETLVRDMLWLQPSKNNGRDKVTEPNFQAIQVSL AYFGIRRNDLTEIFTRAGLINSSNHPFLAQIGTNYTSLIEFYI AYLKERKVYFSRIQKKILQGKLN IQCHPLRDLQREP NKPQEK EEAIFLPRGLFNEAIINCLKKSKLKHLIESPTREKSPALNVSYL IHNYFRAYFEDQSQEFYAQPRNYRLFDKLSPNKGKSKSYLSL EQRIKKMEELRPSKIPVAEANKLLEKEDRLYRK NYNEICDNE SIIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLE NVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHH DTRISSLNKVLS KVKRNNSSISSSVKIQPYENYKRECLDFEEAQIQIPIIHSFEIAM VSMFPDLKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTR NMFLHDKYEAECIKEISDDFVYAKKIIAEFKMKIENIKLEDLS NDSSA
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【表 1 - 1 9 0】

204	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYPHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDNLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISLKNKVLKVKRNNSISSSVKIQPYEN YKRECLDFEEAQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 1 9 1】

205	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDLTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPRG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRNYTLVNNGL SEKGYAFFISKFLERKYSYLFLKKLSGFKRGDLSQYRLTLEV FTALSTKPPVERLRRTTKDTKQDRALDILNELSRPIELYQTLE PKYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFL DKQADFKEIGFYTYLGNYPFHNGYQKTRVDRETKDRYINFQL AGFCKNIQDISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQS TPHYIVNGNNGIKVLPEGKDTYPTIDEKGAKMPIADFWLSK YELPAMLFYTYLRNNNIHKSHCPLSVKDIIERSIHKSTKQKHP EERSELMLRRVMKAIFWTD SKLNEVERIKSQKS AFGKRQHE ILKAGRIAETLVRDMLWLQPSKNNGRDKVTEPNFQAIQVSL AYFGIRRNDLTEIFTRAGLINSSNHPFLAQIGTNYTSLIEFYI AYLKERKVYFSRIQKKILQGKLNQCHPLRDLQREPKNKPQEK EEAIFLPRGLFNEAIINCLKKSKLKHLIESPTREKSPALNVSYL IHNYFRAYFEDQSQEFYAQPRNYRLFDKLSPNKGKSKSYLSL EQRIKKMEELRPSKIPVAEANKLLEKEDRLYRKNYNEICDNE SIIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLENVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHHDTRISSLNKVLS KVKRNNSSISSSVKIQPYENYKRECLDFEEAQIQIPIIHSFEIAM VSMFPDLKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTR NMFLHDKYEAECIKEISDDFVYAKKIIAEFKMKIENIKLEDLS NDSSA
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【表 1 - 1 9 2】

206	Cas13	MGAIKNKHIFAAAYANLAIDGLIKTLNFIAKKLDTQKQLSSW DIKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKK GERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPG GYDIPSSLNCIYDSAINIIKERFQAEEKEMEHLRRYTRKKGRV VLKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFL KKLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQ DRALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPY GLPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYFH NGYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALN VKSIDISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGK DTYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHK SHCPLSVKDIIERSIHKSTKQKHPEERSELMLRRVMKAIFWT DSKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWL QPSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLI NSSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQ GKLNIQCHPLRDLQREPKNPQDKEEAIFLPRGLFNEAIINCLK KSKLKQLIESPTREKSPALNVSYLIQNYFRTYFEDQSQEFYA QPRNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVA EANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTK EYLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDI KIKDYGKLFYIHHDTRISLNNKVLKVKRNNSSISSSVKIQPYE NYKRECLDFEEAQIQUIIHSFEIAMVSMFDPDLKKATPGNYY DFNELITEYEKRTKQKIGSSFLIKTRNMFLHDKYEAECIKEIS DDFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 1 9 3】

207	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYITLANNNDLSKKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSRIPIELYQTLEPKYREMYNETLQPTDAEDPYGL PDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNFYHNG YQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVK SIDISTDSIPDINSFEPYLQSTPHYIVNGNNGIKVLPEGKDT YPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSH CPLSVKDIIERSIHKSTKQKHPEERSELMRRVMKAIFWTD KLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQP SKNNGRDKVTEPNFQAIQVSLAYFGIRNDLTEIFTRAGLINS SNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQGK LNIQCHPLRDLQREPKNPQEKEEAIFLPRGLFNEAIINCLKKS KLKQLIESPTREKSPALNVSYLILNYFRTYFEDQSSEFYAQPR NYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEAN KLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEYLP SDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKID YGKLFYIHHDTRINSLNKVLSKVKRNNSSSSSVKIQPYENYK RECLDFEEAQIPIIHSFEIAMVSMFDPDLKKATPGNYYDFNE LITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISDDFV YAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 1 9 4】

208	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMKHLRNYTLVNNGL SEKGYAFFISKFLERKYSYLFLKKLSGFKRGDSLQYRLTLEV FTALSTKPPVERLRRTTKDTKQDRALDILNELSKIPIELYQTLE PKYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFL DKQADFKEIGFYTYLGNYPFHNGYQKTRVDRETKDRYINFQL AGFCKNIQDISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQS TPHYIVNGNNGIGIKVLPEGKDTYPTIDEKGAKMPIADFWLSK YELPAMLFYTYLRNNNIHKSHCPLSVKDIIERSIHKSTKQKHP EERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHE ILKAGRIAETLVRDMLWLQPSKNNGRDKVTEPNFQAIQVSL AYFGIRRNDLTEIFTRAGLINSSNHPFLAQIGTNYTSLIEFYI AYLKERKVYFSRIQKKILQGKLNQCHPLRDLQREPKNKPQEK EEAIFLPRGLFNEAIINCLKKSKLKQLIESPTREKSPALNVSYL IQNYFRTYFEDQSQEFYAQPRNYRLFDKLSPNKGKSKSYLSL EQRIKKMEELRPSKIPVAEANKLLEKEDRLYRKNYNEICDNE SIIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLENVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHHDTRINSLNKVLS KVKRNNSSISSSVKIQPYENYKRECLDFEEAQIQIPIIHSFEIAM VSMFPDLKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTR NMFLHDKYEAECIKEISDDL VYAKKIIAEFKMKIENIKLEDLS NDSSA
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【表 1 - 1 9 5】

209	Cas13	MGAIKNKHIFAAAYANLAIDGLIKTLNFIAKKLDTQKQLSSW DIKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKK GERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPG GYDIPSSLNCIYDSAINIIKERFQAEEKEMEHLRRYTRKKGRV VLKTEDDHFYITLANNNDLSEKGYAFFISMFLERKYSYLFL KKLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQ DRALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPY GLPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYFH NGYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALN VKSIDISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGK DTYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHK SHCPLSVKDIIERSIHKSTKQKHPEERSELMRRVMKAIFWT DSKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWL QPSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLI NSSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQ GKLNIQCHPLRDLQREPKNPQDKEEAIFLPRGLFNEAIINCLK KSKLKQLIESPTREKSPALNVSYLIQNYFRTYFEDQSQEFYA QPRNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVA EANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTK EYLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDI KIKDYGKLFYIHHDTRISLNNKVLKSKVKNNSISSSVKIQPYE NYKRECLDFEEAQIPIIHSFEIAMVSMFDPDLKKATPGNYY DFNELITEYEKRTKQKIGSSFLIKTRNMFLHDKYEAECIKEIS DDFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 1 9 6】

210	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDSDLQYRLTLEVFTALSTKPPVERLRRTTKDQD RALDILNELSRIPIELYQTLEPKYREMYNETLQPTDAEDPYGL PDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNFYHNG YQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVK SIDISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGKDT YPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSH CPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTDS KLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQP SKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLINS SNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQGK LNIQCHPLRDLQREPNKPQEKEEAIFLPRGLFNEAIINCLKKS KLKQLIESPTREKSPALNVSYLILNYFRTYFEDQSQEFYAQPR NYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEAN KLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEYLP SDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKIKD YGKLFYIHHDTRINSLNKVLSKVKRNNSSSSSVKIQPYENYK RECLDFEEAQIQIPIIHSFEIAMVSMFDPDLKKATPGNYYDFNE LITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISDDFV YAKKIIAEFKMKIENIKLEDFSNDSSA
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【表 1 - 1 9 7】

211	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDSDLQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFEIGFYTYLGNYPHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDNLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISLKNKVLKVKRNNSSISSSVKIQPYEN YKRECLDFEEAQIPIIHSFEIAMVSMFPDLKKATPGNYYD FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 1 9 8】

212	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDLTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPRG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRNYTLVNNGL SEKGYAFFISKFLERKYSYLFLKKLSGFKRGDLSQYRLTLEV FTALSTKPPVERLRRTTKDTKQDRALDILNELSRPIELYQTLE PKYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFL DKQADFKEIGFYTYLGNYPFHNGYQKTRVDRETKDRYINFQL AGFCKNIQDISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQS TPHYIVNGNNGIKVLPEGKDTYPTIDEKGAKMPIADFWLSK YELPAMLFYTYLRNNNIHKSHCPLSVKDIIERSIHKSTKQKHP EERSELMLRRVMKAIFWTD SKLNEVERIKS QKS AFGKRQHE ILKAGRIAETLVRDMLWLQPSKNNGRDKVTEPNFQAIQVSL AYFGIRRNDLTEIFTRAGLINSSNHPFLAQIGTNYTSLIEFYI AYLKERKVYFSRIQKKILQGKLNQCHPLRDLQREPKNKPQEK EEAIFLPRGLFNEAIINCLKKSKLKHLIESPTREKSPALNVSYL IHNYFRAYFEDQSQEFYAQPRNYRLFDKLSPNKGKSKSYLSL EQRIKKMEELRPSKIPVAEANKLLEKEDRLYRKNYNEICDNE SIIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLENVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHHDTRISSLNKVLS KVKRNNSSISSSVKIQPYENYKRECLDFEEAQIQIPIIHSFEIAM VSMFPDLKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTR NMFLHDKYEAECIKEISDDFVYAKKIIAEFKMKIENIKLEDLS NDSSA
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【表 1 - 1 9 9】

213	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRTTKDQD RALDILNELSRIPIELYQTLEPKYREMYNATLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFEIGFYTYLGNYPHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKQLIESPTREKSPALNVSYLILNYFRTYFEDQSQEFYAQP RNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEA NKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEY LPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKI KDYGKLFYIHHDTRINSLNKVLSKVKRNNSSISSSVKIQPYEN YKRECLDFEEAQIQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNSSA
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【表 1 - 2 0 0】

214	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFETFALHFLDKQPDFKEIGFYTYLGNYFHNG YQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVK SIDISTDSIPDINSFEPYLVSMPHYIVNGNIGIKVLPEGKDT YPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSH CPLSVKDIIERSIHKSTKQKHPEERSELMRRVMKAIFWTDS KLNEVERIKSQKSAFGKRQHEILKAGRIAEMLRDMLWLQP SKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLINS SNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQ GK LNIQCHPLRDLQREPKNPQEKEEAIFLPRGLFNEAIINCLKKS KLKQLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQP RNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEA NKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEY LPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKI KDYGKLFYIHHDTRISSLNKVLKVKRNNSSISSSVKIQPYEN YKRECLDFEEAQIQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 2 0 1】

215	Cas13	MGAIKNKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSW DIKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKK GERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPG GYDIPSSLNCIYDSAINIIKERFQAEEKEMEHLRRYTRKKGRV VLKTEDDHFYITLANNNDLSEKGYAFFISMFLERKYSYLFL KKLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQ DRALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPY GLPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYFH NGYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALN VKSIDISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGK DTYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHK SHCPLSVKDIIERSIHKSTKQKHPEERSELMLRRVMKAIFWT DSKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWL QPSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLI NSSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQ GKLNIQCHPLRDLQREPKNPQDKEEAIFLPRGLFNEAIINCLK KSKLKQLIESPTREKSPALNVSYLIQNYFRTYFEDQSQEFYA QPRNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVA EANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTK EYLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDI KIKDYGKLFYIHHDTRISLNNKVLKSKVKRNNSSISSSVKIQPYE NYKRECLDFEEAQIPIIHSFEIAMVSMFDPDLKKATPGNYY DFNELITEYEKRTKQKIGSSFLIKTRNMFLHDKYEAECIKEIS DDFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 2 0 2】

216	Cas13	MGKLYGYKRWYEIEQNNGEKGSGFRKIRVKRVYDEESKSY VVRDEVEDTELIKNNFIINLKDYKTRNSNIQKFYDKFHVG NLFKLKASVKKGKKTFFYKDLEKAETVLTNVEILEQTIKLAN NSKINRKKLEKELTQLNINEKSEEVITIDNIKIYLRQGEKFDKK ENINAIKWRKLTSEELTIKVEIYRECQSINSNLYSLLDYVLSN EEYDDRYYLEEVENKLLIFGTGNKNKNGRNYYYFDYVLKS LSKIKGLIKKDDRNLYLMFLFNIQKTSSENKEHFINKIFNYFK YEVRIEKEDIVEFLVGELEYDLIKRIEKKPSSENQNTNLEKT YILLDKHEKLKETIDTKNEIVQKLTIELKNNNLNRNRIILHKY KILELVDKLNKNIKNGKINTELYGIYKEHYGQCIEYINFNELA LEEKELYKIIYRYLKGRIEKLQNRNKIKIGELRIEDIFIFQKLL EKIEIRVKQYLLEHILYLGLKHHNIDEVNTIRFVEEHANEEL SLELITLFSATNVELNRLKVKGENGSYEKDYDFFSAKPDKG KIKIKDTNSVMKFELLKKLKFINSATETNQEAIKFLKEAYN LRNNILHGKNEEIIEDNKKNLKSKSYKNINELIEELRPSDNEICK SLNLDIIFKGNRKINDINAKLFGNNREKIYLPFSKLVPEIKNII ESYDKNGTFNDERIKKIVLNGAIYVNKILYLKECSNKDGEFI KNLKEELNKDSKEKSKYVSIEELYKKSQISASKGNKKAIFY QRKIIIEIYLKYLKENYVEILDFSKLNLNIEQIENDIKNRKNSN KVLIESIKQKVPENDFEYIISIFALLNDNIFINKIRNRFFSTD WLKNNRYSNIIKILDEVISVNLLRTELLNTSIDIEEIKDDVLTE DIENIPEIREEILQRTKKDFKTLGNNASKEGLSNEDIDKIRN IEDAKINLDFVNNEIKVSLKEYGSLPPNGVLSRNTSKYYNNEI AKKIDQISILTFTKKSIGTISDEKFRNIYWQERKESDESKKIFV YNKNILYLVTKHSFEKLYKNFLEEELNKLKLEDTKYLRDL LRREKNLKVNTLKEINEKVRGYSKEYKKKFIENLKNNDY FGKVVSGRFKNYQEFKEIYDEVSEYKKIRDVVNFNPLNKVY NYLIEINWKLAIQMARAERDLHYIVNGLNELKLIENLQGGN DGISRAYPKYKLNKEKNKKELRLEECHYNFDIDNYKKFEKI CEKLGIDLSENGELQQENETNIRNYISHFYILRKPFVDISISEAI KRVSKLLSYRTRYNNSTYSSVFEVFKKDVELNYDFLKKKIE LNGKTYDEVVQRKKISCLELESYLDYKPIKKILF
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【表 1 - 2 0 3】

217	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFKFQFYTYLGNYPHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDNLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISLKNKVLKVKRNNSISSSVKIQPYEN YKRECLDFEEAQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNDDSSA
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【表 1 - 2 0 4】

218	Cas13	MGAIKNKHIFAAAYANLAIDGLIKTLNFIAKKLDTQKQLSSW DIKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKK GERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPG GYDIPSSLNCIYDSAINIIKERFQAEEKEMEHLRRYTRKKGRV VLKTEDDHFYITLANNNDLSEKGYAFFISMFLERKYSYLFL KKLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQ DRALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPY GLPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYFH NGYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALN VKSIDISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGK DTYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHK SHCPLSVKDIIERSIHKSTKQKHPEERSELMLRRVMKAIFWT DSKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWL QPSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLI NSSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQ GKLNIQCHPLRDLQREPKNPQDKEEAIFLPRGLFNEAIINCLK KSKLKQLIESPTREKSPALNVSYLIQNYFRTYFEDQSQEFYA QPRNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVA EANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTK EYLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDI KIKDYGKLFYIHHDTRISLKNKVLKVKRNNSSISSSVKIQPYE NYKRECLDFEEAQIQUIIHSFEIAMVSMFDPDLKKATPGNYY DFNELITEYEKRTKQKIGSSFLIKTRNMFLHDKYEAECIKEIS DDFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 2 0 5】

219	Cas13	MGAIKNKHIFAAAYANLAIDGLIKTLNFIAKKLDTQKQLSSW DIKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKK GERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPG GYDIPSSLNCIYDSAINIIKERFQAEKEMEHLRRYTRKKGRV VLKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYFL KKLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQ DRALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPY GLPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYFH NGYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALN VKSIDISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGK DTYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHK SHCPLSVKDIIERSIHKSTKQKHPEERSELMLRRVMKAIFWT DSKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWL QPSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLI NSSNPHPFLAQIGTNYTSLIEFYIAYLKERKVFYSRIQKKILQ GKLNIQCHPLRDLQREPKNPQDKEEAIFLPRGLFNEAIINCLK KSKLKQLIESPTREKSPALNVSYLIQNYFRTYFEDQSQEFYA QPRNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVA EANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTK EYLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDI KIKDYGKLFYIHHDTRISSLNKVLKVKRNNSSISSSVKIQPYE NYKRECLDFEEAQIPIIHSFEIAMVSMFDPDLKKATPGNYY DFNELITEYEKRTKQKIGSSFLIKTRNMFLHDKYEAECIKEIS DDFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 2 0 6】

220	Cas13	MGKLYGYKRWYEIEQNNGEKGsfkrKIRVKRVYDEESKSY VVRrDEVEDTEliKnKnFIInLKDYKTRNSNIQKFYDKFHVG NiLFKLKASVKKGKKTfYKDLEKAETVLTnVEiLEQTIKLAN NSKiNRKKLEKELTQLNINEKSEEVTIDNIKIYLRQGEKFDKK ENINAIKWRLTSEELTIKVEIYRECQSINSNLYSLDYVLSN EEYDDRYYLEEVENKLLIFGTGNKnKnGRNYYYFDYVLKS LSKiKGLIKDDRNLYLMFLfNIQKTSenKEHFINKIFNYFK YEVRIEKEDIVEFLVGELEYDliKRIEKkPSENQnQTNLEKT YILLDKHEKLKETIDTKNEIVQKLTIELKNNNLrNRiELHky KiLELVDKLNKnIKNGKINTELYGIYKEHYGQCIEYINFNELA LEEKELYKiiYRYLKGRIEKLLQNRNKIKIGELRIEDIFIFQKLL EKIEIRVKQYLLEHILYLgKLKHhNIDEVNTIRFVEEHANEEL SLELITLFSATNVELNRLlKVKGENGsYEkDYDFFSAKPDKG KiKiKDTNSVMKFELLKklKFINSEATETnQEAIDFLKEAYN LRNNILHGKNeeIIEDNKKNLsKSYKNINELIEELRPSDNEICK SLNLDiIFKGNRKINDINAKLFGNNREKIYLPsFSKLvPEIKNi ESYDKNGTFNDERIKKIVLNGAIYVNKiLYLKECSNKDGEFI KNLKEELNKDSKEKsKYVSIEELYKKSQISASKGNKKAIYKY QRKiIEiYLKYLKENYVEILDFSKLNLNIEQIENDIKNRKNSen KVLIESIKQKVFPENDFEYiISIFALLNDNIFINKIRNRFFSTDT WLKNNRYSNIiKILDEVISVNLLRTELLNTSiDIEEKDDVLTE DIENiPEIREEILQRtKKDFKTLlGNNAISKEGLSNEDIDKiRN IEDAKINLDFVNNEIKVSLKEYGSLPPNGVLSRNTSKYYNNEI AKKiDQISILtFTKKSIGTISDEKFRNIYWQERKESDESKKIFV YNKNiLYLVTKHSFEKLYKNFLEEELNlKLEDTKYLRDLd LRREKNLKVdNTLKEINEKVRGYSKEYKKKFIENLKNNDey FGKVVSGrFKNYQEFKEiYDEVSEYKKIRDvVNFNPLNKVY NYLiEINWKLAIQMARAERDLHYIVNGLNELKLiELNQGQn DGiSRAYPKYKLNKEKNKKELRLEECHYNFDIDNYKKFEKi CEKLGiDLSENGELQQENETNiRNYISHFYILRKPFVDiSISEAI KRVSKLLSYRTRYNNSTYSSVFEVFKDVELNYDFLKKKiE LNGKTYDEVVQRKKISCLELESYLDYKPiKKILF
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【表 1 - 2 0 7】

221	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEIEHLRRYTRKKGRVVL KTEDDHFYITLVNNNDLSEKGYAFFISMFLERKYSYLFLKK LSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQDR ALDILNELSRIPIELYQTLEPKYREMYNETLQPTDAEDPYGLP DRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYPFHNGY QKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVKSI DISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGKDTYP TIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSHCP LSVKDIIERSIHKSTKQKHPEERSELMRRVMKAIFWTD SKL NEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQPSK NNGRDKVTEPNFQAIQVSLAYFGIRNDLTEIFTRAGLINSSN PHPFLAQIGTNYTSLIEFYIAYLKERKVFYSRIQKKILQGKLN QCHPLRDLQREPKNPQDKKEAIFLPRGLFNEAIIINCLKKSKL KQLIESPTREKSPALNVSYLIQNYFRITYFEDQSQEFYAQPRN YRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEANK LLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEYLPS DLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKIKDY GKLFYIHHDTRISSLNKVL SKVKRNNSSISSVKIQPYENYKRE CLDFEEAQIQIPIIHSFEIAMVSMFPDLKKATPGNYYDFNELI TEYEKRTKQKIDSSFRIKTRNMFLHDKYEAECIKEISDDFVY AKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 2 0 8】

222	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFKFQFYTYLGNYPHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDNLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISLKNKVLKVKRNNSISSSVKIQPYEN YKRECLDFEEAQIPIIHSFEIAMVSMFPDLKKATPGNYID FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 2 0 9】

223	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDQTQQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYIRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRTTKDQD RALDILNELSRIPIELYQTLEPKYREMYNETLQPTDAEDPYGL PDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNFYHNG YQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVK SIDISTDSIPDINSFEPYLQSTPHYIVNGNIGIKVLPEGKDT YPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSH CPLSVKDIIERSIHKSTKQKHPEERSELMRRVMKAIFWTDS KLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQP SKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLINS SNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQ GK LNIQCHPLRDLQREPKNPQEKEEAIFLPRGLFNEAIINCLKKS KLKQLIESPTREKSPVLNVSYLIQNYFRAYFEDQSQEFYAQP RNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEA NKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEY LPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKI KDYGKLFYIHHDTRISSLNKVLKVKRNNSSISSSVKIQPYEN YKRECLDFEEAQIQIPIIHSFEIAMVSMFPDLKKATPGNYD FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNSSA
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【表 1 - 2 1 0】

224	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMKHLRNYTLVNNGL SEKGYAFFISKFLERKYSYLFLKKLSGFKRGDLSQYRLTLEV FTALSTKPPVERLRRTTKDTKQDRALDILNELSKIPIELYQTLE PKYREMYNETLQPTDAEDPYGLPDRSRIRFRSRFEAFALHFL DKQADFKEIGFYTYLGNYPFHNGYQKTRVDRETKDRYINFQL AGFCKNIQDISAKKLSEALNVKSIDISTDSIPDINSFEPYLVQS TPHYIVNGNNGIGIKVLPEGKDTYPTIDEKGAKMPIADFWLSK YELPAMLFYTYLRNNNIHKSHCPLSVKDIIERSIHKSTKQKHP EERSELMLRRVMKAIFWTDSKLNEVERIKSQKSFAFGKRQHE ILKAGRIAETLVRDMLWLQPSKNNGRDKVTEPNFQAIQVSL AYFGIRRNDLTEIFTRAGLINSSNHPFLAQIGTNYTSLIEFYI AYLKERKVYFSRIQKKILQGKLNQCHPLRDLQREPKNKPQEK EEAIFLPRGLFNEAIINCLKKSKLKQLIESPTREKSPALNVSYL IQNYFRTYFEDQSQEFYAQPRNYRLFDKLSPNKGKSKSYLSL EQRIKKMEELRPSKIPVAEANKLLEKEDRLYRKNYNEICDNE SIIRLYQIQDILLFMMTKEYLPSDLYNRINKYKLENVKGILNE RVSYLIDLNPLKIQGEDIKIKDYGKLFYIHHDTRINSLNKVLS KVKRNNSISSSVKIQPYENYKRECLDFEEAQIQIPIIHSFEIAM VSMFPDLKKATPGNYYDFNELITEYEKRTKQKIDSSFLIKTR NMFLHDKYEAECIKEISDDL VYAKKIIAEFKMKIENIKLEDLS NDSSA
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【表 1 - 2 1 1】

225	Cas13	MGAIKNKHIFAAAYANLAIDGLIKTLNFIAKKLDTQKQLSSW DIKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKK GERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPG GYDIPSSLNCIYDSAINIIKERFQAEEKEMEHLRRYTRKKGRV VLKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFL KKLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQ DRALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPY GLPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYFH NGYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALN VKSIDISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGK DTYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHK SHCPLSVKDIIERSIHKSTKQKHPEERSELMRRVMKAIFWT DSKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWL QPSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLI NSSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQ GKLNIQCHPLRDLQREPKNPQDKEEAIFLPRGLFNEAIINCLK KSKLKQLIESPTREKSPALNVSYLIQNYFRTYFEDQSQEFYA QPRNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVA EANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTK EYLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDI KIKDYGKLFYIHHDTRISLKNKVLKVKRNNSSISSSVKIQPYE NYKRECLDFEEAQIQUIIHSFEIAMVSMFDPDLKKATPGNYY DFNELITEYEKRTKQKIGSSFLIKTRNMFLHDKYEAECIKEIS DDFVYAKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 2 1 2】

226	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRTTKDTKQD RALDILNELSRIPIELYQTLEPKYREMYNETLQPTDAEDPYGL PDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNFYHNG YQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVK SIDISTDSIPDINSFEPYLQSTPHYIVNGNNGIKVLPEGKDT YPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSH CPLSVKDIIERSIHKSTKQKHPEERSEMLRRVMKAIFWTDS KLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQP SKNNGRDKVTEPNFQAIQVSLAYFGIRNDLTEIFTRAGLINS SNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQ GK LNIQCHPLRDLQREPKNPQEKEEAIFLPRGLFNEAIINCLKKS KLKQLIESPTREKSPALNVSYLILNYFRTYFEDQSSEFYAQPR NYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEAN KLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEYLP SDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKIKD YGKLFYIHHDTRINSLNKVLSKVKRNNSSSSSVKIQPYENYK RECLDFEEAQIQIPIIHSFEIAMVSMFDPDLKKATPGNYYDFNE LITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISDDFV YAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 2 1 3】

227	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDLSQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFKFQFYTYLGNFYHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDNLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISLKNKVLKVKRNNSISSSVKIQPYEN YKRECLDFEEAQIPIIHSFEIAMVSMFPDLKKATPGNYYD FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 2 1 4】

228	Cas13	MGAIENKHIFAAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDSDLQYRLTLEVFTALSTKPPVERLRRTTKDTKQD RALDILNELSKIPIELYQTLEPKYREMYNETLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYPHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYIVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKHLIESPTREKSPALNVSYLIQNYFRAYFEDQSQEFYAQ PRNYRLFDNLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAE ANKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKE YLPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIK IKDYGKLFYIHHDTRISSLNKVL SKVKRNNSISSSVKIQPYEN YKRECLDFEEAQIPIIHSFEIAMVSMFPDLKKATPGNYYD FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKHIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 2 1 5】

229	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 1 6】

230	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLT GKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 1 7】

231	Cas13	MDTPNFSEIPVSLQSHPYFAHYLNMARHNAYVILEYVNR ELIKPGKNLDEDNLIQSTVLKDGYPDRKPDELSHRNRLLVQ HFPFLREAENEGARTCNVSYKLKTALAALNQWRNNASHY PLNQNHKDFDLQPFFSFAIEACKKRMREVFQPDDEFYLLTN EKQFYTLHNENGFTEKGLYCFICFFLEKKYAFQFLAGIKGFK NTTDNKFRATLETFTTEHCCRLPKPKLDSSDIKLDMLGELSRC PAPLFDLLDIEERKKFIREPEEVKPDES GDREEVQQVLMKRY DDRFYPYFALRYFEEKNLLKGISFHHIGRWIKSEHTKKIMGAE RDRLLKDIRTFGELKEFSPEHAPDYWLRDGITPDDVDQFSP QYRIVGNRIGIKLNYNGHNRWSVPDKEINVKPDIIISTYEF NLFLYEHLYQKKLTGLSPAEFIQDYLD RFNNFLSEFKAGHIR PVGDFSLEKRRGQGDEPDLTARRKSLQKELDRFVLKGKDL DKIREYLLGYKQKSEKKQAKWILGGMKETVYWRNKAEQS PEKMRSGDMAQQLARDIIFLTPPHTVKEHKQKLNSLEYDVL QYALAYFSSNREKLYSFFKEHQLTVKGDRAHPFLYKIRLDE CQGILDFIVYMQQKEKWLGWLDRLNLKSPRLNEEEFFNTYS YFIKTDTKRAIEMDYESCPNYLPRGIFNEPIAKALQKAGVKI KDEDNASYALSVYSNGKTQPFYNKERYYNKGIFRMEELPEK LQPKELLGKIQWTIKSSGKDTEEFRSLQNLKNRILNTEKEIRY VQSTDRA LWIMVADLFPETFELRPDDLECIGHDLSDDL SRP YQMKEKVYNYTITDYLPIKRYGEFRRFLKDRRLNLLTYFE EGVPLHREALVAELEAYDLQRKNLLEIIRFEKLVFDRHRHE LTFSGEGENQYVNHWDYLD FVARKYGLSAEVKELNSERFT ELRNKMLHNQIPYQLWIK EAIAREENTVCGRIMGMIGEIYE RMTTEIEKQMQV
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【表 1 - 2 1 8】

232	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 1 9】

233	Cas13	MENKTSLGNNIYYNPFKPQDKSYFAGYFNAAMENTDSVFR ELGKRLKGKEYTSENFFDAIFKENISLVEYERYVKLLSDYFP MARLLDKKEVPIKERKENFKKNFKGIKAVRDLRNFYTHKE HGEVEITDEIFGVLDDEMLKSTVLTVKKKKVKTDKTKEILKKS IEKQLDILCQKKLEYLRDTARKIEEKRRNQRRERGEKELVAPF KYSDKRDDLIAAIYNDAFDVYIDKKKDSLKESSKAKYNTKS DPQQEEGDLKIPISKNGVVFLLSLFLTKQEIHAFKSKIAGFKA TVIDEATVSEATVSHGKNSICFMATHEIFSHLAYKKLKRKVR TAEINYGEAENAEQLSVYAKETLMMQMLDELSKVPDVVYQ NLSEDVQKTFIEDWNEYLKENNGDVGTMEEEQVIHPVIRKR YEDKFNFAIRFLDEFAQFPTLRFQVHLGNYLHDSRPKENLI SDRRIKEKITVFGRLSELEHKKALFIKNTETNEDREHYWEIFP NPNYDFPKENISVNDKDFPIAGSILDREKQPVAGKIGIKVKLL NQYVSEVDKAVKAHQLKQRKASKPSIQNIIEEIVPINESNP KEAIVFGGQPTAYLSMNDIHSILYEFFDKWEKKKEKLEKKG EKELRKEIGKELEKKIVGKIQAQIQIIDKDTNAKILKPYQDG NSTAIDKEKLIKDLKQEQNILQKLKDEQTVREKEYNDFIAYQ DKNREINKVRDRNHKQYLKDNLKRKYPEAPARKEVLYYRE KGKVA VWLANDIKRFMPTDFKNEWKGEQHSLLQKSLAYY EQCKEELKNLLPEKVFQHLPFKLGGYFQQKYLYQFYTCYLD KRLEYISGLVQQAENFKSENKVFKKVENECFKFLKKQNYTH KELDARVQSILGYPIFLERGFMDKPTIIGKTFKGNEALFAD WFRYYKEYQNFQTFYDTENYPLVELEKKQADRKRKTKIYQ QKKNDVFTLLMAKHIFKSVFKQDSIDQFSLEDLYQSREERLG NQERARQTGERNTNYIWNKTVDLKLCDGKITVENVKLKNV GDFIKYEYDQRVQAFLKYEENIEWQAFLIKESKEEENYPYV VEREIEQYEKVRREELLKEVHLIEEYILEKVKDKEILKKGDN QNFKYYILNGLLKQLKNEDVESYKVFNLTNTEPEDVNINQLK QEATDLEQKAFVLTYIRNKFAHNQLPKKEFWDYCQEKYGKI EKEKTYAEYFAEVFKKEKEALIK
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【表 1 - 2 2 0】

234	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLT GKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDG LIAEALLKVLREYCEIVKSQI
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【表 1 - 2 2 1】

235	Cas13	MTEQSERPYNGTYTLEDKHFWA AFLNLARHNA YITLTHID RQLAYSKADITNDQDVLSFKALWKNLDNDLERKSRLRSLIL KHFSFLEGAAYGKKLFESKSSGNKSSKNKELTKKEKEELQA NALSLDNLKSILFDLQKLKDFRNYYSHYRHSGSSELPLFDG NMLQRLYNVFDVSVQRVKRDHEHNDKVDPHYHFNLVRK GKKDRYGHNDNPSFKHHFVDSEGMVTEAGLLFFVSLFLEKR DAIWMQKKIRGFKGGTGPYEQMTNEVFCRSRISLPKCLKES LRTDDWMLLDMLNELVRCPKPLYDRLREKDRACFRVPVDI LPDEDDTDGGGEDPFKNTLVRHQDRFPYFALRYFDLKKVFT SLRFHIDLGTYHFAIYKKMIGE QPEDRHLTRNLYGFGRIQDF AEEHRPEEWKRLVRDL DYLETGDKPYISQTTPHYHIEKGKIG LRFVPEGQHLWPSPEVGTTTRTGRSKCAQDKRLTAEAFLSVH ELMPMMFYFLLREKYSEEVS AEKVQGRIKRVIEDVYAIYD AFARDEINTLKELDTCLADKGIRRGHLPKQMITILSQERKDM KEKIRKKLQEMIADTDHRLDMLDRQTDRKIRIGRKNAGLPK SGVIADWLVRDMMRFQPVAKDASGKPLNNSKANSTEYRM LQRALALFGGEKERLTPYFRQMNL TGGNNPHPF LHETRWE HTNILSFYRSYLARKAFLE RIGRSDRVENC PFLLKEPKTDR QTLVAGWKDEFHLPRGIFTEAVRDCLIEMGYDEVGSYREVG FMAKAVPLYFERACEDRVQPFYDSPFN VGNSLKP KKGRFLS KEDRAEEWERGMERFRDLEAWSHSAARRIKDAFAGIEYASP GNKKKIEQLLRDLSLWEAFESKLKVRADKINLAKLKEILE AQEHYPYHDFKSWQKFERELRLVKNQDIITWMMCRDLMEEN KVEGLDTGTLYLKDIRPNVQEQGSLNVLNRVKPMRLPVVV YRADSRGHVHKEAPLATVYIEERN TKLLKQGNFKSFVKDRR LNGLFSFVDTGGLAMEQYPISKLRVEYELAKYQTARVCVFE LTLRLEESLLSRYPHLPDES FREMLESWSDPLLAKWP ELHGK VRLIAVRNAFSHNQYPMYDEAVFSSIRKYDPSSPDAI EERM GLNIAHRLSEE VKQAKETVERIIQA
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【表 1 - 2 2 2】

236	Cas13	MEKPLPPNVYTLKHKFFWGAFLNIA RHNAFITICHINEQLGL TTPPNDDKIADVVC GTWNNILNNDHDL LKKSQ LTELILKHFP FLAAMCYHPPKKEGKKKGSQKEQQKEKENEASQAEALNP SELIKALKTLVKQLRTL RNYYSHYKHKKPDAEKDIFKHLYK AFDASLRMVKEDYKAHFTVNL TQDFAHLNRKGKNKQDNP KFDRYRFEKDGGFTESGLLFFTNLFLDKRDAYWMLKKVSGF KASHKQSEKMTTEVFCSRILLPKLRLESRYDHNQMLLDML SELSRCPKLLYEKLSEKDKKHFQVEADGFLDEIEEEQNPFKD ALIRHQDRFPYFALRYLDL NESFKSIRFQVDLGTYHYCIYDK KIGDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALT KDLD YKETSKQPFISKTTPHYHITDNKIGFRLGTSKELYP SLEVKD G ANRIAKYPYNSDFVAHAFISVHELLPLMFYQHLTGKSEDLL KETVRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQM LGLLQNKQPD LSEKAKIKIEK LIAETKLLSHRLNTKLKSSPKL GKRREKLIK TGDWL VKDFMRFQPVAYDVQNQPIESSKANST EFQLIQRALALYGGEKNRLEGYFKQTNLIGNTNPHPF LNKFN WKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLLLKI PKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDLT LSKPIR KEIKKHGRVGFISRATLYFRERYQDDHQSFYNLPYELEAKA STPKPPLPKKREYVLRAEHYEWQQNK PQSPTELQRLELHT SDRWKDYLLYKRWQHLEKKLR LYNQDVMLWMLTLELT KNHFKELKLNYHQLKLENLAVNVQEADAKLNPLNQTLPMV LPVKVYPATAFGEVQYQETPIRTVYIREEQTKALKMGNFKA LVKDRRLNGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVD AFKETLSLEEKLLNKHASLSSLENEFRTLLEEWKKKYAASS MVTDEHIAFIASVRNAFCHNQYPFYKETLHAPILLFTVAQPT TEEKDGLGIAEALLRVLREYCEIVKSQI
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【表 1 - 2 2 3】

237	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDL NESFKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYP SLEIKDGAN RIAKYPYNSGFVAHAFISVHELLPLMFYQH LTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFQPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGN TNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRET LSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEKYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNK PQSPTESQRLELHTSDRWKD YLLYKRWQHLEKKLRLYRNQDVMLWLMTELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 2 4】

238	Cas13	MENKTSLGNNIYYNPFPQDKSYFAGYFNAAMENTDSVFR ELGKRLKGKEYTSENFFDAIFKENISLVEYERYVKLLSDYFP MARLLDKKEVPIKERKENFKKNFKGIKAVRDLRNFYTHKE HGEVEITDEIFGVLDDEMLKSTVLTVKKKKVKTDKTKEILKKS IEKQLDILCQKKLEYLRDTARKIEEKRRNQRRERGEKELVAPF KYSDKRDDLIAAIYNDAFDVYIDKKKDSLKESSKAKYNTKS DPQQEEGDLKIPISKNGVVFLLSLFLTKQEIHAFFSKSIAGFKA TVIDEATVSEATVSHGKNSICFMATHEIFSHLAYKKLKRKVR TAEINYGEAENAEQLSVYAKETLMMQMLDELSKVPDVVYQ NLSEDVQKTFIEDWNEYLKENNGDVGTMEEEQVIHPVIRKR YEDKFNFAIRFLDEFAQFPTLRFQVHLGNYLHDSRPKENLI SDRRIKEKITVFGRLSELEHKKALFIKNTETNEDREHYWEIFP NPNYDFPKENISVNDKDFPIAGSILDREKQPVAGKIGIKVKLL NQYVSEVDKAVKAHQLKQRKASKPSIQNIIEEIVPINESNP KEAIVFGGQPTAYLSMNDIHSILYEFFDKWEKKKEKLEKKG EKELRKEIGKELEKKIVGKIQAQIQIIDKDTNAKILKPYQDG NSTAIDKEKLIKDLKQEQNILQKLKDEQTVREKEYNDFIAYQ DKNREINKVRDRNHKQYLKDNLKRKYPEAPARKEVLYYRE KGKVA VWLANDIKRFMPTDFKNEWKGEQHSLLQKSLAYY EQCKEELKNLLPEKVFQHLPFKLGGYFQQKYLYQFYTCYLD KRLEYISGLVQQAENFKSENKVFKKVENECFKFLKKQNYTH KELDARVQSILGYPIFLERGFMDKPTIIGKTFKGNEALFAD WFRYYKEYQNFQTFYDTENYPLVELEKKQADRKRKTKIYQ QKKNDVFTLLMAKHIFKSVFKQDSIDQFSLEDLYQSREERLG NQERARQTGERNTNYIWNKTVDLKLCDGKITVENVKLKNV GDFIKYEYDQRVQAFLKYEENIEWQAFLIKESKEEENYPYV VEREIEQYEKVRREELLKEVHLIEEYILEKVKDKEILKKGDN QNFKYYILNGLLKQLKNEDVESYKVFNLNTEPEDVNINQLK QEATDLEQKAFVLTYIRNKFAHNQLPKKEFWDYCQEKYGKI EKEKTYAEYFAEVFKKEKEALIK
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【表 1 - 2 2 5】

239	Cas13	MFFSFHNAQRVIFKHLYKAFDASLRMVKEDYKAHFTVNLT RDFAHLNRKGKNKQDNPDFNRYRFEKDGFFTESGLLFFTNL FLDKRDAYWMLKKVSGFKASHKQREKMTTEVFCSRILLP KLRLESRYDHNQMLLDMLSELSRCPKLLYEKLSEENKKHFQ VEADGFLDEIEEEQNPFKDTLIRHQDRFPYFALRYLDLNEF KSIRFQVDLGTYHYCIYDKKIGDEQEKRHLTRTLLSFGRQLD FTEINRPQEWKALTKDLDYKETSNOFPISKTTPHYHITDNKIG FRLGTSKELYPSEIKDGANRIAKYPYNSGFVAHAFISVHELL PLMFYQHLTGKSEDLLKETVRHIQRIYKDFEERINTIEDLEK ANQGRPLGAFPKQMLGLLQNKQPDLSEKAKIKIEKLIAETK LLSHRLNTKLKSSPKLGKRREKLIKTVGLADWLVKDFMRFQ PVAYDAQNQPIKSSKANSTEFWFIRRALALYGGEKNRLEGY FKQTNLIGNTNPHPFLNKFNWKACRNLVDFYQQYLEQREKF LEAIKNQPWEPYQYCLLLKIPKENRKNLVKGWEQGGISLPR GLFTEAIRETLSEDLMLSKPIRKEIKKHGRVGFISRAITLYFKE KYQDKHQSFYNLSYKLEAKAPLLKREEHYEYWQQNKQPSP TESQRLELHTSDRWKDYLLYKRWQHLEKKLRLYRNQDVM LWLMTELTKNHFKELNLNYHQLKENLAVNVQEADAKL NPLNQTLPMVLPVKVYPATAFGEVQYHKTPIRTVYIREEHT KALKMGNFKALVKDRRLNGLFSFIKEENDTQKHPISQLRLR RELEIYQSLRVDAFKETLSLEEKLLNKHTSLSSLENEFRALLE EWKKEYAASSMVTDEHIAFIASVRNAFCHNQYPFYKEALHA PIPLFTVAQPTTEEKDGLGIAEALLKVLREYCEIVKSQI
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【表 1 - 2 2 6】

240	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 2 7】

241	Cas13	MEKPLPPNVYTLKHKFFWGAFLNIA RHNAFITICHINEQLGL TTPPNDDKIADVVC GTWNNILNNDHDL LKKSQ LTELILKHFP FLAAMCYHPPKKEGKKKGSQKEQQKEKENEASQSAEALNP SELIKALKTLVKQLRTL RNYYSHYKHKKPDAEKDIFKHLYK AFDASLRMVKEDYKAHFTVNL TQDFAHLNRKGKNKQDNP KFDRYRFEKDGGFTESGLLFFTNLFLDKRDAYWMLKKVSGF KASHKQSEKMTTEVFCSRILLPKLRLESRYDHNQMLLDML SELSRCPKLLYEKLSEKDKKHFQVEADGFLDEIEEEQNPFKD ALIRHQDRFPYFALRYLDL NESFKSIRFQVDLGTYHYCIYDK KIGDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALT KDLD YKETSKQPFISKTTPHYHITDNKIGFRLGTSKELYP SLEVKG ANRIAKYPYN SDFVAHAFISVHELLPLMFYQHLTGKSEDLL KETVRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQM LGLLQNKQPD LSEKAKIKIEK LIAETKLLSHRLNTKLKSSPKL GKRREKLIK TGVLADWL VKDFMRFQPVAYDVQNQPIESSK ANSTEFQLIQRALALYGG EKNRLEGYFKQTNLIGNTNPHPFL NKFNWKACRN LVDFYQQYLEQREKFLEAIKNQPWEPYQYC LLLKIPKENRKNLVKGWEQGGISLPRGLFTEAIRET LSED LTL SKPIRKEIKKHGRVGFISRAITLYFRERYQDDHQSFYNLPYEL EAKASTPKPPLPKKREYVLRAEHYEWQQNK PQSPT ELQRL ELHTSDRWKDYLLYKRWQHLEKKLRLYRNQDVMLWLMT LELTKNHFKELKLN YHQLKLENLAVNVQEADAKLNPLNQT LPMVLPVKVPATAFGEVQYQETPIRTVYIREEQTKALKMG NFKALVKDRRLNGLFSFIKEENDTQKHPISQLRLRRELEIYQS LRVDAFKETLSLEEKLLNKHASLSSLENEFRTLLEEWKKKY AASSMVTDEHIAFIASVRNAFCHNQYPFYKETLHAPILLFTV AQPTTEEKDGLGIAEALLRVLREYCEIVKSQI
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【表 1 - 2 2 8】

242	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIA RHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDL LKKSQ LTELILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQA EALNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDL NESFKSIRFQVD LGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALT KDLDYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYP SLEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGN TNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWLMTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 2 9】

243	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDG LIAEALLKVLREYCEIVKSQI
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【表 1 - 2 3 0】

244	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEKYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 3 1】

245	Cas13	MFFSFHNAQRVIFKHLYKAFDASLRMVKEDYKAHFTVNLT RDFAHLNRKGKNKQDNPDFNRYRFEKDGFFTESGLLFFTNL FLDKRDAYWMLKKVSGFKASHKQREKMTTEVFCSRILLP KLRLESRYDHNQMLLDMLSELSRCPKLLYEKLSEENKKHFQ VEADGFLDEIEEQNPFKDTLIRHQDRFPYFALRYLDLNESE KSIRFQVDLGTYHYCIYDKKIGDEQEKRLHTRTLLSFGRLOD FTEINRPQEWKALTKDLDYKETSNOFPISKTTPHYHITDNKIG FRLGTSKELYPSEIKDGANRIAKYPYNSGFVAHAFISVHELL PLMFYQHLTGKSEDLLKETVRHIQRIYKDFEERINTIEDLEK ANQGRPLGAFPKQMLGLLQNKQPDSEKAKIKIEKLIAETK LLSHRLNTKLKSSPKLGKRREKLIKTVGLADWLVKDFMRQ PVAYDAQNQPIKSSKANSTEFWFIRRALALYGGEKNRLEGY FKQTNLIGNTNPHPFLNKFNWKACRNLVDFYQQYLEQREKF LEAIKNQPWEPYQYCLLLKIPKENRKNLVKGWEQGGISLPR GLFTEAIRETLSEDLMLSKPIRKEIKKHGRVGFISRAITLYFKE KYQDKHQSFYNLSYKLEAKAPLLKREEHYEYWQQNKQPSP TESQRLELHTSDRWKDYLLYKRWQHLEKKRLRYRNQDVM LWLMTELTKNHFKELNLNYHQLKENLAVNVQEADAKL NPLNQTLPMVLPVKVYPATAFGEVQYHKTPIRTVYIREEHT KALKMGNFKALVKDRRLNGLFSFIKEENDTQKHPISQLRLR RELEIYQSLRVDAFKETLSLEEKLLNKHTSLSSLENEFRALLE EWKKEYAASSMVTDEHIAFIASVRNAFCHNQYPFYKEALHA PIPLFTVAQPTTEEKDGLGIAEALLKVLREYCEIVKSQI
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【表 1 - 2 3 2】

246	Cas13	MDTPNFSEIPVSLQSHPYFAHYLNMARHNAYVILEYVNR ELIKPGKNLDEDNLIQSTVLKDGYPDRKPDELSHRNRLLVQ HFPFLREAENEGARTCNVSYKLKTALAALNQWRNNASHY PLNQNHKDFDLQPFFSFAIEACKKRMREVFQPDDEFYLLTN EKQFYTLHNENGFTEKGLYCFICFFLEKKYAFQFLAGIKGFK NTTDNKFRATLETFTTEHCCRLPKPKLDSSDIKLDMLGELSRC PAPLFDLLDIEERKKFIREPEEVKPDES GDREEVQQVLMKRY DDRFPYFALRYFEEKNLLKGISFHHIGRWIKSEHTKKIMGAE RDRLLKDIRTFGELKEFSPEHAPDYWLRDGITPDDVDQFSP QYRIVGNRIGIKLNYNGHNRWSVPDKEINVKPDIIISTYEFL NLFLYEHLYQKKLTGLSPAEFIQDYLD RFNNFLSEFKAGHIR PVGDFSLEKRRGQGDEPDLTARRKSLQKELDRFVLKGKDL DKIREYLLGYKQKSEKKQAKWILGGMIKETVYWRNKAEQS PEKMRSGDMAQQLARDIIFLTPPHTVKEHKQKLNSLEYDVL QYALAYFSSNREKLYSFFKEHQLTVKGDRAHPFLYKIRLDE CQGILDFFIVYMQQKEKWLGWLDRLNLSKSPRLNEEEFFNTYS YFIKTDTKRAIEMDYESCPNYLPRGIFNEPIAKALQKAGVKI KDEDNASYALSVYSNGKTQPFYNKERYYNKGIFRMEELPEK LQPKELLGKIQWTIKSSGKDTEEFRSLQNLKNRILNTEKEIRY VQSTDRA LWIMVADLFPETFELRPDDLECIGHDLSDDL SRP YQMKEKVYNYTITDYLPIKRYGEFRRFLKDRRLNLLTYFE EGVPLHREALVAELEAYDLQRKNLLEIIRFEKLVFDRHRHE LTFSGEGENQYVNHWDYLD FVARKYGLSAEVKELNSERFT ELRNKMLHNQIPYQLWIK EAIAREENTVCGRIMGMIGEIYE RMTTEIEKQMQV
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【表 1 - 2 3 3】

247	Cas13	MTEQNEKPYNGTYTLEDKHFWA AFLNLARHNAYITLTHI DRQLAYSKADITNDEDILFFKGQWKNLDNDLERKARLRSLI LKHFFFLEGAAYGKKLFESQSSGNKSSKKKELTKKEKEELQ ANALSLDNLKSILFDLQKLKDFRNYYSHYRHPESELPLFD GNMLQRLYNVFDVSVQRVKRDHEHNDKVDPHRHFNLVR KGKKDKYGNNDNPFFKHHFVDREGKVTEAGLLFFVSLFLE KRDAIWMQKKIRGFKGGTETYQQMTNEVFCSRISLPKLKL ESLRTDDWMLLDMLNELVRCPSLYDRLREEDRARFRVPV DILSDEDDTDGAEEDPFKNLVRHQDRFPYFALRYFDLKKV FTSLRFHIDLGTYHFAIYKKNIGE QPEDRHLTRNLYGFGRIQD FAEEHRPEEWKRLVRDL DYFETGDKPYITQTTPHYHIEKGKI GLRFVPEGQHLWPSPEVGATRTRGRSKYAQDKRFTA EAFLSV HELMPMMFYFLLREKYSEEASAERVQGRIKRVIEDVYAVY DAFARDEINTRDELDA CLADKGIRRGHLPRQMIAILSQKHK DMEEKVRKKLQEMIADTDHRLDMLDRQTDRKIRIGRKNAG LPKSGVIADWLVRDMMRFQPVAKDTSGKPLNNSKANSTEY RMLQRALALFGGEKERLTPYFRQMNL TGGNNPHPFLHETR WESHTNILSFYRSYLKARKAFLQSIGRSDRVENHRFLLLKEP KTDRQTLVAGWKGEFHLPRGIFTEAVRDCLIEMGLDEVRSY KEVGFMKAVPLYFERASKDRVQPFYDYPFNVGNSLKP KK GRFLSKEKRAEEWESGKERFRDLEAWSHSAARRIEDAFAGI ENASRENKKKIEQLLQDLSLWETFESKLKVKADKINIAKLK KEILEAKEHPYLD FKS WQKFERELRLVKNQDIITWMMCRDL MEENKVEGLDTGTLYLKDIRTDVQEQGSLNVLNHVKPMRL PVVVYRADSRGHVHKEQAPLATVYIEERDTKLLKQGNFKSF VKDRRLNGLFSFVDTGGLAMEQYPISKLRVEYELAKYQTAR VCAFEQTLEELSLTRYPHLPDKNFRKMLESWSDPLLAKW PELHEKVRLLI AVRNAFSHNQYPMYDEAVFSPIRKYDPSSPD AIEERMRLNIAHRLSEEVKQAKETVERIIQA
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【表 1 - 2 3 4】

248	Cas13	MDTPNFSEIPVSLQSHPYFFAHYLNMARHNAYVILEYVNR ELIKPGKNLDEDNLIQSTVLKDGYPDRKPDELSHRNRLLVQ HFPFLREAENEGARTCNPVSYKLKTALAALNQWRNNASHY PLNQNHKDFDLQPFFSFAIEACKKRMREVFQPDDEFYLLTN EKQFYTLHNENGFTKGLYCFICFFLEKKYAFQFLAGIKGFK NTTDNKFRATLETFTHEHCCRLPKPKLDSSDIKLDMLGELSRC PAPLFDLLDIEERKKFIREPEEVKPDES GDREEVQQVLMKRY DDRFPYFALRYFEEKNLLKGISFHHIGRWIKSEHTKKIMGAE RDRLLKDIRTFGELKEFSPEHAPDYWLRDGITPDDVDQFSP QYRIVGNRIGIKLNYNGHNRWSVPDKEINVKPDIIISTYEFL NLFLYEHLYQKKLTGLSPAEFIQDYLD RFNNFLSEFKAGHIR PVGDFSLEKRRGQGDEPDLTARRKSLQKELDRFVLKGKDLP DKIREYLLGYKQKSEKKQAKWILGGMIKETVYWRNKAEQS PEKMRSGDMAQQLARDIIFLTPPHTVKEHKQKLNSLEYDVL QYALAYFSSNREKLYSFFKEHQLTVKGDRAHPFLYKIRLDE CQGILDDFFIVYMQQKEKWLGWLDRLNLSKSPRLNEEEFFNTYS YFIKTDTKRAIEMDYESCPNYLPRGIFNEPIAKALQKAGVKI KDEDNASYALSVYSNGKTQPFYNKERYYNKGIFRMEELPEK LQPKELLGKIQWTIKSSGKDTEEFRSLQNLKNRILNTEKEIRY VQSTDRA LWIMVADLFPETFELRPDDLECIGHDLSDDL SRP YQMKEKVYNYTITDYLPIKRYGEFRRFLKDRRLNLLTYFE EGVPLHREALVAELEAYDLQRKNLLEIIRFEKLVFDRHRHE LTFSGEGENQYVNHWDYLD FVARKYGLSAEVKELNSERFT ELRNKMLHNQIPYQLWIK EAIAREENTVCGRIMGMIGEIYE RMTTEIEKQMQV
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【表 1 - 2 3 5】

249	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEMEHLRRYTRKKGRVV LKTEDDHFYYTLANNNDLSEKGYAFFISMFLERKYSYLFLK KLSGFKRGDSLQYRLTLEVFTALSTKPPVERLRTTKDTKQD RALDILNELSRIPIELYQTLEPKYREMYNATLQPTDAEDPYG LPDRSRIRFRSRFEAFALHFLDKQADFKFQFYTYLGNFYHN GYQKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNV KSIDISTDSIPDINSFEPYLVQSTPHYTVNGNIGIKVLPEGKD TYPTIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKS HCPLSVKDIERSIHKSTKQKHPEERSELMLRRVMKAIFWTD SKLNEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQ PSKNNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLIN SSNPHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQG KLNIQCHPLRDLQREPKNKPQEKEEAIFLPRGLFNEAIINCLKK SKLKQLIESPTREKSPALNVSYLILNYFRITYFEDQSQEFYAQP RNYRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEA NKLLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEY LPSDLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKI KDYGKLFYIHHDTRINSLNKVLSKVKRNNSSSSSVKIQPYEN YKRECLDFEEAQIPIIHSFEIAMVSMFPDLKKATPGNYYD FNELITEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISD DFVYAKKIIAEFKMKIENIKLEDFSNDDSA
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【表 1 - 2 3 6】

250	Cas13	MEKPLPPNVYTLKHKFFWGAFLNIA RHNAFITICHINEQLGL TTPPNDDKIADVVC GTWNNILNNDHDL LKKSQ LTELILKHFP FLAAMCYHPPKKEGKKKGSQKEQQKEKENE AQSQA EALNP SELIKALKTLVKQLRTL RNYYSHYKHKKPDAEKDIFKHLYK AFDASLRMVKEDYKAHFTVNL TQDFAHLNRKGKNKQDNP KFDRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGF KASHKQSEKMTTEVFCSRILLPKLRLESRYDHNQMLLDML SELSRCPKLLYEKLSEKDKKH FQVEADGFLDEIEEEQNPFKD ALIRHQDRFPYFALRYLDL NESFKSIRFQVDLGTYHYCIYDK KIGDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALT KDLD YKETSKQPFISKTTPHYHITDNKIGFRLGTSKELYP SLEVKD G ANRIAKYPYN SDFVAHAFISVHELLPLMFYQHLTGKSEDLL KETVRHIQRIYKDFEERINTIEDLEKANQGR LPLGA FPKQM LGLLQNKQPD LSEKAKIKIEK LIAETKLLSHRLNTKLKSSPKL GKRREKLIK TGVLADWL VKDFMRFQPVAYDVQNQPIESSK ANSTEFQLIQRALALY GGEKNRLEGYFKQTNLIGN TNPHFPL NKFNWKACRN LVDFYQQYLEQREKFLEAIKNQPWEPYQYC LLLKIPKENRKNLVKGWEQGGISLPRGLFTEAIRET LSED LTL SKPIRKEIKKHGRVGFISRAITLYFRERYQDDHQSFYNLPYEL EAKASTPKPPLPKKREYVLRAEHY EYWQQNK PQSPT ELQRL ELHTSDRWKDYLLYKRWQHLEKKLRLYRNQDVMLWLMT LELTKNHFKELKLNYHQLKLENLAVNVQEADAKLNPLNQT LPMVLPVKVPATAFGEVQYQETPIRTVYIREEQTKALKMG NFKALVKDRRLNGLFSFIKEENDTQKHPISQLRLRRELEIYQS LRVDAFKETLSLEEKLLNKHASLSSLENEFRTLLEEWKKKY AASSMVTDEHIAFIASVRNAFCHNQYPFYKETLHAPILLFTV AQPTTEEKDGLGIAEALLRVLREYCEIVKSQI
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【表 1 - 2 3 7】

251	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLT GKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDG LIAEALLKVLREYCEIVKSQI
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【表 1 - 2 3 8】

252	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 3 9】

253	Cas13	MFFSFHNAQRVIFKHLYKAFDASLRMVKEDYKAHFTVNL RDFAHNLNRKGKNKQDNPDFNRYRFEKDGFFTESGLLFFTNL FLDKRDAYWMLKKVSGFKASHKQREKMTTEVFCSRILLP KLRLESRYDHNQMLLDMLSELSRCPKLLYEKLSEENKKHFQ VEADGFLDEIEEQNPFKDTLIRHQDRFPYFALRYLDLNE KSIRFQVDLGTYHYCIYDKKIGDEQEKRLHTRTLLSFGR LQD FTEINRPQEWKALTKDLDYKETS NQPFISKTTPHYHITDNKIG FRLGTSKELYP SLEIKDGANRIAKYPYNSGFVAHAFISVHELL PLMFYQH LTGKSEDL LLKETVRHIQRIYKDFEERINTIEDLEK ANQGR LPLGAFPKQMLG LLQNKQPD LSEKAKIKIEK LIAETK LLSHRLNT KLKSSPKL GKRREK LIKTGVLAD WLVKDFMR FQ PVAYDAQ NQPIKSS KANSTEF WFIRRAL ALYGGEK NRLEGY FKQTNL IGNTN PHPFLNK FNWKAC RNLVDFY QQYLEQ REKF LEAIK NQWEPY QYCLLL KIPKEN RKNLVK GWEQGG ISLPR GLFTEA IRETL SEDLML SKPIR KEIKKH GRVGF ISRAIT LYFKE KYQDK HQSFY NLSYK LEAKA PLLKRE EHYEW QQNK PQSP TESQR LELHT SDRWK DYLLY KRWQH LEKKL RLYRN QDVM LWLM TLELT KNHFK ELNLN YHQLK LENLA VNVQE ADAKL NPLN QTLPM VLPVK VYPAT AFGEV QYHK TPIRT VYIRE EHT KALK MGNFK ALVKD RRLN GLFS FIKE ENDT QKHP ISQL RLR RELEI YQSL RVDA FKET LSLEE KLLN KHTS LSSE LENE FRALLE EWKKE YAASS MVTDE HIAFI ASVR NAFCH NQYP FYEAL HA PIPL FTVA QPTTE EKDGL GIAEA LLKVL REYCE IVKSQI
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【表 1 - 2 4 0】

254	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIA RHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDL LKKSQ LTELILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQA EALNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGK NKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDL NESFKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALT KDLDYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKEL YPSLEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLT GKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFQPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGN TNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEKYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNK PQSPTESQRLELHTSDRWKD YLLYKRWQHLEKKLRLYRNQDVMLWLMTLELTKNHFKE L NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 4 1】

255	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 4 2】

256	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 4 3】

257	Cas13	MDTPNFSEIPVSLQSHPYFAHYLNMARHNAYVILEYVNR ELIKPGKNLDEDNLIQSTVLKDGYPDRKPDELSHRNRLLVQ HFPFLREAENEGARTCNVSYKLKTALAALNQWRNNASHY PLNQNHKDFDLQPFFSFAIEACKKRMREVFQPDDEFYLLTN EKQFYTLHNENGFTEKGLYCFICFFLEKKYAFQFLAGIKGFK NTTDNKFRATLETFTTEHCCRLPKPKLDSSDIKLDMLGELSRC PAPLFDLLDIEERKKFIREPEEVKPDES GDREEVQQVLMKRY DDRFPYFALRYFEEKNLLKGISFHHIGRWIKSEHTKKIMGAE RDRLLKDIRTFGELKEFSPEHAPDYWLRDGITPDDVDQFSP QYRIVGNRIGIKLNYNGHNRWSVPDKEINVKPDIIISTYEFL NLFLYEHLYQKKLTGLSPAEFIQDYLD RFNNFLSEFKAGHIR PVGDFSLEKRRGQGDEPDLTARRKSLQKELDRFVLKGKDL DKIREYLLGYKQKSEKKQAKWILGGMIKETVYWRNKAEQS PEKMRSGDMAQQ LARDIIFLTPPHTVKEHKQKLNSLEYDVL QYALAYFSSNREKLYSFFKEHQLTVKGDRAHPFLYKIRLDE CQGILDFFIVYMQQKEKWLGWLDRLNLSKSPRLNEEEFFNTYS YFIKTDTKRAIEMDYESCPNYLPRGIFNEPIAKALQKAGVKI KDEDNASYALSVYSNGKTQPFYNKERYYNKGIFRMEELPEK LQPKELLGKIQWTIKSSGKDTEEFRSLQNLKNRILNTEKEIRY VQSTDRA LWIMVADLFPETFELRPDDLECIGHDLSDDLLSRP YQMKEKVYNYTITDYLPIKRYGEFRRFLKDRRLNLLTYFE EGVPLHREALVAELEAYDLQRKNLLEIIYRFEKLVFDRHRHE LTFSGEGENQYVNHWDYLD FVARKYGLSAEVKELNSERFT ELRNKMLHNQIPYQLWIK EAIAREENTVCGRIMGMIGEIYE RMTTEIEKQMQV
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【表 1 - 2 4 4】

258	Cas13	MFFSFHNAQRVIFKHLYKAFDASLRMVKEDYKAHFTVNLT RDFAHLNRKGKNKQDNPDFNRYRFEKDGFFTESGLLFFTNL FLDKRDAYWMLKKVSGFKASHKQREKMTTEVFCSRILLP KLRLESRYDHNQMLLDMLSELSRCPKLLYEKLSEENKKHFQ VEADGFLDEIEEEQNPFKDTLIRHQDRFPYFALRYLDLNESE KSIRFQVDLGTYHYCIYDKKIGDEQEKRHLTRTLLSFGRQLD FTEINRPQEWKALTKDLDYKETSNOFPISKTTPHYHITDNKIG FRLGTSKELYPSEIKDGANRIAKYPYNSGFVAHAFISVHELL PLMFYQHLLTGKSEDLLKETVRHIQRIYKDFEERINTIEDLEK ANQGRPLGAFPKQMLGLLQNKQPDLSEKAKIKIEKLIATK LLSHRLNTKLKSSPKLGKRREKLIKTVGLADWLVKDFMRQ PVAYDAQNQPIKSSKANSTEFWFIRRALALYGGEKNRLEGY FKQTNLIGNTNPHFPLNKFNWKACRNLVDFYQQYLEQREKF LEAIKNQPWEPYQYCLLLKIPKENRKNLVKGWEQGGISLPR GLFTEAIRETLSEDLMLSKPIRKEIKKHGRVGFISRAITLYFKE KYQDKHQSFYNLSYKLEAKAPLLKREEHYEYWQQNKQPSP TESQRLELHTSDRWKDYLLYKRWQHLEKKRLRYRNQDVM LWLMTELTKNHFKELNLNYHQLKENLAVNVQEADAKL NPLNQTLPMVLPVKVYPATAFGEVQYHKTPIRTVYIREEHT KALKMGNFKALVKDRRLNGLFSFIKEENDTQKHPISQLRLR RELEIYQSLRVDAFKETLSLEEKLLNKHTSLSSLENEFRALLE EWKKEYAASSMVTDEHIAFIASVRNAFCHNQYPFYKEALHA PIPLFTVAQPTTEEKDGLGIAEALLKVLREYCEIVKSQI
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【表 1 - 2 4 5】

259	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLT GKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFQPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 4 6】

260	Cas13	MTNTPKRRTLHRHPSYFGAFLNIARHNAFMIMEHLSTKYDM EDKNTLDEAQLPNAKLFGLCKKRYGKPDVTEGVSRDLRRY FPFLNYPLFLHLEKQQNAEQAATYDINPEDIEFTLKGFFRLN QMRNNYSHYISNTDYGKFDKLPVQDIYEAIFRLLDRGKHT KRFDVFESKHTRHLESNNSEYRPRSLANSPDHENTVAFVTCL FLERKYAFPFLSRLDCFRSTNDAAEGDPLIRKASHECYTMFC CRLPQPKLESSDILLDMVNELGRCPSALYNLLSEEDQARFHI KREEITGFEEEDPDEELEQEIVLKRHSDRFPYFALRYFDDTEAF QTLRFDVYLGRWRTKPVYKKRIYGQERDRVLTQSIRTFTRL SRLLPYENVKHDAVRQNEEDGKLVNPDVTSQFHKSWIQIES DDRAFLSDRIEHFSPHYNFGDQVIGLKFINPDRYAAIQNVFP KLPGEEKKDKDAKLVNETADAIISTHEIRSLFLYHYLSKKPIS AGDERRFIQVDTETFIKQYIDTIKLFEDIKSGELQPIADPPNY QKNEPLPYVRGDKEKTQEERAQYRERQKEIKERRKELNTLL QNRYGLSIQYIPSRLREYLLGYKKVPYEKLALQKLRAQRKE VKKRIKDIEKMRTPRVGEQATWLAEDIVFLTPPKMHTPERK TTKHPQKLNDQFRIMQSSLAYFSVNKKAIKKFFQKETGIGL SNRETSHPLYRIDVGRCRGILDFYTGYLKYKMDWLDDAIK KVDNRKHGKKEAKKYELPSSIQHKTPLELDYTRLPVYLP RGLFKKAIVKALAAHADFQVEPEEDNVIFCLDQLLDGDTQD FYNWQRYYSALTEKETDNQLVLAHPYAEQILGTIKTLEGK QKNNKLGNAKQKIKDELIDLKRAKRRLDREQYLRAVQA EDRALWLMIQERQKQKAEHEEIAFDQLDLKNITKILTESIDA RLRIPDTKVDITDKLPLRRYGDLRRVAKDRRLVNLASYHYV AGLSEIPYDLVKKELEEYDRRRVAFFEHVYQFEKEVYDRYA AELRNENPKGESTYFSHWEYVAVAVKHSADTHFNELFKEK VMQLRNKFHHNEFPYFDWLLPEVEKASAALYADRVFDVAE GYYQKMRKLMRQ
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【表 1 - 2 4 7】

261	Cas13	MTNTPKRRTLHRHPSYFGAFLNIARHNAFMIMEHLSTKYDM EDKNTLDEAQLPNAKLFGLCKKRYGKPDVTEGVSRDLRRY FPFLNYPLFLHLEKQQNAEQAATYDINPEDIEFTLKGFFRLN QMRNNYSHYISNTDYGKFDKLPVQDIYEAIFRLLDGRGKHT KRFDVFESKHTRHLESNNSEYRPRSLANSPDHENTVAFVTCL FLERKYAFPFLSRLDCFRSTNDAAEGDPLIRKASHECYTMFC CRLPQPKLESSDILLDMVNELGRCPSALYNLLSEEDQARFHI KREEITGFEEEDPDEELEQEIVLKRHSDRFPYFALRYFDDTEAF QTLRFDVYLGRWRTKPVYKKRIYGQERDRVLTQSIRTFTRL SRLLPYENVKHDAVRQNEEDGKLVNPDVTSQFHKSWIQIES DDRAFLSDRIEHFSPHYNFGDQVIGLKFINPDRYAAIQNVFP KLPGEEKKDKDAKLVNETADAIISTHEIRSLFLYHYLSKKPIS AGDERRFIQVDTETFIKQYIDTIKLFEDIKSGELQPIADPPNY QKNEPLPYVRGDKEKTQEERAQYRERQKEIKERRKELNTLL QNRYGLSIQYIPSRLREYLLGYKKVPYEKLALQKLRAQRKE VKKRIKDIEKMRTPRVGEQATWLAEDIVFLTPPKMHTPERK TTKHPQKLNDQFRIMQSSLAYFSVNKKAIKKFFQKETGIGL SNRETSHPLYRIDVGRCRGILDFYTGYLKYKMDWLDDAIK KVDNRKHGKKEAKKYELPSSIQHKTPLELDYTRLPVYLP RGLFKKAIVKALAAHADDFQVEPEEDNVIFCLDQLLDGDTQD FYNWQRYYSALTEKETDNQLVLAHPYAEQILGTIKTLEGK QKNNKLGNAKQKIKDELIDLKRAKRRLDREQYLRAVQA EDRALWLMIQERQKQKAEHEEIAFDQLDLKNITKILTESIDA RLRIPDTKVDITDKLPLRRYGDRLRRVAKDRRLVNLASYHV AGLSEIPYDLVKKELEEYDRRRVAFFEHVYQFEKEVYDRYA AELRNENPKGESTYFSHWEYVAVAVKHSADTHFNELFKEK VMQLRNKFHHNEFPYFDWLLPEVEKASAALYADRVFDVAE GYYQKMRKLMRQ
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【表 1 - 2 4 8】

262	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIA RHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDL LKKSQ LTELILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQA EALNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDL NESFKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYP SLEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLT GKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGN TNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEKYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNK PQSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWLMTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPI SQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 4 9】

263	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLT GKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 5 0】

264	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 5 1】

265	Cas13	MESIKNSQKSTGKTLQKDPFYFGLYLNMALLNVRKVENHIR KWLGDVALLPEKSGFHSLLTTDNLSSAKWTRFYKSRKFLP FLEMFDSDKKSyenRRETTECLDTIDRQKISSLLKEVYGKLQ DIRNAFSHYHIDDQSVKHTALIISSEMHRFIENAYSFALQKTR ARFTGVFVETDFLQAEEKGDNKKFFAIGGNEGILKDNALIF LICFLDREEAFKFLSRATGFKSTKEKGFLAVRETFCALCCR QPHERLLSVNPREALLMDMLNELNRCPDILFEMLDEKDQKS FLPLLGEEEQAHIENSLNDELCEAIDDPFEMIASLSKRVRYK NRFPYLMLRYIEEKNLLPFIRFRIDLGCLELASYPKKMGEEN NYERSVTDHAMAFAFRLTDFHNEDAVLQQITKGITDEVRFSL YAPRYAIYNNKIGFVRTGGSDKISFPTLKKKGGEHCVAYT LQNTKSFGFISYDLRKILLSSFLDKDKAKNIVSGLLEQCEKH WKDLSENLFDAIRTELQKEFPVPLIRYTLPRSKGGKLVSSKL ADKQEKYESEFERRKEKLTEILSEKDFDLSQIPRRMIDEWLN VLPTSREKKLKGYVETLKLDCRERLRVFEEKREKGEHPVPRI GEMATDLAKDIHRMVIDQGVKQRITSAYYSEIQRCLAQYAG DDNRRHLDSIIRELRLKDTKNHHPFLGKVLRPGLGHTKLY QRYFEEKKEWLEATFYPAASPKRVPRFVNPPTGKQKELPLII RNLMKERPEWRDWKQRKNSHPIDLPSQLFENEICRLLKDKI GKEPSGKLKWNEMFKLYWDKEFPNGMQRFYRCKRRVEVF DKVVEYSEEGGNYKKYYEALIDEVVRQKISSSEKSKLQ VEDLTLSVRRVFKRAINEKEYQLRLLCEDDRLLFMAVRDLY DWKEAQLDLKDIDNMLGEPVSVSQVIQLEGGQPD AVIKAEC KLKDVSKLMRYCYDGRVKGLMPYFANHEATQEQVEMELR HYEDHRRRVFNWVFALEKSVLKNEKLRRFYEESQGGCEHR RCIDALRKASLVSEEEYEFLVHIRNKS AHNQFPDLEIGKLPPN VTSGFCECIWSKYKAIICRIIPFIDPERRFFGKLLEQK
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【表 1 - 2 5 2】

266	Cas13	MEKPLPPNVYTLKHKFFWGAFLNIA RHNAFITICHINEQLGL TTPPNDDKIADVVC GTWNNILNNDHDLLKKSQ LTELILKHFP FLAAMCYHPPKKEGKKKGSQKEQQKEKEKEKENEASQAE ALNPSELIKVLKTIVKQLRTL RNYSSHSHKKPDTEKDIFKH LYKAFDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQ DNPDFNRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKK VSGFKASHKQREKMTTEVF CRSHILLPKLRLESRYDHNQML LDMLSELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQN PFKDTLIRHQDRFPYFALRYLDL NESFKSIRFQVDLGTYHYCI YDKKIGDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTK DLDYKETS NQPFISKTTPHYHITDNKIGFRLGTSKELYP SLEI KDGANRIAKYPYNSGFVAHAFISVHELLPLMFYQHLT GKSE DLLKETVRHIQRIYKDFEERINTIEDLEKANQGR LPLGAFPK QMLGLLQNKQPD LSEKAKIKIEK LIAETKLLSHRLNTKLKSS PKLGKRREKLIK TGVLADWL VKDFMRFQPVAYDAQNQPIK SSKANSTEFWFIRRALALYGGEKNRLEGYFKQTNLIGN TNP HPFLNKFNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEP YQYCLLLKIPKENRKNLVKGWEQGGISLPRGLFTEAIRE TLS EDLMLSKPIRKEIKKHGRVGFISRAITLYFKEKYQDKHQSFY NLSYKLEAKAPLLKREEHYEYWQQNK PQSPTESQRLELHTS DRWKDYLLYKRWQHLEKKLR LYNQDIMLWLM TLELTKN HFKELNLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLP VKVYPATAFGEVQYQETPIRTVYIREEHTKALKMGNFKALV KDRRLNGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAF KETLDLEEKLLKKHTSLSSLENKFRILLEEWKKEYAASSMVT DEHIAFIASVRNAFCHNQYPFYEEALHAPIPLFTVAQQTTEE KDGLGIAEALLRVLREYCEIVKSQI
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【表 1 - 2 5 3】

267	Cas13	MFFSFHNAQRVIFKHLYKAFDASLRMVKEDYKAHFTVNLT RDFAHLNRKGKNKQDNPDFNRYRFEKDGFFTESGLLFFTNL FLDKRDAYWMLKKVSGFKASHKQREKMTTEVFCSRILLP KLRLESRYDHNQMLLDMLSELSRCPKLLYEKLSEENKKHFQ VEADGFLDEIEEQNPFKDTLIRHQDRFPYFALRYLDLNESE KSIRFQVDLGTYHYCIYDKKIGDEQEKRLHTRTLLSFGRQLD FTEINRPQEWKALTKDLDYKETSNOFPISKTTPHYHITDNKIG FRLGTSKELYPSEIKDGANRIAKYPYNSGFVAHAFISVHELL PLMFYQHLTGKSEDLLKETVRHIQRIYKDFEERINTIEDLEK ANQGRPLGAFPKQMLGLLQNKQPDSEKAKIKIEKLIAETK LLSHRLNTKLKSSPKLGKRREKLIKTVGLADWLVKDFMRQ PVAYDAQNQPIKSSKANSTEFWFIRRALALYGGEKNRLEGY FKQTNLIGNTNPHPFLNKFNWKACRNLVDFYQQYLEQREKF LEAIKNQPWEPYQYCLLLKIPKENRKNLVKGWEQGGISLPR GLFTEAIRETLSEDLMLSKPIRKEIKKHGRVGFISRAITLYFKE KYQDKHQSFYNLSYKLEAKAPLLKREEHYEYWQQNKQPSP TESQRLELHTSDRWKDYLLYKRWQHLEKKRLRYRNQDVM LWLMTELTKNHFKELNLNYHQLKENLAVNVQEADAKL NPLNQTLPMVLPVKVYPATAFGEVQYHKTPIRTVYIREEHT KALKMGNFKALVKDRRLNGLFSFIKEENDTQKHPISQLRLR RELEIYQSLRVDAFKETLSLEEKLLNKHTSLSSLENEFRALLE EWKKEYAASSMVTDEHIAFIASVRNAFCHNQYPFYKEALHA PIPLFTVAQPTTEEKDGLGIAEALLKVLREYCEIVKSQI
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【表 1 - 2 5 4】

268	Cas13	MEKPLPPNVYTLKHKFFWGAFNLNIARHNAFITICHINEQLGL TTPPNDDKIADVVCWTNNILNNDHDLKKSQTELILKHFP FLAAMCYHPPKKEGKKKGSQKEQQKEKEKEKENEASQAE ALNPSELIKVLKTIVKQLRTLRYSHSHKKPDTEKDIFKH LYKAFDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQ DNPDFNRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKK VSGFKASHKQREKMTTEVFCRSHILLPKLRLESRYDHNQML LDMLSELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEQN PFKDTLIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCI YDKKIGDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTK DLDYKETSQPFISKTTPHYHITDNKIGFRLGTSKELYPSEI KDGANRIAKYPYNSGFVAHAFISVHELLPLMFYQHLTGKSE DLLKETVRHIQRIYKDFEERINTIEDLEKANQGRPLGAFPK QMLGLLQNKQPDSEKAKIKIEKLAETKLLSHRLNTKLKSS PKLGKRREKLIKTVGLADWLKDFMRFPVAYDAQNQPIK SSKANSTEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTP HPFLNKFNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEP YQYCLLLKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETSL EDLMLSKPIRKEIKKHGRVGFISRAITLYFKEKYQDKHQSFY NLSYKLEAKAPLLKREEHYEYWQONKPSPTESQRLELHTS DRWKDYLLYKRWQHLEKKLRLYRNQDIMLWLMTELTKN HFKELNLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLP VKVYPATAFGEVQYQETPIRTVYIREEHTKALKMGNFKALV KDRRLNGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAF KETLDLEEKLLKKHTSLSSLENKFRILLEEWKKEYAASSMVT DEHIAFIASVRNAFCHNQYPFYEEALHAPIPLFTVAQQTTEE KDGLGIAEALLRVLREYCEIVKSQI
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【表 1 - 2 5 5】

269	Cas13	MGAIENKHIFAAYANLAIDGLIKTLNFIAKKLDTQKQLSSWD IKHVITLIDSIFDQNPQNNLEQVVEGYLPWIKPIIEMKTPKKG ERQSDKLCIEYKTIITAFASLLNDVRNYYTHYYHDPICIYPGG YDIPSSLNCIYDSAINIHKERFQAEEKEIEHLRRYTRKKGRVVL KTEDDHFYITLVNNNDLSEKGYAFFISMFLERKYSYLFLKK LSGFKRGDSLQYRLTLEVFTALSTKPPVERLRRTTKDTKQDR ALDILNELSRIPIELYQTLEPKYREMYNETLQPTDAEDPYGLP DRSRIRFRSRFEAFALHFLDKQADFKEIGFYTYLGNYPFHNGY QKTRVDRETKDRYINFQLAGFCKNIQDISAKKLSEALNVKSI DISTDSIPDINSFEPYLVQSTPHYIVNGNNIGIKVLPEGKDTYP TIDEKGAKMPIADFWLSKYELPAMLFYTYLRNNNIHKSHCP LSVKDIIERSIHKSTKQKHPEERSELMRRVMKAIFWTD SKL NEVERIKSQKSAFGKRQHEILKAGRIAETLVRDMLWLQPSK NNGRDKVTEPNFQAIQVSLAYFGIRRNDLTEIFTRAGLINSSN PHPFLAQIGTNYTSLIEFYIAYLKERKVYFSRIQKKILQGKLN QCHPLRDLQREPKNPQDKKEAIFLPRGLFNEAIIINCLKSKL KQLIESPTREKSPALNVSYLIQNYFRITYFEDQSQEFYAQPRN YRLFDKLSPNKGKSKSYLSLEQRIKKMEELRPSKIPVAEANK LLEKEDRLYRKNYNEICDNESIIRLYQIQDILLFMMTKEYLPS DLYNRINKYKLENVKGILNERVSYLIDLNPLKIQGEDIKIKDY GKLFYIHHDTRISSLNKVL SKVKRNNSSISSVKIQPYENYKRE CLDFEEAQIQIPIIHSFEIAMVSMFPDLKKATPGNYYDFNELI TEYEKRTKQKIDSSFLIKTRNMFLHDKYEAECIKEISDDFVY AKKIIAEFKMKIENIKLEDLSNDSSA
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【表 1 - 2 5 6】

270	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHAFISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKDWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDG LIAEALLKVLREYCEIVKSQI
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【表 1 - 2 5 7】

271	Cas13	MEKPLPPNVYTLKHKFFWGAFLNIA RHNAFITICHINEQLGL TTPPNDDKIADVVC GTWNNILNNDHDLLKKSQ LTELILKHFP FLAAMCYHPPKKEGKKKGSQKEQQKEKENE AQSQA EALNP SELIKALKTLVKQLRTL RNYYSHYKHKKPDAEKDIFKHLYK AFDASLRMVKEDYKAHFTVNL TQDFAHLNRKGKNKQDNP KFDRYRFEKD GFFTESGLLFFTNLFLDKRDAYWMLKKVSGF KASHKQSEKMTTEVFCSRILLPKLRLESRYDHNQMLLDML SELSRCPKLLYEKLSEKDKKHFQVEADGFLDEIEEEQNPFKD ALIRHQDRFPYFALRYLDL NESFKSIRFQVDLGTYHYCIYDK KIGDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALT KDLD YKETSKQPFISKTTPHYHITDNKIGFRLGTSKELYP SLEVKD G ANRIAKYPYN SDFVAHAFISVHELLPLMFYQHLTGKSEDLL KETVRHIQRIYKDFEERINTIEDLEKANQGRLPLGA FPKQM LGLLQNKQPD LSEKAKIKIEKLI AETKLLSHRLNTKLKSSPKL GKRREKLIK TGVLADWL VKDFMRFQPVAYDVQNQPIESSK ANSTEFQLIQRALALY GGEKNRLEGYFKQTNLIGN TNPHFPL NKFNWKACRN LVDFYQQYLEQREKFLEAIKNQPWEPYQYC LLLKIPKENRKNLVKGWEQGGISLPRGLFTEAIRET LSED LTL SKPIRKEIKKHGRVGFISRAITLYFRERYQDDHQSFYNLPYEL EAKASTPKPPLPKKREYVLRAEHY EYWQQNK PQSPT ELQRL ELHTSDRWKDYLLYKRWQHLEKKLRLYRNQDV MLWLMT LELTKNHFKELKLN YHQLKLENLAVNVQEADAKLNPLNQT LPMVLPVKVYPATAFGEVQYQETPIRTVYIREEQTKALKMG NFKALVKDRRLNGLFSFIKEENDTQKHPISQLRLRRELEIYQS LRVDAFKETLSLEEKLLNKHASLSSENEFR TLLEEWKKKY AASSMVTDEHIAFIASVRNAFCHNQYPFYKETLHAPILLFTV AQPTTEEKDGLGIAEALLRVLREYCEIVKSQI
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【表 1 - 2 5 8】

272	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDG LIAEALLKVLREYCEIVKSQI
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【表 1 - 2 5 9】

273	Cas13	MEKPLLPNVYTLKHKFFWGAFLNIARHNAFITICHINEQLGL KTPSNDDKIVDVVCETWNNILNNDHDLLKKSQLTEILKHFP FLTAMCYHPPKKEGKKKGHQKEQQKEKESEAQSQAELNP SKLIEALEILVNQLHSLRNYYSHYKHKKPDAEKDIFKHL YKA FDASLRMVKEDYKAHFTVNLTRDFAHLNRKGKNKQDNPDF NRYRFEKDGFFTESGLLFFTNLFLDKRDAYWMLKKVSGFK ASHKQREKMTTEVFCSRILLPKLRLESRYDHNQMLLDMLS ELSRCPKLLYEKLSEENKKHFQVEADGFLDEIEEEQNPFKDT LIRHQDRFPYFALRYLDLNEFSKSIRFQVDLGTYHYCIYDKKI GDEQEKRHLTRTLLSFGRLQDFTEINRPQEWKALTKDL DYK ETSNQPFISKTTPHYHITDNKIGFRLGTSKELYPSEIKDGAN RIAKYPYNSGFVAHA FISVHELLPLMFYQHLTGKSEDLLKET VRHIQRIYKDFEERINTIEDLEKANQGRLPLGAFPKQMLGL LQNKQPD LSEKAKIKIEKLIAETKLLSHRLNTKLKSSPKLGK RREKLIK TGVLADWL VKDFMRFPVAYDAQNQPIKSSKAN STEFWFIRRALALYGGEKNRLEGYFKQTNLIGNTNPHFPLNK FNWKACRNLVDFYQQYLEQREKFLEAIKNQPWEPYQYCLL LKIPKENRKNLVKGWEQGGISLPRGLFTEAIRETLSEDMLS KPIRKEIKKHGRVGFISRAITLYFKEYQDKHQSFYNLSYKL EAKAPLLKREEHYEYWQQNKPSPTESQRLELHTSDRWKD YLLYKRWQHLEKKRLRYRNQDVMLWMLTLELTKNHFKEL NLNYHQLKLENLAVNVQEADAKLNPLNQTLPMVLPVKVYP ATAFGEVQYHKTPIRT VYIREEHTKALKMGNFKALVKDRRL NGLFSFIKEENDTQKHPISQLRLRRELEIYQSLRVDAFKETLS LEEKLLNKHTSLSSLENEFRALLEEWKKEYAASSMVTDEHI AFIASVRNAFCHNQYPFYKEALHAPIPLFTVAQPTTEEKDGL GIAEALLKVLREYCEIVKSQI
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【表 1 - 2 6 0】

274	Cas12a	MKS LAQFQNL YALQKTLRFELKPEGHTRET FNRL EEEIEKE QASENENIVYQDLLRAKKYEEKIKIILDEYHKDFIEQALAYAN LTELEKYEELYRKS NR TSEEEEEEFENTKESLRKQIANIFIKNP NKT VQERWKFLFSKKLIQNELIVWVKGN YELLSEKLN EFP DESSIISTIEDFKYFTTYFRNYHENRKNLYSNEDKFSTIAHRLI HENLPKFIDNIAIYQKAKAVLNINEVEKELGLPEDTLDKIFSL DFFSKALTQKGIDQYNYFLGGKTENEVKKIKGLNEFINLYN QQQQDKNQRLPFLKVLYKLPLFERTSTSFREFIENDRD LIER IGKFYYNDLKQYRDDSQGDTTDILSGINTLLRHVHDYRDGL YVNGGITLTQISQKIFGSWSYINNALAYFYDTYIDASGV DHQ GERKPKKQKQIQEKTW LKQKQFPVILVEKALSEYKSIETNE DLKTRISDTTLCDFFKRCGND DNGQDLFDRIEARLREKNEEG YSLEDLLKKEFTTERKLMQDKTKTLLIKNFLDVIQGD KDDIT AGLLHFVKCLIPRTEISEKNELFYSGMEKYLNILSEVTPLYNK ARNYLTQKPYSIEKVKNFENSTLLDGWDENEESDN SCVLL RKR GYYYLGIMNKKHNMIFDRKIYPKATEGEAYYEKMIYK LLPGAYKMLPKVFFSEKNIDYFKPSEEILRIRNTASYSKNGQP QEGYQKASFSIEDCRKYIDFFKKCIANHWDWQKFNFNFSP T EYYQSIDEFYREIERQGYKIDFVKIPESYINQLIKENKLYLFKI YNKDFSEKKKSKGKDNLHTLYWKMLFDEKNLKD VVLKLN GEAEVFFRQKSILYNEEIWNKGHHYSELKDRFSYPIISNKRY AEDKFFLHVPITLNFKADGINNVNNMVNEFIKDN RDIIIGID RGERHLLYVSVINQKGDIVEQCSLNEIVTEYNGKIFKKNYHE ELDNLEKERDRARKDWQTIANIKELKEGYLSHVIHKISK LIL KYNAIVVMEDLNSGFKRGRQKVEKQVYQNF EKQLIEKLN Y LVLKESNVDEPGGVLRAYQLANKFETFKKLGKQSGIIFYVP AAYTSAIDPVTGYIQYLYPLKQADSVEKARKFYSQFKRISYN PHKQWFEFSFDYNDFNIIYHGKSSWTICTTNTERYMWNRL L NNGHGGEELVYVTNELELLFGEYNIIYGDGKDIKQ QITDVQ DIDVDRTAKQFYKRINELLNLTLKLRHNNGKKGADEEDYIL SPVEPYFDSRFESRKPSMQQTLPINADANGAFNIARKGLLLL ERLNQLGV EEFKTKKSNNKKTQWLPHELWVEYAQN HTRK
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【表 1 - 2 6 1】

275	Cas12a	MQDKTGWSSFTNKYLSKTLRFELKPVGNTQKMLEDGDFV QKDRERQENYKKVKPFMDKLRHREFIKEALNNLKLEGLTEYF EIFKKFRKDKNNKELKNAEKKLRQIIGRCYTETAQIWVEKY KEFGFKKNIGFLFEEGVFELMKLYGNDEASQIEKNGEVL SIFDGWKGFLGYFKKFFETRNNFYKDDGTSTAVSTRIINENL KIYLDNLIKYNKIKDKVDFKEADILQENKLNLSDDFNVESYA KYSLQKGIDYYNEILGGKTLKNGTKLKGLENEVINEYKQKNK SGELSKFKMLKKQILGEGEDRTLFEIENEDELKDVLDKDFY NADPKITLFTLLEDDFSNTEKYKDELDKIYFNTVAINGILHR WVDDSGVFQKYLFEVLKSNKLVKSNHYDKKEDSYKFPDFIS FEHIKVALENCERDGLKDKFWKEKYTKECLTENGLANLW QEFLEIYKCEFKKLYDYKTDDNDCYLQYRDNYKKYILDANF NPKEKSAKDIIKDYLDSVLSIYQLAKYFALEKKKVWTTDYE TGDFYYEYIKFYEDTYEQIIPYNLVRNYLTRKPINTAKKWK LNFDNAYLASGWDKDKVSNLTVILRRDEQYYLAIMKKGK NKIFEKKFSCGEFEKMEYKQIAEASSDIHNLVLMNDGSCRR IKMHDKRKYWPLDISIIEKKSYAKENFVRRDFERFVNYMK KCSLLYWKEYDLKFSDTSTYKNINDFTNEIASQGYKLSFSAI PESYINEKNNNGELYLFQIYNKDFGIKTEGNKNLHTMYWESI FSEENRFRNFIVKLNGKAEIFYRPKSEQVEKEQRNFTREIKN RRYTENKIYFHCPTLNRISRENVKKFNNGINNYIATNPINIL GVDRGEKHLVYYAIVDQDQGLIDAEDATGSFNTIGSTDYHR LLEEKAKDREKERKDWDLIRGIKDLKKGYSLVVRKIADLAI KYNAIIFEDLNTRFKQIRGGMEKSVMYQQLEKALINKLSFLV NKGEKDPEQAGHLLKAYQLAAPFQTFDKMGRQTGIIFYTQA SYTSKIDPITGWRPNLYLKYNIDDSKESIKKFKSILFNKEKN RFETYDLKDFVD FEEDKIPEKTEWTLCSSVERHKWNRHMN NNKGGYEVYKDLTENFYKLFDENNISMNKDIVDQVESISNG NFFRQFIYLFNLVCQIRNTDEKAEDVDKRD FILSPVEPFDSR RAKDFKAYGDNLPKNGDENGAYNIARKGVLIKKIKEYYNQ NGSCDKLGWGDLSISHKEWDDFATNN
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【表 1 - 2 6 2】

276	Cas12a	MDSYEQFTKLYPIQKTIRFELKPQGRTKEHFDNSNFLEKDRE RDDNYKILKEVIDDYHREFIDECLSNQNLNWDLDLKKFSEEYR RSKEKKNNRDSESEQKRMSTTSETRAINKKNLAEQKRMRG EIVSAFKKDDRFBKHLFSEKLFSILLKNQIYEKGTLEEIEAFDCF NKFSGYFKSFHENRKNMYSDEDEKETAISYRIINENFPKLLDN FEKYQYVCREYPEQIREAESTLAEAGCYIKMDEIFSIDNFNN VMMQGGKESGISRYNLAIGGIVQGTGEKPKGLNEFLNLAYQ NEPNGRKKIRMEPLYKQILSKEESFSYRLEAFTDDSQLLSAIR SFFDIVEKDKNGNIFDRAVNLMSFSNYDTSKIYIRKAYLNQ VSKEIFGYRGKSDSKPAKTADESLNKSGGWEKLGQMLRDY KADSIGDRNLEKTCKKVDKWLDSDEFTLSDILGAISLAGSNE TFEAYVSEICVARRNIDKEKEKEKNINVEKISGDTESIQUIKAL LDSVQEFFHLLSPFQLHPNTPHDWTFYAEFNDIYDKLSAITPL YNQARNHLTKKNLDTSKIKLNFNNPTLANGWDVNKEYENT AVILIRDGKYYLIGIMNPKNKRKIKFDEGSGAGPFYQKMVYK LLPGPYRMLPKVFFAKKNIDYYNPSQEIREGYKAGKHKKGK EFDKGFCHKLIDFFKESIQKNENWKVDFKFSPTESYDDISEF YQEVEKQGYRMYFVNIPSDTIDRYVEGGDMFLFQIYNKDFA KGAKGNDMHTLYWNAVFSEENLQKGVMLKSGEAEFYR KKSDIKDPPHREGEILVNRTYIDRTHVSGVMGEQNTVKESRI PVPDEIHKNLFDYYNHGRELTKEEKEYCDKVGSFKAYYGIV KDRRYLENKMYFHVPLTLNFKAIGEKRINKMAIEKFLTDEN ACIIGIDRGERNLLYYSIIDRNGKIIDQKSLNVIDGFDYHEKLS QRQTEREVARQSWNSIGKIKDLKEGYLAKAVHEISKMAIKY NAIVVLEDLHFGFKGRLKVEKQIYQKFEEMLINKLNYLVF KDVSDSSDAGGVLNAYQLTAPLESFSKLGKQSGILFYVPAA FTSVIDPTTGFDLNFSSSITSTQKKKEFLQRFESIVYSARDG GIFATFDYRNFSKIATDHRNMWTVYTHGERIRYVRDEKCY KTTDPTKRIKEALSGIEYDDGSDIRDKITQSGDNNLINTVYHS FMDTIKMRNKDGRIDYIISPVKNRNGEFRSDYKHRDFPVDA DANGAYHIALKGELLMRMIGKTYDSNSDKMPKLEHKDWFE FMQTRGDQ
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【表 1 - 2 6 3】

277	Cas12b	MCVSRLPWFNITLTGKLNQRLNQMCVSRLPWFCTPKGQL AATPKTVVAQQENAMLAIRDVHEAAPADLKTVAQRLEPG YFVTQFPKQQMTGDEARAEAEERLFAACQKKFKELAEYEDG YRQCLDALGPNLSLPRLGRKPKGAYPYAVVFKLMPTNATW ECFKRVTASLYKRAQKGVVSPVSADSIADVRTNDEPLFEYF TNLALVRPPGNKDRAVWFEFDLAAFIEAIKSPHQFFQDTIKR EQAVAQIKAKLDAMDGQGRAASGEEDALPGFEGDDRITLL RELVTDITLGYLAEADASTSPGGKIEYSIQERTVIRGFAEVKRR WRDLVEKKGKATEDALLKVLAEQEHRDDFGSATLYRELA KPKFQPIWRDPGTQPWHADDPLRAWLEYRELGRELEDKQR PIRFTPVHPVHSPRFFIFPKKKGGGRFGTVHEPGQLRVMAGI VAQTQHGWEPPVVRITYAAPRLRRDQLRDDVETDLESRPW LQPMMQALGLPEPDTADFSNCRVTLQPSAPDDIQLTFPVDV SADKLTTAIGKAARWAKQFNLFDPDGNFYNASLRWPHEKK PSKPPVPWHEALDNFSVLAADLGQRCAGAFARLEVRANDD FAGKPSRFIGETPGKKWRAALVAAGMLRLPGEEQTVWRPG ATGPNFHTELSGSRGRMARPHEADDTADLLRAFDCPEESLM PADWRTSLSFPEQNDKLLVAARRYQSRLARLHRWCWFLTD EKKRQTALDEIREAEDMPAADDPQLTDKLRALLLQKQAALP GLLVRLANRILPLRGRSWQWETHPKADCHLLTQTGPALPD VWIRGQRGLSMQRIEQIEELRRRFQSLNQMQRREIGGKPPIR RDDSIPDCCPDLLDKLDQIKEQRANQAAHMILAEALGLRLA PPPADKRQLRASRDVHGQYVKSREPVDVIEDLSRYRSSQG RAPRENSRLMKWCHRAVRDKLRELCEPFGIPVVETPAAYSS RFCSRSGVAGFRAVEVGPGFDREFPMMMLKDREDEGEPPV QLILQVATLNQGRDGKPPRTLLAPLAGGPIFVPIVDKLNAGD IQPALAQADINAAINLGLRAIADPRLWSIHPRCRTQRQGDQM LTREKRKFGETGQPLAVHRADGVKPDDTRNPNFFADISGSL PAWESATLDGQHLLSGRCLRSEIKKRQWQRCAEINDRRMN RWMKGE
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【表 1 - 2 6 4】

278	Cas12b	MTELQTQRAYTLRLKGIDEKDQSWRDALWKTHEAVNKGAKVFGDWLLTLRGGLDHTLADAEIPGEKGKPDRAPTQEERKHRRILLALSWLSVESERGAPEEFIVATGKEPAATRNDKVIAALKDILRGRNLTEEKISEWTEVCTPSLSAAIREDAVWVNRSAFDEAVKRIGSSLTREEVWDMLECFGSRNAYLAPVKISEDESSDGEQEEKAKDLVQKAGQWLSSRFGTGEGADFAKMAAVYAKIAAWAGNAQAGTTGNEVINNLATALREFTPKSNDLKGVLDLISGPGYKSATRNLKQIANTKTVTREDISKLQETAGEDSEECATKTGSKGKRAYADAILKDVESVCGFTYRIDKDGQPVSVADYSKYDEDYKWGSSRHKEFAVMLDHAARRVSLAHTWIKRAEAERRKFEEDSKKIMQVPQAAKDWLDAYCAQRSEASGALEPYRIRKRAIQGWKEIIASWNKPDCKTAEDRIAAARQLQDDPEIEKFGDIQLFEALAEDDAQCVWKKEDGTLDPAILNYTLASEAMFKKQHFVPSYRHPDAFLYPVFCDFGNSRWELDFSI REAATKLKEIEAKIEKQRQEVHKVQQALEKCEENDEKRPKMEERLKEAQKKLQESQNYGEYLHSNNKITMVLFDGTFVKKHIFAWQSKRLTKDLALYQEPSADPKNVVSRADRLGRAVASVGINDAVKVAGLFEQENWNGRLQAPRQQLAIAQYVEKHGWDNKA EKMRASIKWFITFSAKLQSKGPWNEFARKHGLKEDPHYWPHA EKNNRTAHSRLILSRLPGLRVLSVDLGHRYYAAACAVWEALGSEAFKKDIEGKRIIRGDTDENALYCHTEHEANGKKHITTYRRIGADTLPDGAHHPAPWARLDRQFLIKLQGEDEQAREASNEEIWKVHQLENTLGRRTPLIDRLIAGGWGYTEKQKARLEVLTLNLGWCPTNKTDNQEEGDEEETAILSKPSLLVDDLMSAVRTLRLALKRHGDRARIAHYLITDEKTKPGGVKEKLDKNGRVELLLDALGLWHDLFSSPGWHDEKAKQLWNAIYIAGLLPEGELQQA KSVTTSAAALGGQKKEKKEKLRAVAEALYLNSDLCHSLNEVWRKRWEEDDKQWRIYIRWFKDWIMPRGANAKSPAIRHVGGSLTRLATLTEFRRKVQVGFFTRLHPDGTKTETREDFGQKTLDTLEHLREQRVKQLASRIVEAALGIGSEDKRWWDGKKRPRQRIADPRFVPCHAVVIENLTHYRPEETRTRREN RQIMEWASSKVKKYLSEICQLHGLHLREVSAAYTSHQDSRTGAPGIRCQDVSLIEFMKSPFWRKQVAQAEKKQKEGKGDAVERYLCELNQWK GASEEWRKAGFVRIPLRGGEIFVSAAGHDSPAAKGIHADLNAAANIGLRALLDPDWSGKWWYVPCNSS TMC PARDKVTGSAAVNPGQPLQVSAQLESDDAAKDTKKRK KKG DGKSKEIINLWRDISSYPLEDTRGGTWSNKT VYWNRVQSNVVHILQNQMKG
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【表 1 - 2 6 5】

279	Cas12b	MPETTQRAYTLRLQGHDPKDASWREALWKTHEAVNRGAK AFGDWLLTLRGGLDHSLADEGAPGQTPTEEQRKQRRILLAL SWLSVESENGAPQEYIVPHDRDNESGARQNWKTREALREIL KNRGCRDDEIESWCHDCEPSLTSAIRKDAVWVNRSKAFDN AVQSIPNFSREEIWDLLGCFVSSQAYLAPLESPKDDKPDAS KKDSSKDLIQSAGQWLSRRFGRGKGLNFARLAETYEAIARW ASVANPGDTNDLIADLAKTLNAETPELDGILKVVSGPGHKS KTRNLLRSLSAVNHITKDTLQRLKDTANEDAKKAKLKKGE KGHRAYAYKVLEAVEDACGFTYLQEGDRAKHCEFAVMLD HAARRVSSLHTWIKRAEAERRRFEIDTKKKDQLPPSVKEWL DTYCQKRSKETGAVEPYRIRGAIEGWKEIVEAWSKAGTTT AEDRKHEARRLPDNPIDKSGDIKLFEDLALEDALPVWHAN GDPNNPPDPQLLIDYVEGSEAEFKKRAFKVPTYCHPDPLVHP VFCDYGCSRWNVSFAIQPVKKQKLSSEEKLPAGLLLDLLH GTAIRPVALRWQSKRFARDLALNTTDSDDKPNVTRADRFG CALAKCPSSQKIRIRGLFEEKYWNGRLQAPRPELTALAKRV AKYGWDKKARKLRNSLNWFITFSANLRPSGPWEEYTKYAE KAFSSNASAKPSVSRGGFWVVHASPNKRGKMAQLRLCRLP ELRVLSVDLGHRYAAACAVWETLSKSAFEQEIHERKILRGG TGPNDLFCHTQHDNTGQSKVTIYRRIGADTLPNGTPHPAPW ARLDQRFLIKLPGEEREARKASPTELANVEKLEKELGLKTSE NRVKRIDDLMSTLRTVRQALRRHSLRARIAFNLATLRDQS DGDEESQSKQKRDTRWNNTVKIWHSLLESNEWTDDWAKA LWDELGPLSDPQKADDAEWLKLAAEKFYTRWQEDEQTRW ERLRWLRRWILPRGSQAASQKGSIRHVGGLSLTRLATIKTLY QVLKAYHMLRKPNSRKNIPAEGDEALQNFGQKILDDLEH MREQRVKQLASRIVEAALGLGRMKQVTIGKDPKRPREPVD QSCHAVVIENTHYRPEKRQTRRENRLMDWSAAKVKKYL KECCQLHGLHLVEVSASYTSRQDSRTGAPGIRCQEVPLTDFL KKNFWREQVKQAKQRLSEGKANARDRYLCQLNERWGNAP APVTQTAIRLRIPLNGGELFVSADQNSPASKGIQADLNAAAN IGLRAITDPDWPGAWWYVPCEANTFKPVKDKVAGSAAIDS NVSLKKDSPNSEKPASDRKSRTSKSMINLWCDTSSKSLSEKD QWQESAPYWEDVAARTINILQASLACSTTNSQ
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【表 1 - 2 6 6】

280	Cas12a	MKS LAQFQNL YALQKTLRFELKPEGHTRET FNRL EEEIEKE QASENENIVYQDLLRAKKYEEKIKIILDEYHKDFIEQALAYAN LTELEKYEEL YRKS NR TSEEEEE FENTKESLRKQIANIFIKNP NKT VQERWKFLFSKKLIQNELIVWVKGN YELLSEKLN EFP DESSIISTIEDFKYFTTYFRNYHENRKNLYSNEDKFSTIAHRLI HENLPKFIDNIAIYQKAKAVLNINEVEKELGLPEDTLDKIFSL DFFSKALTQKGIDQYNYFLGGKTENEVKKIKGLNEFINLYN QQQQDKNQRLPFLKVLYKLPLFERTSTSFREFIENDRD LIER IGKFYYNDLKQYRDDSQGDTTDILSGINTLLRHVHDYRDGL YVNGGITLTQISQKIFGSWSYINNALAYFYDTYIDASGV DHQ GERKPKKQKQIQEKTW LKQKQFPVILVEKALSEYKSIETNE DLKTRISDTTLCDFFKRCGND DNGQDLFDRIEARLREKNEEG YSLEDLLKKEFTTERKLMQDKTKTLLIKNFLDVIQGD KDDIT AGLLHFVKCLIPRTEISEKNELFYSGMEKYLNLSEVTPLYNK ARNYLTQKPYSIEKVKNLFENSTLLDGDW DENEESDN SCVLL RKR GYYYLGIMNKKHNMIFDRKIYPKATEGEAYYEKMIYK LLPGAYKMLPKVFFSEKNIDYFKPSEEILRIRNTASYSKNGQP QEGYQKASFSIEDCRKYIDFFKKCIANHWDWQKFNFNFSP T EYYQSIDEFYREIERQGYKIDFVKIPESYINQLIKENKLYLFKI YNKDFSEKKKSKGKDNLHTLYWKMLFDEKNLKD VVLKLN GEAEVFFRQKSILYNEEIWNKGHHYSELKDRFSYPIISNKRY AEDKFFLHVPITLNFKADGINNVNNMVNEFIKDNRDIHII GID RGERHLLYVSVINQKGDIVEQCSLNEIVTEYNGKIFKKNYHE ELDNLEKERDRARKDWQTIANIKELKEGYLSHVIHKISK LIL KYNAIVVMEDLNSGFKRGRQKVEKQVYQNF EKQLIEK LNY LVLKESNVDEPGGVLRAYQLANKFETFKKLGKQSGIIFYVP AAYTSAIDPVTGYIQYLYPLKQADSVEKARKFYSQFKRISYN PHKQWF EFSFDYNDFNIIYHGKSSWTICTTNTERYMWNRL L NNGHGGEELVYVTNELELLFGEYNIIYGDGKD IKQQITDVQ DIDVDRTAKQFYKRINELLNLTLKLRHNNGKKGADEEDYIL SPVEPYFDSRFESRKPSMQQTLPINADANGAFNIARKGLLLL ERLNQLGV EEF EKT KSNKKTQWLPHELWVEYAQN HTRK
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【表 1 - 2 6 7】

281	Cas12b	MAYQNGKEQPTVTNQRAYTLRLSGTNDQDSIWRNRLWHT HEAVNKGAKTFGDWLLTMRGGLCHTLAEADVPGKGNKPA RHPTPQEIRSRRVVLALSWSVESQHGAPERHLVSHDLDIAT GERKNWKTVEALREILHGRCLCKELIDEWANDCRDSLSATI REDAVVWNRSKAFLAALKKIGASLTREELWDFLQPPFANK HGYLQMDTVAGVTNGDSETDAEEAKEDSSEEKAKDLSQKA GQWLSSRFGTGTGADFSRFSKVYEVLAARCGSVAVGVSGV EAIRILAGTLADFSPPGSNDIEGMLGLMSGPGYKSATRNILQKI NTLQTVSQQDLRLREASEKDALQSKQKVGGKGSRPYANA ILQDVEAACGICYAGTGESPARHWQYAVILDHAARRVSMA HSWIKRAEEQRSKFEIEKDKLDHVPKDALAWLDAFCARRSS ESGASDAYRIRRSAVDGWKQVVAAWAALPPKPNQGSSELL SDAESARIQAARELQDTVEKFGDIQLFEALSLTGAKCVWQP DGRPDAQPLLDYVAGTDAISKKQRFKVPAYRHPDALLHPVF CDFGNSRWNNYAIHRAPEKLTPAQQLLEKKKAEIDKAELT LAKAGDAAKQANISEKINGLRAAFIQQEKVAWLNSRHAM TMSLWDGTHIEDTPLIWQSKRFGSDIGQPVEAQPLPVSRAADR FGRAVALAQDNVPVIPSGLFDLSDWNGRLQAPRRQLEAIAA IRDSAKLSVNEKQQLVAKRIQSIRWLLTFSAKLQSHGPFIA AAQHGFWDWRYGAHGPENKSRQGLAKLILCRLPGLRILSVDL GHRYAAACAVWETLNAGQIQKACLDAGKEAPGPCTLYLHL KQIANGKEKKTIFRRIAADTLPDGSPHPAPWARLDRQFLIKL QGEDRDARLATSEEIAAVEQMENELGVVRQLKRKGRELLV DELMSDALRTLRLGLRRHGVRRARIAFNLTANKRIRPGGKEE VLDQEGRVLLLTETLLAWYELYTAERWTDEPARELWNRHI QPLLGATILQNTVNQEDTPSAAKRRKLREETSGKLKHVAEEI AKNDSLRCQLHVLWSAQWQTEDVIWRTRLRMMRRWLLPR GVKRNAQLRISIRDVGGLSLTRIASFKSLYQVQKAYQMRPH PEDPRLNIPERGDSRLNFGQRVLDAMERMRENVRKQLASR IAEAAALGIGGETGISSKDGSKKRPTERSSDPRFAPCHAVVIE DLTHYRPDETQTRRENRLMSWSSSKVKYLGEACELNGL YLREVSPAYTSRQDSRTGAPGLRCNDVTVVEFNNSPFWRKQ VGAAEKNQKEGNKG DARERYLLSIEEGIRGAANDRDIFRIPV KGGEIFVSACITDGGNNAKKNAPPGLQADLNAAANIGLRAIF DPDWEGRWYIPCAATLCPDAKKFIGCKAVDPTKPLRVV AEEGAISASGIGSKKSGRKKNAATDGTRIVNLWRDPSGAPIH RDVLRSPWQDYAGYWNEVQHRVIRNLKTCYEQTSQQEDP FVSQDADKPF
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【表 1 - 2 6 8】

282	Cas12b	MKRLAETALADKVKCETNSRPKGERAYANSILHDVESACGF TYRVDKGEQPVVSDYSHYANDYRWGPANHSEFAVMLDH AARRVSLAHTWIKRAEAERRQFEENAKKIDKVPKVAREWL DSLCAERSIVLGALEPYRIRRAVDGWKHVVAAWSKSDCK TAQDRITAARLLQEDPEIDKFGDIQLFEALAEDHAVCVWQR DGEAGKTSDPQLLIDYALAAEAFFKKRHFKVPAYRHPEAFW HPVFCDFGQSRWKICFDVHKNRQSRQRACANRISRKICFD VHKKRQTLRLSLEVWTGSKMLDMPLCWQCKRLARDLALG QDHKKDRSCQVTRADRLGRAVSNVARNQEVQILGLFEQEY WNGRLQAPRPQLEALGRYIEKHGWDAAKQKSCRAIRWMIS FSPRLQPAGPWGKFAEKLQLNPNPKYWPHAEDNKDRGSR KLILCRLPGLRVLSVDLGHRYAAACAVWEAVDAEQVKEAC QAAGHREPNENDLYLHLKKRTTKQKKGSQGVVEETTYRRI GADTLPDCTPHPAPWARLDROFLIRLQGEEDEARAASNEEV WAVHKLEAELGRTIPLIDRLLGAGWGQTEKQKARLKALRE LGWTPANKCQAFNSTDETELRRPSLAVDELMLDAVGTLRL ALKRHGDRARIARYLITDERTKPGGVKEKLDENGRIELLQD ALIIWHGLFSSPRWRDDAAKQLWNEHIAKLVGQNLVEVSE DASGSERRTKQKQNKREKLREAAKALVDDVALRQALHDMW KRRWEEEDREWRRRLRWFKDWVLPREQARKAYSRAET GSSSHPKRRARYAAIRRVGGLSLTRLATLTFRRKVQVGFFT RLKPDGTAEAEKEGFGQSTLDALEHLRAQRVKQLASRIVEA ALGVGRIRRFPGVKNPKRPDTPVDKPCHAIVIENLTHYRPEE TRTRRENRLMTWSSSIKKYLAEACQLYGLHLREVTAAY TSRQDSRTGAPGLRCQDVPVKEFMRSFLWRKEVAQAEEKL TAGKGSSYERLLCELNQRWKDNSPGDGKRAELLRLPHKGG EIFVSAAPDSPAARGLQADLNAAANIGLRALTDPDWPGKW WHVPCNAVTFRPVEDKVKGSAAVKLDQSLRQVAHPQSKDP GAKKSKEIVNLWCDISSLPLEHREWKLDPYPAYWNNVQ CRVIRVLQGV
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【表 1 - 2 6 9】

283	Cas12b	MANAKVKTTTRSYYTSLNAPSDTTDRSPLWHRIFRTHYAIC CGAREFGKLLLDLRGGLPTSLAQLGEGIAENDRRQTQRGTR RILALGWLSVEDLDHARNDPHRVQDTAPGSPLDQDLAEKIL RKILITKGIKSEEEQSNWISDCLPALTANIRPDVWVNRAESF AQWQRGTQPGAQPPTPEEAQILFSLCGESLVTTLPEQPAA AGQKQPDQETSPDPEEQTDRPPAAPSADDEMPSNASRGIF GDLFGENAEGKRSRSQKDNFACAVRDFLCANPTPSADAIT EFREKQKPREPNPPGPEKYPPEVSTSGAPTAVAKRYRKLVC AGLWPKSADEGDSSRNSAKTKFADPKPEQKTEIQINALDLID ACNQAAPADDSGTSPKAGRVFAPAWASNIAEKVASATQMP ANAKSLNEFKRLMFALAARRFSQTQSWTRRNEAERHMAAA RQDAAVARLREIDPDHKAQDWLRGYEQRRADQSGSNGEFR ITRRMIGEAEAVFKAWAGTNSAAERELKTVAVQTAEKFG DAALYSEIARNTAAEA VWRSGSAPEILDQWVKLRKAQSDQ QRTRVPRFCHPNAFRHTWCEFGESSKPGVWYAWNPKSKP RKPEVGGEGDGTRRLWVLLPDFNSGIGQAVPLRWRKRLSK DLGEALQPSDAPIPRADRVSIAAAGLNLEGANGVPARYRPSL PFSENTKGWNARLQANRTALLHLESKWDAEAAWTRDGGGR SLLALKWFTTFSPELAMSEGPGRAIHPKLGWNSEPHSDLNR AQKRGGNAKLILSRLPGLRVLSVDLGHRYAAACAVWETLT TEQMNAACQAKNHTQPAESDMYVHLAHPTEPVVKSGRKK GQNLIQTTVYRRIAADTLPDGTPHPAPWGRLDRQFLIKLQGE QRPTAASKNEADLANALFHRLGLRSDADSENKSRAVDKL MARTVRVATLGLKRHARRAKIAYALDPNTKAIPGMGSSA AFTPGDEPHIHLTDALFDWQSLATDAKWDDAHARSLWNH HIATLPGGFHLENPTPRDESAHEPSRQRQRSGDDALRATLKP IAEKLSKADRQEVHAAWKKYWGSDGQSAIVPKVLQQR GPEKTPSASASGWHGKIRWITDWIMGKYLEGCTGHAWKH DVGGLSVSRITTMKSLYQLHKAFAMRATPEKPRGAPEKGES NLGAAQGILTAMESMRQQRVKQLASRIAEALGAGIERRSD NGRELQRPREVRDDPRFAACHAVVVEDLTNYRPDEMQRTR ENRQLMQWASSKVKKYLSEACQLHGLYLGRVPAGYTSRQ DSRTGAPGVRCGDIPVEELMAAPRWRRQILTAEKTRRENNT GTARDRYILTLDEKYRLLTAEQRKKTPPARIPVKGGDLFVSA DPDSPAASGIQADLNAAANIGLKALIDPDWPGRWWYIPCD TTHKPSPERTRGSAAVDCDVPLGPDSTGTPEDRDAKPKKNQ RNSKIAGRQSAIHNLRDPTHLPIKENPSAWCESKKYWNQ VEHNVVKVIESKGQKLTQTAEAAATGESASSPPIAPTDVPW
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【0079】

当業者は、それらのアミノ酸配列が公知であることを考えると、これらの酵素が容易に生成され得ることを理解するであろう（例えば、供給源生物の培養及び／または組換え発現／精製を通じて、例えば、さまざまな商業的供給源のいずれかから契約してもよい）。次に、生成された酵素を直接及び／またはコラテラル切断についてさまざまな温度（複数可）で、及び／または安定性及び／または機能の他の証拠に関して関連する温度（複数可）で評価してもよい。

【0080】

実施例 4：Cas 13 の熱安定性

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この実施例は、C a s 1 3 酵素の熱安定性を確認し、さらに実証する。本実施例は、本明細書に記載されるように、改善されたコラテラル活性アッセイで使用するための特定の熱安定性 C a s 1 3 候補を示す。T c c C a s 1 3 a 及び T h p C a s 1 3 a の熱安定性を試験した。簡単に説明すると、さまざまな範囲の標識 RNA 標的を、T c c C a s 1 3 a または T h p C a s 1 3 a ; リボヌクレアーゼ阻害剤 ; T 7 RNA ポリメラーゼ、M g C l 2 及び c R N A (順方向または逆方向のいずれかの補体方向) とインキュベートした。図 3 A は、6 5 ° C での T c c C a s 1 3 a の有意な活性を示している。図 3 A のデータはまた、c R N A の構造が熱安定性酵素の活性に影響を与え得ることも示唆している。さらに、図 3 B は、T c c C a s 1 3 a が 4 0 ° C ~ 6 5 ° C の範囲を含む広範囲の温度にまたがって活性であることを示している。

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【0081】

アッセイ内のバックグラウンドに寄与するパラメーターを特定するために、いくつかの構成要素の有無にかかわらず、T c c C a s 1 3 a を使用して追加のアッセイを実行した。図 3 C では、C a s 酵素と c R N A の複合体の存在がアッセイのバックグラウンドに寄与することが実証される。

【0082】

実施例 5 : 熱安定性 C a s 酵素の例示的な発見及びスクリーニング

本実施例は、熱安定性 C a s 酵素候補 (例えば、C a s 1 2 及び C a s 1 3 酵素) を発見及びスクリーニングする例示的な方法を実証している (図 4) 。新規の C a s 1 2 及び C a s 1 3 酵素は、特注のインシリコパイプラインを使用して発見された。簡単に説明すると、公的に利用可能な微生物ゲノム及びメタゲノムデータベースは、試料収集温度および配列読み取り品質などの環境メタデータに基づいて最初にフィルタリングされた。その後、C R I S P R リピートは、公開されているリピートアノテーション法を使用して、フィルタリングされたゲノムデータセットで識別された。次に、公開されたオープンリーディングフレーム (O R F) 発見法を使用して、C R I S P R リピートを持つゲノムで全てのコーディング配列をアノテーションして、その後、公知の C a s 1 2 及び C a s 1 3 酵素で事前トレーニングされた隠れマルコフモデル (H M M) を使用してこれらの O R F を分類した。酵素は、その直接反復が保存されている場合 (> 9 5 %) 、およびその場合にのみ、推定候補としてアノテーションされ、予測された酵素は、以前に発見された酵素と一致するドメイントポロジーを有した。

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【0083】

候補酵素は、製造業者の指示に従って、インビトロのタンパク質合成 (例えば、New England Bio Labs による P U R E x p r e s s インビトロタンパク質合成キット) によって発現された。C a s 1 2 a 候補酵素の最初のプールは、5 2 ° C での活性の陰性対照として鋳型を使用せずに、エンドポイント (図 5) 及び速度論的分析 (図 6) によって評価した。各候補は、5 2 ° C で、3 つの異なるガイド / 標的対で試験した (図 5) 。

【0084】

5 2 ° C で 4 4 の最初の候補の中で最も高い活性を示した候補のサブセット (例えば、1 2 の候補) を、より高温 (例えば、5 8 ° C 、6 0 ° C 、6 2 ° C) でのさらなる評価のための最も効率的なガイド及び標的と組み合わせて選択した。

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【0085】

エンドポイント分析及び速度論的分析の両方で、5 8 ° C である程度の活性を示す候補酵素のサブセット (例えば、1 2 の候補酵素のうち 9 つ) が示された。活性のある 9 つのうち、5 つは高活性 (R S 9 、R S 1 2 、R S 3 8 、R S 5 4 、及び R S 5 6) に分類され、残りの 4 つは低活性 (R S 3 1 、R S 3 9 、R S 4 7 、および R S 5 0) に分類された (図 7) 。

【0086】

エンドポイント分析及び速度論的分析の両方で、6 0 ° C である程度の活性を示すサブセット (例えば、1 2 の候補酵素のうち 5 つ) が示された。ある程度の活性がある 5 つのう

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ち、3つは高活性（RS50、RS56、及びRS9）として分類され、残りの2つは低活性（RS28及びRS29）として分類された（図8）。

【0087】

エンドポイント分析及び速度論的分析の両方で、62℃である程度の活性を示すサブセット（例えば、12の候補酵素のうち2つ）（RS9及びRS54）が示された（図9）。

【0088】

12の候補酵素の洗練されたリストをさまざまな温度で評価された一方で、4つの優先候補酵素（RS10、RS28、RS38、及びRS54）を精製して、さまざまな温度（例えば、約35℃～約65℃）での活性を評価した。RS54は、LAMP温度（例えば、61℃）で活性を示した（図10）。

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【0089】

Cas12a候補のサブセットを、58℃と70℃の両方で鑄型対照がない場合と比較して、3つの異なるガイドセットと標的セットを使用してさらに調べた（図11）。Cas12bcdfも52℃と58℃の両方で全てのガイド／標的対で評価した（図12）。速度論的分析は、Cas12a候補であるRS62についても実行して、52℃で活性を示した（図13）。

【0090】

Cas13候補酵素の初期プールは、37℃と52℃の両方での活性の陰性対照として鑄型を使用せずに、エンドポイント分析（図14）によって評価した。熱安定性を示す単一のCas13候補酵素（RS73）を同定した。

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【0091】

実施例6：熱安定性Cas12a酵素の例示的な特性評価

本実施例は、例示的な熱安定性Cas12a酵素であるRS9の特性評価を実証している。RS9が標的核酸の増幅に熱安定性無機ピロホスファターゼ（TIPP）の使用を必要とするか否かを判断するために、ORF1ab増幅のリアルタイム検出は、TIPPの有無において、ORF1abの開始濃度の範囲（4.5コピー／μL～4,500コピー／μL）にまたがって完了した。例示的な反応には、30ng／μLのRS9、112.5XL-213（ORF1abガイド）、1×HKFB（ORF1ab）プライマーセット、1×wsLAMPミックス、125nM DNaseアラート、1U熱安定性無機ピロホスファターゼ（TIPP）の有無が含まれ、存在するウイルスRNA鑄型濃度が示された。例示的な反応は、VICチャンネルで検出されたQS5上で58℃で120分間インキュベートされた。TIPPを含まないリアルタイム反応では、鑄型の開始濃度に関係なく、鑄型なしの対照と比較して、統計的に有意なORF1abの増幅は生じなかった。鑄型の開始濃度が4.5コピー／μLである場合を除いて、TIPPを含むリアルタイム反応によって、鑄型対照なしと比較してORF1abの有意な増幅が示され、RS9では増幅にTIPPを使用する必要があることが示唆されている（図15）。

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【0092】

RS9の特異性はまた、リアルタイム分析を使用しても評価された。増幅は開始濃度4,500コピー／μLでORF1ab鑄型と、ORF1abに固有のプライマー及びガイド、またはORF1abガイドを使用した非標的化プライマーで行った。各反応条件は、TIPPの有無においてでも実施した。例示的な反応には、30ng／μLのRS9、112.5XL-213（ORF1abガイド）、1×HKFB（ORF1ab）またはCFB（N）プライマーセット、1×wsLAMPミックス、125nM DNaseアラート、1U熱安定性無機ピロホスファターゼ（TIPP）の有無が含まれ、4,500コピー／μLのウイルスRNAがあった。例示的な反応は、VICチャンネルで検出されたQS5上で58℃で120分間インキュベートした。非標的化プライマーを含む、及び／またはTIPPなしの反応では増幅は検出されなかった。ORF1abプライマー、ORF1abガイド、及びTIPPを含む反応で強力な増幅が検出され、これは、RS9がその標的に特異的であり、増幅にTIPPが必要であることを示している（図16）。

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【0093】

RS9 コラテラル切断活性は、100 nM の一本鎖 DNA 標的と、レポーターとして DNase Alert または RNase Alert を使用して評価した。陰性対照として、標的なしの条件を利用した。RS9 は、DNase Alert を切断できなかったため、標的なしの対照条件を有意に上回る強度測定が得られた。RS9 は、RNase Alert を切断し得、標的なしの対照条件と同様の測定強度が得られ、これは、RS9 が RNA 特異的なコラテラル切断活性を有することを示している（図17）。

【0094】

RS9 コラテラル切断活性は、公知の Cas12a、LbaCas12a とともに、ORF LAMP 生成物を標的として、及び RNase Alert、PolyrA、PolyrC、または PolyrU レポーターのいずれかを使用してさらに評価された。陰性対照として、標的なしの条件を利用した。RS9 及び LbaCas12a は両方とも、PolyrA、PolyrC、または PolyrU よりも効率的に RNase Alert を切断できた（図18）。

【0095】

実施例7：熱安定性 Cas13a の例示的な特性評価

本実施例は、例示的な熱安定性 Cas13a 酵素である TccCas13a の特性評価を示している。TccCas13a 活性の最適温度を決定するために、Cas 反応を、10 nM 標的及び RNase Alert をレポーターとして使用してある温度範囲で実施した。陰性対照として、標的なしの条件を使用した。温度プロファイルによって、TccCas13a が約 62 °C で最高の活性を示すことが示唆されている（図19）。

【0096】

TccCas13a が RNA に加えて ssDNA によって活性化されるか否かを判断するために、RNase Alert をレポーターとして使用して 62 °C で Cas 反応を完了した。さまざまな標的をさまざまな濃度で利用した（例えば、10 nM、100 nM、または 1,000 nM の ssDNA または 10 nM の RNA）。陰性対照として、標的なしの条件を使用した。結果によって、TccCas13a は RNA によって活性化され得るが、62 °C で ssDNA 鑄型の最高濃度でも ssDNA によって活性化され得ないことが示された（図20）。

【0097】

ssDNA による TccCas13a の活性化も 58 °C で評価された。TccCas13a は、標的なしの対照と比較して、1 nM、10 nM、及び 100 nM の RNA 標的の存在下で 58 °C で活性化されたが、58 °C での ssDNA による TccCas13a の活性化は、100 nM または 1,000 nM の ssDNA 標的を使用した場合にのみ検出された。58 °C での 10 nM の ssDNA 標的は、標的なしの対照と比較して違いを示さず、LwaCas13 ssDNA 活性化で観察されたものと同様に、TccCas13a 活性化には RNA よりも高濃度の ssDNA が必要であることが示唆されている。興味深いことに、TccCas13a は、対照（標的なし）と比較して、どの濃度（10 nM、100 nM、または 1,000 nM）でも ssDNA* によって活性化されなかった（図21）。

【0098】

TccCas13a が LwaCas13 の活性とは異なる特定のコラテラル活性を示したか否かを判断するために、Cas 反応を、2つの異なるレポーター、複数の異なる塩基（「NN」）を含む RNase Alert、及び2つの「UU」塩基のみを含む「UU」固有のレポーター及び DNA 骨格を使用して行った。反応は 60 °C で行った。LwaCas13a は、どちらのレポーターのコラテラル活性も他方よりも優先しなかったが、TccCas13a は、「UU」部位と比較して「NN」部位でのコラテラル活性の増加を示した（図22）。

【0099】

実施例8：追加の候補熱安定性 Cas 酵素の例示的な特性評価

本実施例は、例示的な熱安定性 Cas 酵素、Pal 1（配列番号 274）、Pal 2 低 MW、Pal 2 高 MW（配列番号 275）、及び Pal 3（配列番号 276）の特性評価を実証する。各酵素は、レポーターとして Dnase Alert との Cas のみの反応において、37℃及び56℃の両方で4つのガイド（342～353として指定）を使用して試験された。蛍光シグナルを各反応の時間に対してプロットした（図23）。Pal 1は、56℃で2つのガイドに対して低い活性を示した。Pal 2 低 MW または Pal 3 の活性は観察されなかったが、Pal 2 高 MW の 56℃で2つのガイドの活性が観察された。56℃での Pal 1 及び Pal 2 の活性を図24に示す。これらの酵素を用いた研究の追加の結果を、図25～30に示す。見てわかるように、Pal 1 は、56℃と70℃で2つのガイドに対して活性を示した。Pal 1 は、57℃で最大の活性を示し、少なくとも67℃で有意な活性を示した。Pal 2 高 MW は、56℃で2つのガイドに対して活性を示した。Pal 2 高 MW も、47～52℃で最大の活性を示し、少なくとも57℃までは有意な活性を示した。Pal 2 低 MW、または37℃、56℃、もしくは70℃での Pal 3 - 6 のいずれについても、有意な活性は観察されなかった。したがって、当業者は、これらの酵素が少なくとも約56℃で、及び／または56℃から70℃の範囲内で熱安定性であることを理解している。これらの特定の例示された酵素はまた、それらの関連する活性（複数可）が劇的に低下し、及び／または37℃などの低温では検出されないので、熱活性であるとも記載され得る。いかなる特定の理論にも拘束されることを望まないが、好熱性生物の酵素は、そのような温度で低下した（または検出できない）活性を示すことが多いことに留意されたい。

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【0100】

等価物

当業者は、本明細書に記載される本発明の具体的な実施形態の多くの等価物を慣用的でしかない実験を使用して理解するか、または確認することができるであろう。本発明の範囲は、上記の説明に限定されるものではなく、むしろ以下の特許請求の範囲に記載される。

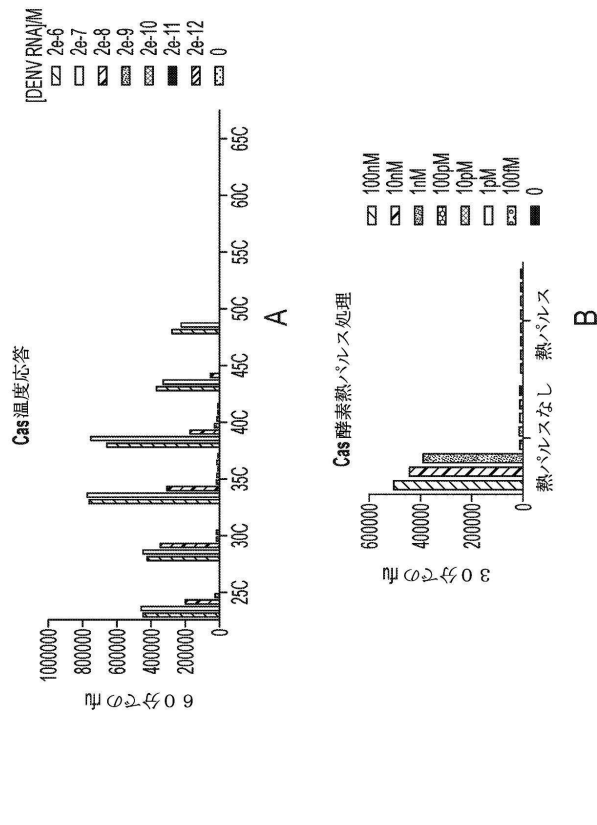
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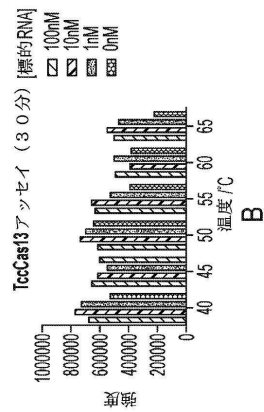
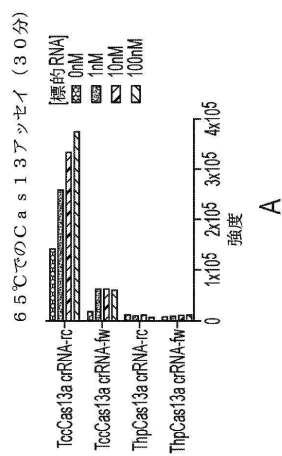
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【図面】

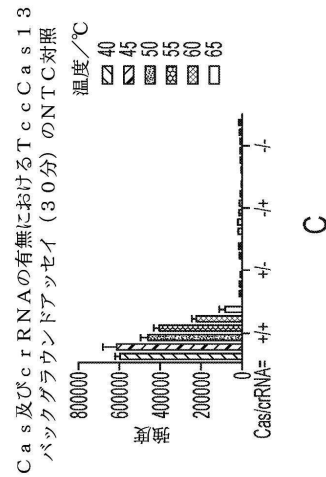
【図 1】



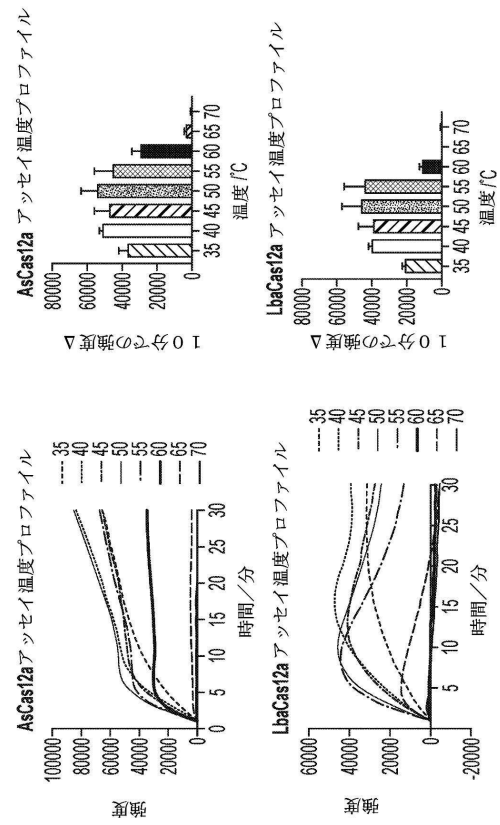
【図 3 - 1】



【図 3 - 2】



【図 2】



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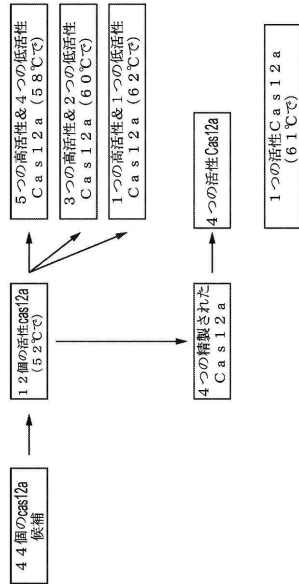
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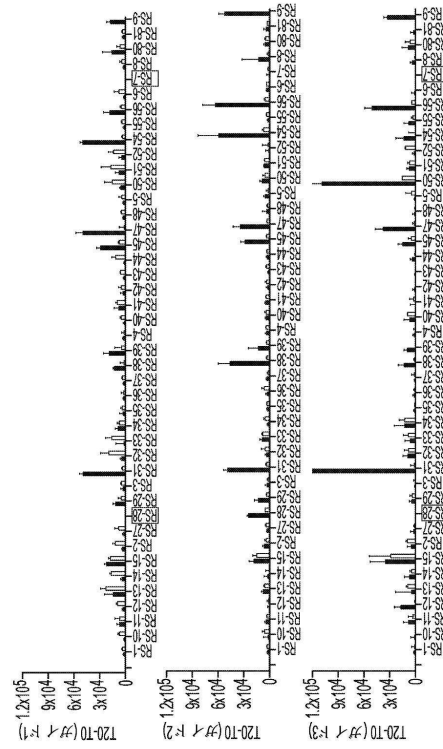
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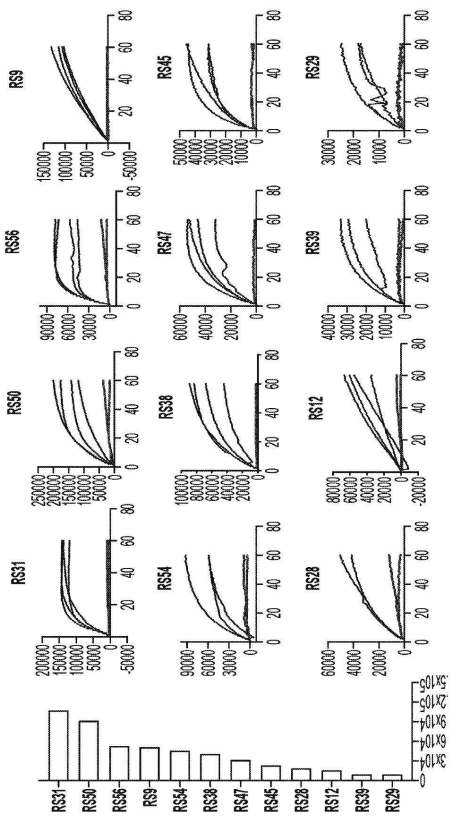
【図 4】



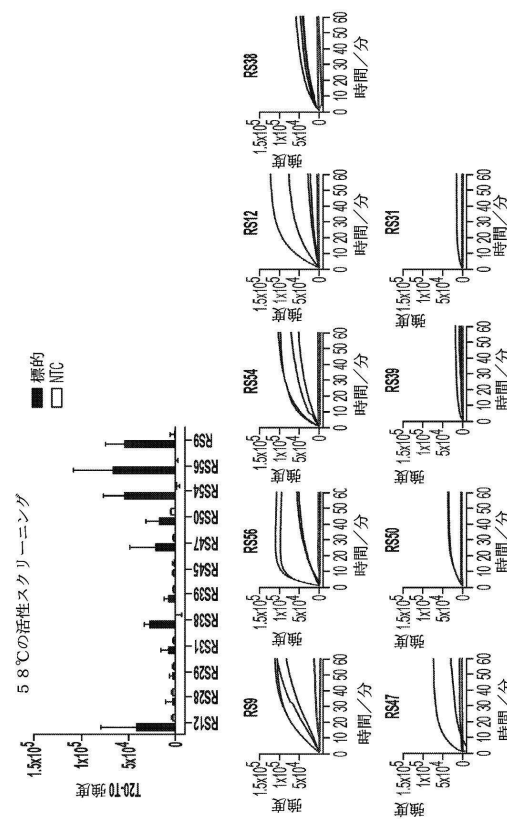
【図 5】



【図 6】



【図 7】



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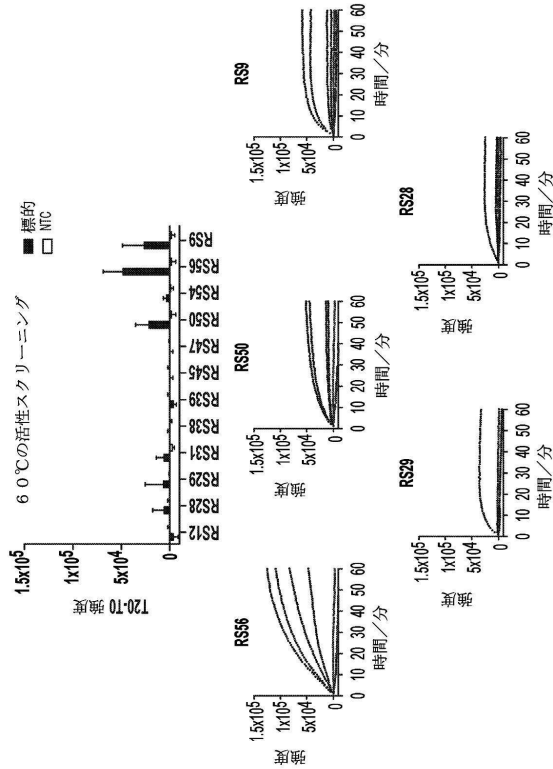
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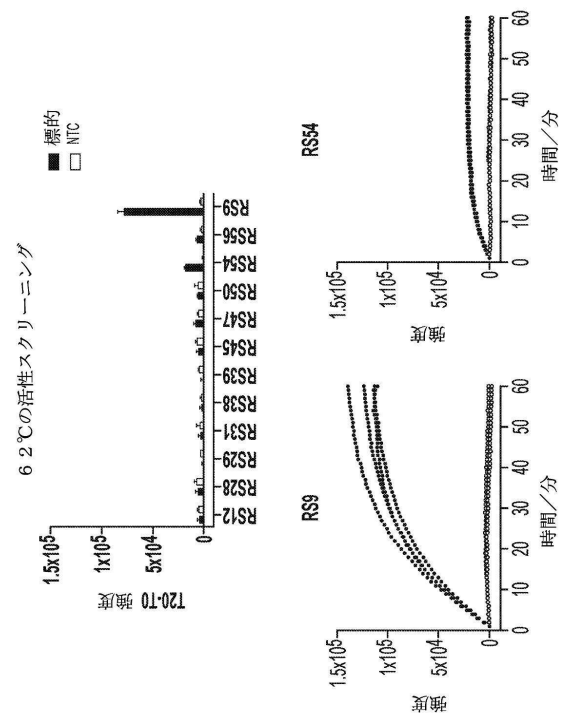
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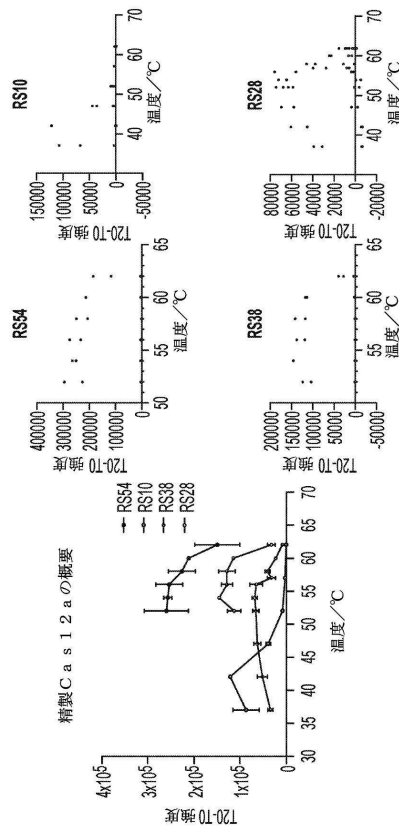
【図 8】



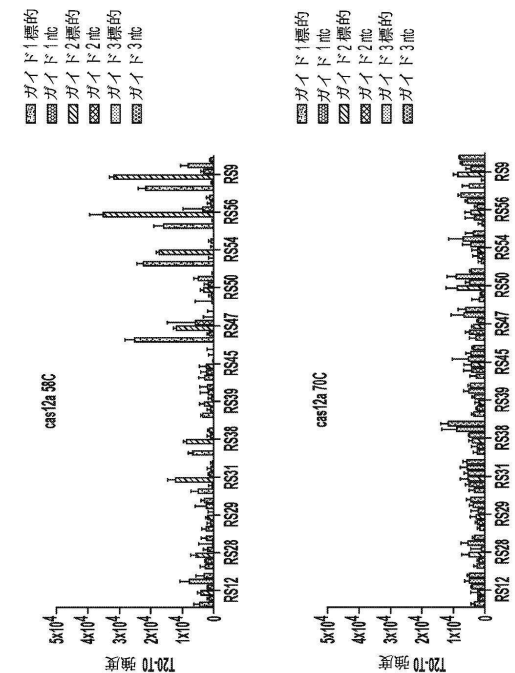
【図 9】



【図 10】



【図 11】



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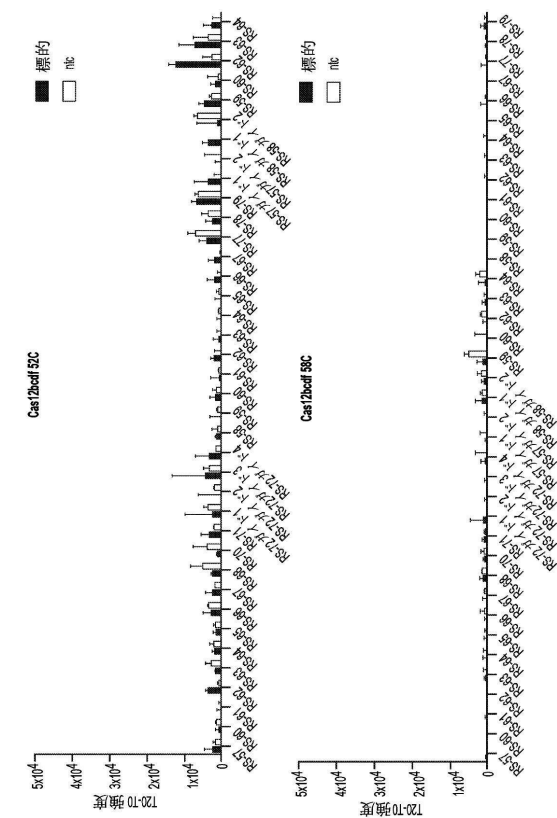
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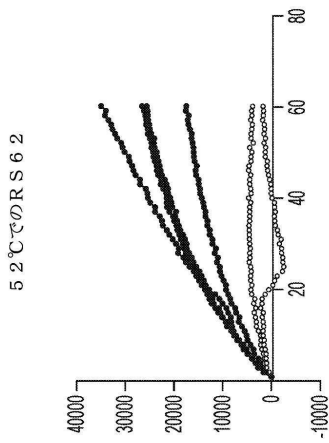
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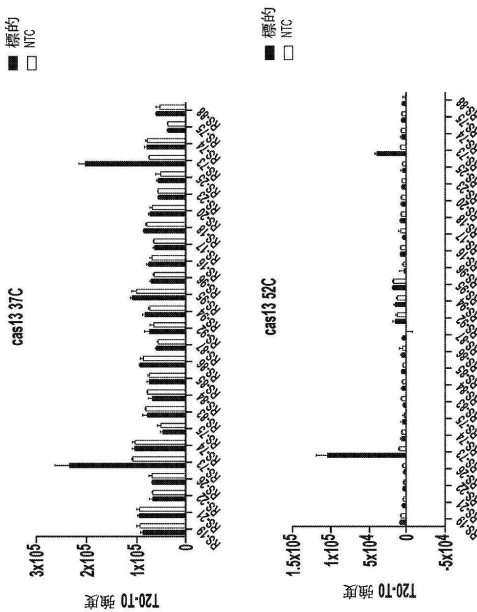
【図 1 2】



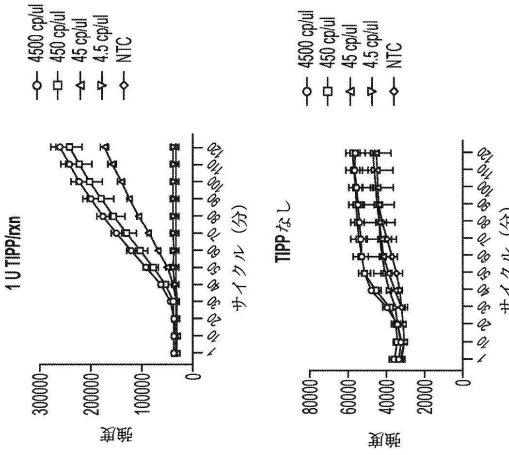
【図 1 3】



【図 1 4】



【図 1 5】



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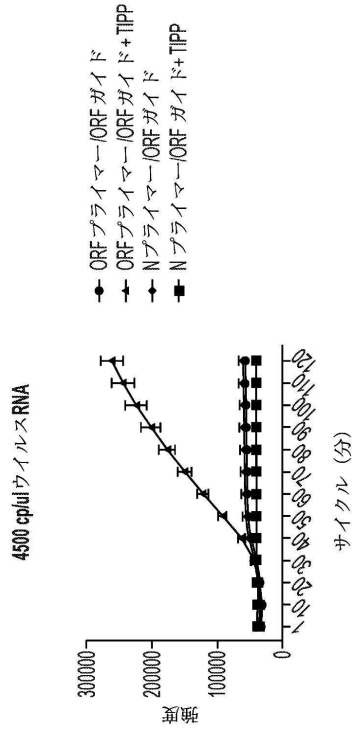
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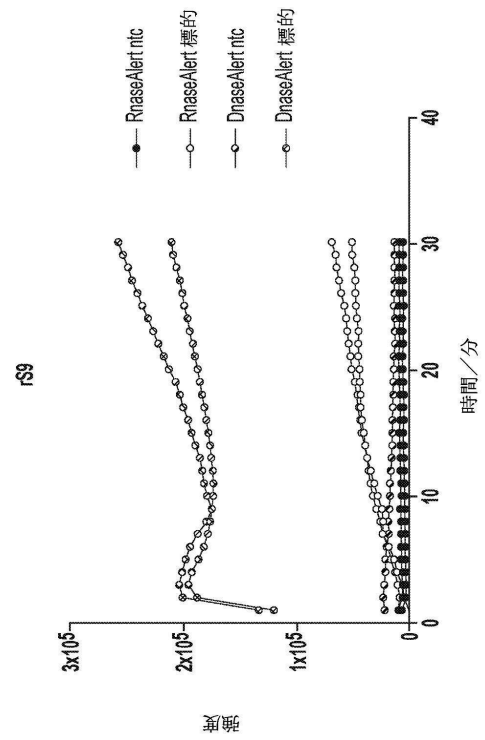
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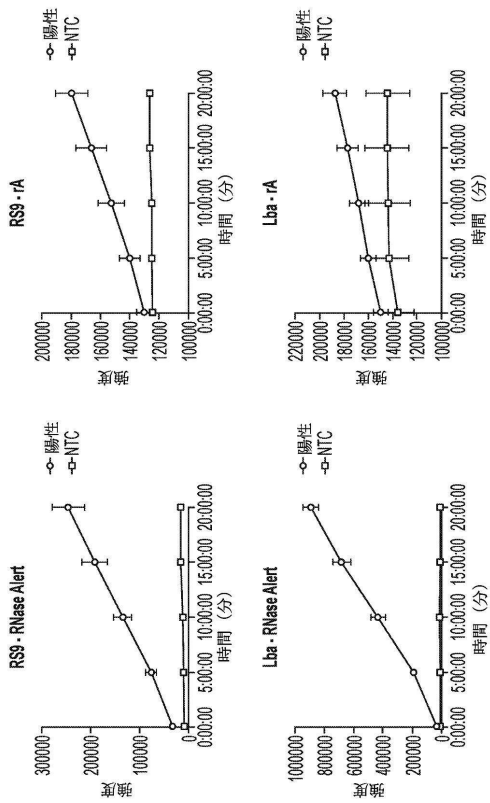
【図 16】



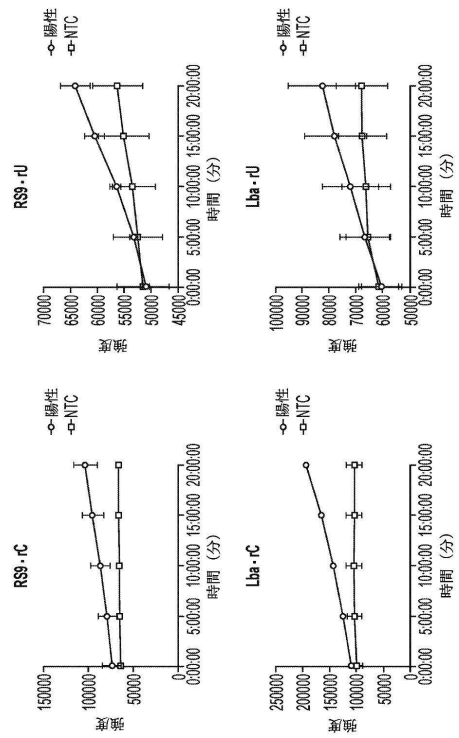
【図 17】



【図 18 - 1】



【図 18 - 2】



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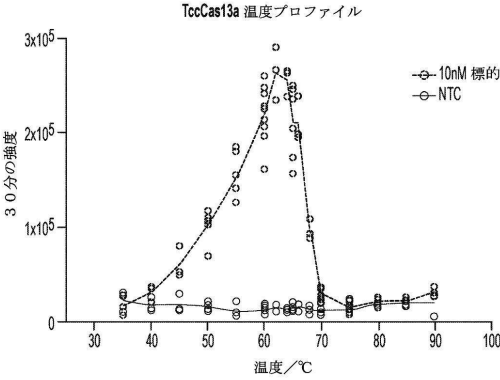
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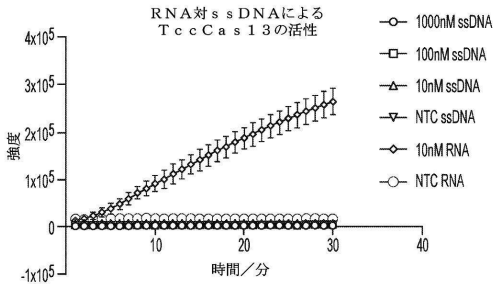
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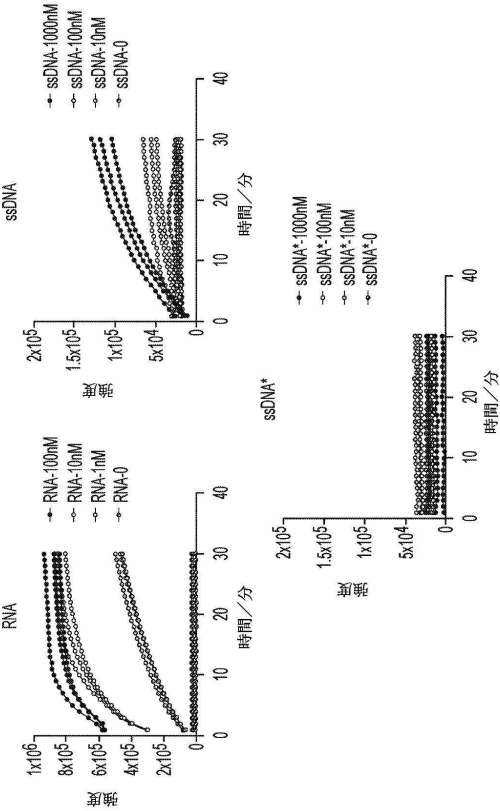


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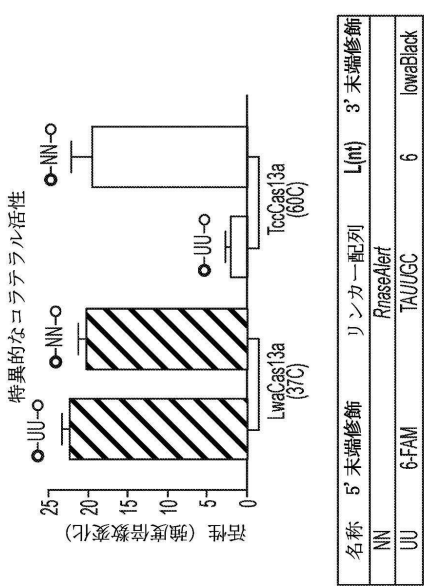


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【図 21】



【図 22】



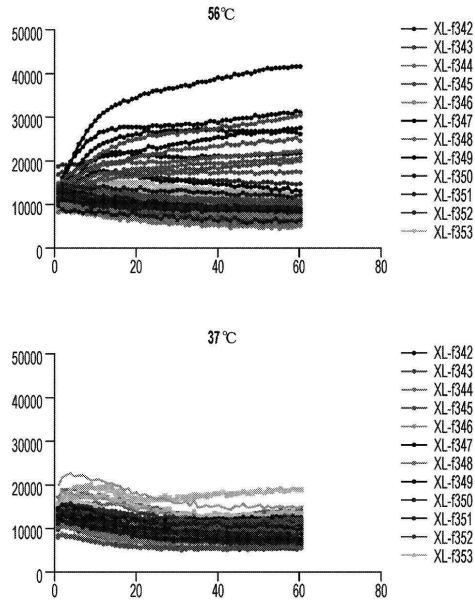
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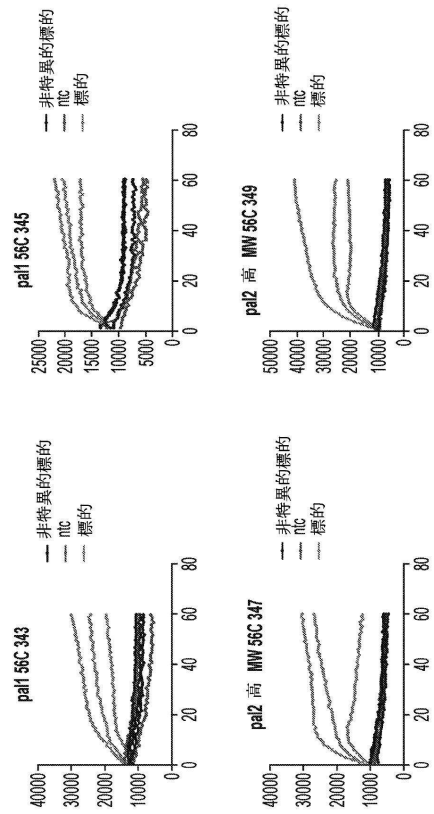
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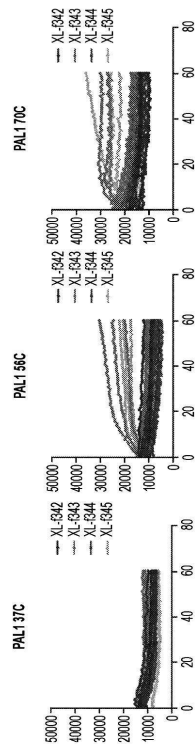
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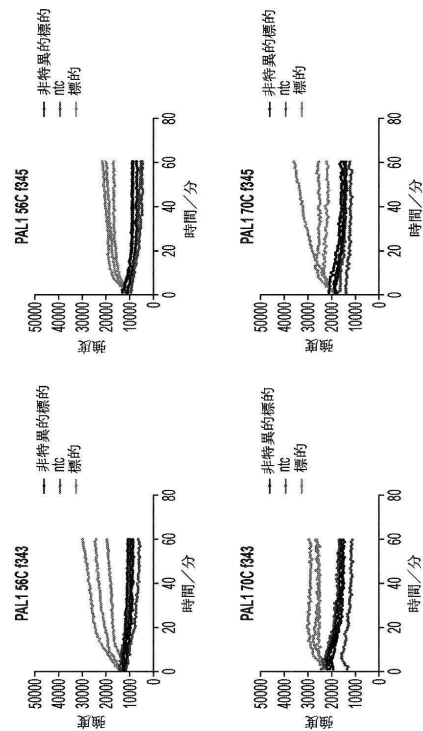
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【図 2 5】



【図 2 6】



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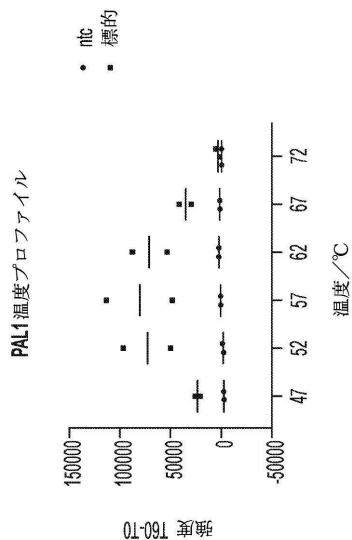
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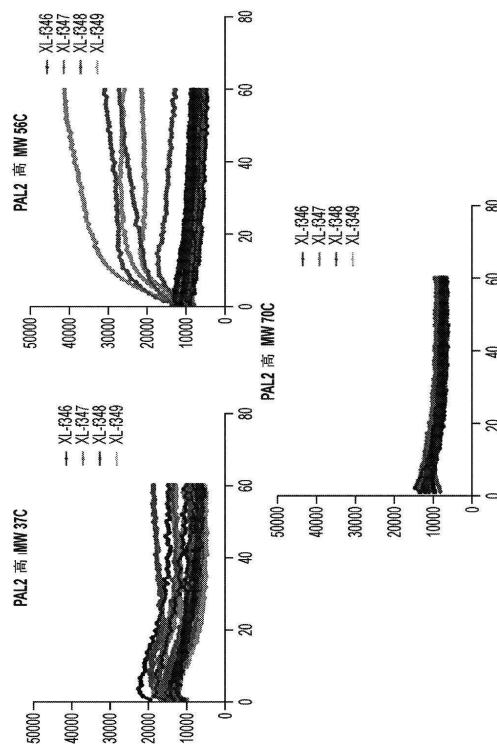
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【図 2 7】



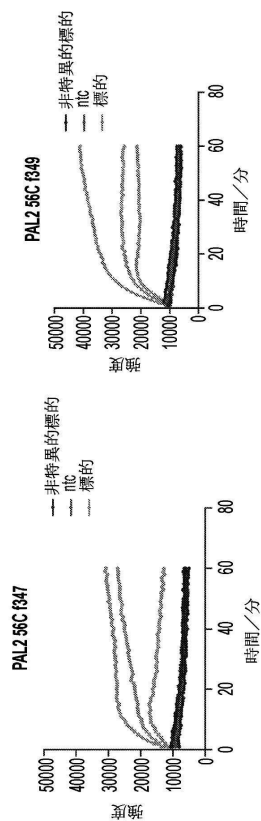
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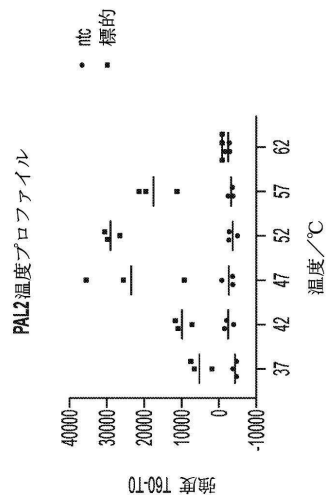
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【図 2 9】



【図 3 0】



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【配列表】

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【国際調査報告】

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2021/015306

A. CLASSIFICATION OF SUBJECT MATTER INV. C12Q1/683 C12Q1/6844 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) C12Q		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, CHEM ABS Data, Sequence Search, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2019/011022 A1 (SHANGHAI TOLO BIOTECHNOLOGY COMPANY LTD [CN] ET AL.) 17 January 2019 (2019-01-17) claims; [0068]; [0069]; [0141]; [0291]	1-18
X	DIPALI G. SASHITAL: "Pathogen detection in the CRISPR-Cas era", GENOME MEDICINE, vol. 10, no. 1, 24 April 2018 (2018-04-24), XP055514846, DOI: 10.1186/s13073-018-0543-4 page 2, last paragraph	1-18
----- -/-		
☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
7 May 2021		18/05/2021
Name and mailing address of the ISA/ European Patent Office, P.B. 5518 Patentaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer
		Hennard, Christophe

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page 1 of 2

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International application No

PCT/US2021/015306

X(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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X	WO 2019/126577 A2 (BROAD INST INC [US]; MASSACHUSETTS INST TECHNOLOGY [US] ET AL.) 27 June 2019 (2019-06-27) claims; [00155] -----	1-18
X	WO 2019/178428 A1 (ARBOR BIOTECHNOLOGIES INC [US]; SMITH ELISE KESTON [US]) 19 September 2019 (2019-09-19) claim 43, figure 16 -----	1-18
X,P	WO 2020/142754 A2 (MAMMOTH BIOSCIENCES INC [US]) 9 July 2020 (2020-07-09) claim 36, figures -----	1-7, 11, 12, 15-17

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Information on patent family members

International application No

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