

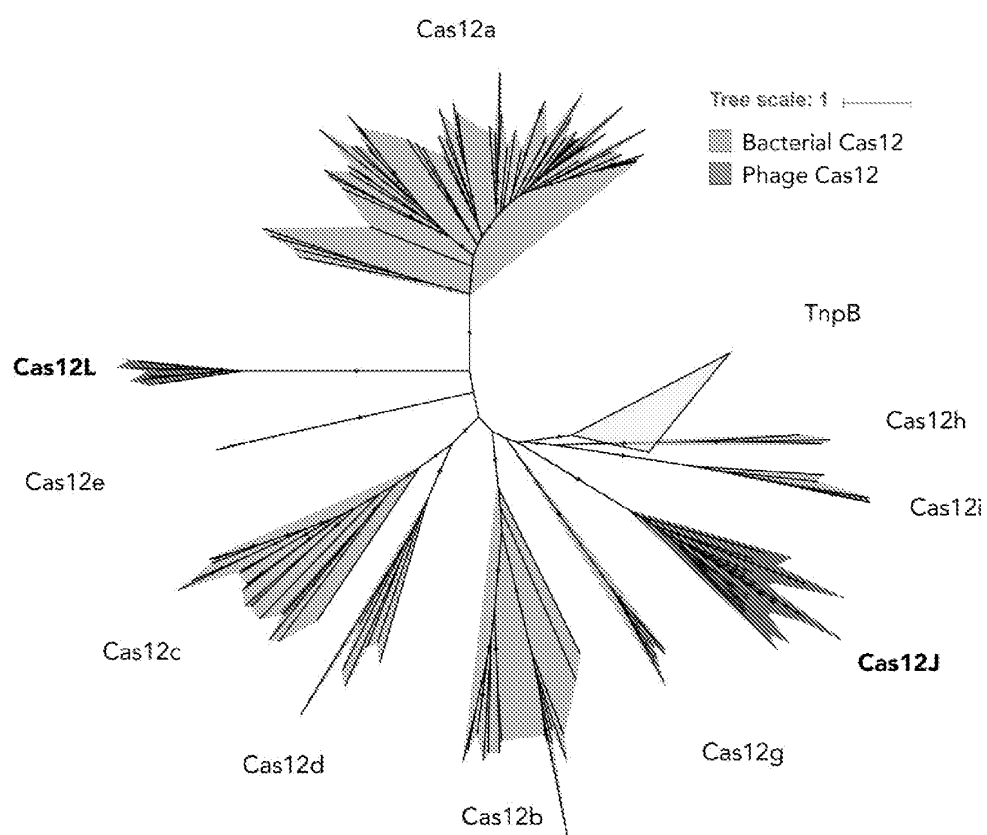


FIG. 1

FIG. 2A

>Cas12L_1_257905508 (SEQ ID NO:102)

MASHKKTESNQIIKTFSEFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKISELYKYIPNEKKN
 SGYALTTLISDEWKDKPMYMMFKKGYPANNRDNAIYETLNTCNTEHYTGNILNFSDTYYRRFGYVASAISN
 YVTKISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEYLESKTDSPNFVYRMTTLY
 EFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKSMYIMGGSNTPFDITQIGGNSLNIFSKNLNVDVF
 GRYDVIKDNLTLLVDIINGHGASFVLKIINDEIYIDINVSVPPDKKIATTNKVVGIDVNIKHMLLATNILD
 DGNVKGYYVNIYKEVINSDDFKKVCNSTVMQYFTDFSKFVTFCCPLEFDFLFSRVCNQKGIYNDNSAMEKSF
 SDVLNKLKWNFIETGDNTRKIYIENVMKLRSQMKAYAIKKNAYYKQQSEYDFGKSEEFIQEHFPSNTDKG
 IEILNKLNDNISKKILGCRNNIIQYSYNLFEINGYDMVSLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQE
 EMEKKDIYSVIKKGGYDIIIFDNDVVTDAKLSAGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAG
 VSLVPSYFTSQMDSIDHKIYFVQDNKSGKLKLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTDCRN
 MEMKQSRTDKSLYNKPSYETFIKTQGSAAVAKLKEGFVKILDEASV*

Repeat: ATTGTTGTAACCTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2B

>Cas12L_2_196848753 (SEQ ID NO:103)

MAHKKNVGAEIVKTYSFVKVNTNGITMEKLMNAIDFQSYYNLCSDWICKNLTTMTIGDLDDQYIP
 EKAKGNTYATVLLDEAWKNQPLYKIFGKKYSSNNRNALYCALSSVIDMTKENVLGFSKTHYIR
 NDYILNVISNYASKLSKLNTGVKSRAIKETSDEATHIEQVIYEMEHNKWESIEDWKNQIEYLNST
 DYNPTYMERMKTL SAYYSTHKSEVDAKMQEMAVENLVKFGGCRRNNSKKSMFIMGSNTTNYT
 ISYIGGNSFNINFANILNFDVYGRRDVVKNGEVLVDIMANHGDIVLKIVNGELYADVPCSVTLNK
 VESNFDKVVGIDVNMKHMILLSTSITDNGSSDFLNIYKEMSNNAEFMALCPEEDRKYYKDISKYV
 TFAPLELDLLFSRISKQKGKVKMEKVYSEILEALKWKFFANGDNKNRIYVESIQKIRQQIKALCVIK
 NAYYEQQSAYDIDKTQEYIETHPFSLTEKGMSIKSKMDKICQTIIGCRNNIIDYAYSFFERNGYSII
 GLEKLTSSQFEKTKSMPTCKSLLNFHKVLGHTLSELETLPINDVVKKGYTFTTDNEGKITDASL
 SEKGKVRKMKDDFFNQAIKAIHFADVVDYFATLSNNGQTGIFFVPSQFTSQMDSNTHNLYFENA
 KNGGLKLAPKYKVRQTQEYHLNGLPADYNAARNIAYIGLDETMRNFTLKKANSNKSLYNQPIYD
 TGIKKTAGVFSRMKKLKRYEII*

Repeat: ATTGTTGTAGACCTCTTTTTATAAGGATTGAACAAC (SEQ ID NO:3)

Spacer length: 30

FIG. 2C

>Cas12L_3_66741167 (SEQ ID NO:104)

MRISPHLFYIFFKKIWKCHFFVLSLYQLNQYIMASHEKTESNQIIKTFSEFKIKNANGLSLDVLNDAL
TEYQNYYNICSDWIKDHLTMKIGELYKYIPDEKKNSGYALTLSDEWKDKPMYMMFKKGYPANN
RDNAIYETLNTCNTEHYTGNILNFSDTYYRRFGYVASAISNYVTKISKMSTGSRSKNISNDSDVD
TIMEQVIYEMEHNGWTSVKDWENQMEYLESKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMET
MSIDSLIKFGGCRRKDSKKS MYIMGGSNTPFDITQIGGNSLNIKFSKNLNVDFGRYDVIKNTL
LVDIINGHGASFVLKIINGEIIYIDINVSVPFDKKIATTNKVVGIDVNIKHMLLATNILDDGNVNGYVNI
YKEVINDSDFKKVCNSTVMKYFTDFSKFVTFPCLEFDLFSRVCNQKGIYNDNSAMEKSFSFDVL
NKLKWNFIETGDNTKRIYIENVMKLRSQMKAYAIVKNAYYKQQSEYDFGKSEEFIQEHFPSNTD
KGIEILNKLDNISKKILGCRNIIQYSYNLFEINGYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILG
CTQEEMEKKDIYSVIKGGYYDIIFDNDVVTDKLSKLGELSFKKDDFFNLMIKSIHFADIKDYFITL
SNNGTAGVSLVPSYFTSQMDSIDHKIYFVQDNKSGKLLANKHKVRSSQEKHINGLNADYNAA
RNIAYIMENTECRNMFMKQSRD KSLYNKPSYETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2D

>Cas12L_4_67031163 (SEQ ID NO:105)

MRISPHLFYIFFKKIWKSHFFVLSLYQLNQYIMASHKKTESNQIIKTFSEFKIKNANGLSLDVLNDAI
 TEYQNYNICSDWIKDHLTMKIGELYKYIPDEKKNSGYALTISDEWKDKPMYMMFKKGYPANND
 RDNAIYETLNTCNTEHYTGNILNFPDYYRRFGYVASTISNYVTKISKMSTGSRSKNISNDSDVD
 TIMEQVIYEMEHNGWTSVKDWENQMEYLESKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMET
 MSIDSLIKFGGCRRKDSKKSMYIMGGSNTPFDITQIGGNSLNKFSKNLNVDVFGRYDVIKDNLT
 LVDIINGHGASFLKIINGEIIYIDINVSVFPDKKIATTNKVVGIDVNIKHMLLATNILDGNGVNGYVNI
 YKEVINDSDFKKVCNSTVMKYFTDFSKFVTFPCLEFDLFSRVCNQKGIYNDNSAMEKSFSDVL
 NKLKWNFIETGDNTKRIYIENVMKLRSQMKAYAIVKNAYYKQQSEYDFGKSEEFIQEHFPSNTD
 KGIEILNKLDNISKILGCRNNIIQYSYNLFEINGYDMISLEKLTSSQFKKNPFPTVNSLLKYHKILG
 CTQEEMEKKDIYSVIKKGYDYIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITL
 SNNGTAGVSLVPSYFTSQMDSIDHKIYFVQDNKSGKLLANKHKVRSSQEKHINGLNADYNAA
 RNIAYIMENTECRNMFMKQSRDTSLYNKPSYETFIKTQGSAAVAKLKEGFVKILDEASV*

Repeat: ATTGTTGTAACCTCTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2E

>Cas12L_5_67793351 (SEQ ID NO:106)

MRISPHLFYIFFKKIWKCHIFVLSLYQLNQYIMASHKKTESNQIIKTFSEFKIKNANGLSLDVLNDAIT
 EYQNYNICSDWIKDHLTMKIGELYKYIPDEKKNSGYALTISDEWKDKPMYMMFKKGYPANNR
 DNAIYETLNTCNTEHYTGNILNFSPTYRRFGYVASTISNYVTKISKMSTGSRSKNISNDSDVDTI
 MEQVIYEMEHNGWTSVKDWENQMEYLESKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMS
 IDSLIKFGGCRRKDSKKSMYIMGGSNTPFDITQIGGNSLNKFSKNLNVDVFGRYDVIKDNLTLLVD
 IINGHGASFLKIINGEIIYIDINVSVFPDKKIATTNKVVGVDVNIKHMLLATNILDGNGVNGYVNIYK
 EVINDSDFKKVCNSTVMKYFTDFSKFVTFPCLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNK
 LKWNFIETGDNTKRIYIENVMKLRSQMKAYAIVKNAYYKQQSEYDFGKSEEFIQEHFPSNTDKGI
 EILNKLDNISKILGCRNNIIQYSYNLFEINGYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQ
 EEMEKKDIYSVIKKGYDYIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNN
 GTAGVSLVPSYFTSQMDSIDHKIYFVQDNKSGKLLANKHKVRSSQEKHINGLNADYNAAARNIA
 YIMENTDCRNMFMKQSRDTSLYNKPSYETFIKTQGSAAVAKLKEGFVKILDEASV*

Repeat: ATTGTTGTAACCTCTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2F

>Cas12L_6_67912869_partial (SEQ ID NO:107)

QYVTFAPLELDLLFSRISKQGKVKMEKAYSEILEALKWKFFANGDNKNRIYVESIQKIROQKICALC
VIKNAYYEQQSAYDIDKTQEYIETHPFSLTEKGMSIKSKMDKICQTIIGCRNNIIDYAYSFFERNGY
TIIGLEKLTSSQFEKTKSMPTCKSLLNFHKVLGHTLSELETLPINDVVKKGYAFTTNDNEGRITDA
SLSEKGKVRKMKDDFFNQAIKAIHFADVVDYFATLSNNGQTGIFFVPSQFTSQMDSNTHNLYFE
NAKNGGLKLASKSKVRKSQEYHLNGLPADYNAARNIAYIGLDEIMRNTFLKKANSNKSLYNQPI
YDTGIKKTAGVFSRMKKLKKYKVI*

Repeat: ATTGTTGTAGATACCTTTTTGTAAGGATTGAACAAC (SEQ ID NO:5)

Spacer length: 30

FIG. 2G

>Cas12L_7_68090316_partial (SEQ ID NO:108)

VLNDAITEYQNYNICSDWIKDHLTMKIGELYKYIPDEKKNNGYALTLSDEWKDKPMYMMFCK
GYPANSRDNAIYEALNTCNTEHYTGNILNFSDTYYRRFGYVASAISNYVTKISKMSTGSRSKNIS
NDSDVDTIMEQVIYEMEHNGWTSVKDWENQMEYLESKTDSNPNFVYRMTTLYEFYKSHIDEV
NSKMETMSIDSLIKFGGCRKDSKKSMMYIMGGSNTPFDITQIGGNSLNIKFSKLNLDVDFGRYD
VIKDNTLLVDIINGHGASFVLKIINDEIYIDINVSPFDKKIATTNKVVGIDVNIKHMLLATNILDGDN
VNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTFPCLEDFLFSRVCNQKGIYNDNSAME
KSFSNVNLKLKWNFIETGDNTKRIYIENVMLKRSQMKAYAIKKNAYYKQQSEYDFGKSEEFIQE
HPFSNTDKGIEILHKLDNISKILGCRNNIIQSYNLFINGYDMISLEKLTSSQFKKKPFPTVNSLL
KYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVDKLSKLGELSKFKDDFFNLMIKSIHFADI
KDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVDNKGKGLKLANKHKVRSSQEKHINGLN
ADYNAARNIAYIMENTDCRNMFMKQSRTDKSLYNKPSYETFIKTQGSAAVAKLKEGFMKILDEA
SV*

Repeat: ATTGTTGTAACCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2H

>Cas12L_8_68328292_partial (SEQ ID NO:109)

IFFKKIWKCHIFVLSLYQLNQYIMASHKKTESNQIIKTFSEFKIKNANGLSLDVLNDAITEYQNYYNIC
SDWIKDHLTMKIGELYKYIPDEKKNISGYALTLSDEWKDKPMYMMFKKGYPANSRDNAIYEALN
TCNTEHYTGNILNFSPTYRRFGYVASAISNYVTKISKMSTGSRSKNISNDSVDVTIMEQVIYEM
EHNGWTSVKDWENQMEYLESKTDSPNPFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGG
CRRKDSKKSIMYIMGGSNTPFQIDGNSLNIFSKNLNVDVFGRYDVIKDNLTLLVDIINGHGAS
FVLKIINDEIYIDINVSVPFDKKIATTNKVVGVVDVNIKHMLLATNILDGNGVNGYVNIYKEVINDSDF
KKVCNSTVMKYFTDFSKFVTFPCLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIET
GDNTKRIYIENVMKLRSQMKAYAIKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIEILHKLDNI
SKKILGCRNNIIQYSYNLFEINGYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDI
YSVIKKGYYDIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLV
PSYFTSQMDSIDHKIYFVQDNKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTEQ
GSAVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTAACCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2I

>Cas12L_9_68454124 (SEQ ID NO:110)

MASHKKTESNQIIKTFSEFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
KKNISGYALTLSDEWKDKPMYMMFKKGYPANNRDNAIYETLNTCNTEHYTGNILNFSPTYRR
FGYVASAISNYVTKISKMSTGSRSKNISNDSVDVTIMEQVIYEMEHNGWTSVKDWENQMEYLE
SKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKSIMYIMGGSNTPF
DITQIGGNSLNIFSKNLNVDVFGRYDVIKDNLTLLVDIINGHGASFVLKIINGEYIDINVSVPFDKKI
ATTNKVVGVVDVNIKHMLLATNILDGNGVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
PCLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMKAY
AIKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLKLDNISKKILGCRNNIIQYSYNLFEIN
GYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDA
KLSAKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECCRNMFQKSRDTSKSLYNKPS
YETFIKTQGSVSKLKDGFKILDEASV*

Repeat: ATTGTTGTAACCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2J

>Cas12L_10_68605313 (SEQ ID NO:111)

MMKKMRTNPHLFYICFKKIWKCHFFALSLYQLNQYIMASHKKTESNQIIKTFSEFKIKNANGLSLD
 VLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDEKKNSGYALT LISDEWKDKPMYMMFKK
 GYPANSRDNAIYEALNTCNTEHYTGNILNFSDTYYRRFGYVASTISNYVTKISKMSTGSRSKNIS
 NDSVDVTIMEQVIYEMEHNGWTSVKDWENQMEYLESKTDSNPNFVYRMTTLYEFYKSHIDEV
 NSKMETMSIDSLIKFGGCRRKDSKKS MYIMGGSNTPFDITQIGGNSLNIKFSKNLNVDFVFGRYD
 VIKDNTLLVDIINEHGASFVLKIIINDEIYIDINVSVPFDKKIATTNKVVGVDVNIKHMLLATNILDGDN
 VNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTFCPLEDFLFSRVCNQKGIYNDNSAME
 KSFSVDLNLKLNFIETGDNTKRIYIENVMLKRSQM KAYAIVKNAYYKQQSEYDFGKSEEFIQE
 HPFSNTDKGIEILNKLDNISKKILGCRNNIIQYSYNLFEINGYDMISLEKLTSSQFKKKPFPTVNSLL
 KYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADI
 KDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVDNKGKLLANKHKVRSSQEKHINGLN
 ADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPSYETFIKTQGS AVAKLKKEGFVKILDEA
 SA*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2K

>Cas12L_11_69266821_partial (SEQ ID NO:112)

NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
 YETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2L

>Cas12L_12_69417229_partial (SEQ ID NO:112)

NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
 YETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2M

>Cas12L_13_69733214 (SEQ ID NO:113)

MASHKKTESNQIIKTFSEFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
KKNSGYALTLSDEWKDKPMYMMFKKGYPANSRDNAIYEALNTCNTEHYTGNI LNFSDTYYRR
FGYVASTISNYVTKISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
SKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKSMYIMGGSNTPF
DITQIGGNSLNIKF SKNLNVDVFGRYDVIKDN TLLVDIINGHGASFVLKIINGEIYIDINVSVPFDKKI
ATTNKVVGVDVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
CPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMKA
YAIVKNAYYKQQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF EIN
GYDMISLEKLTSSQFEKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTDCRNMFMKQSRTDKSLYNKPS
YETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2N

>Cas12L_14_70235246_partial (SEQ ID NO:114)

VPFDKKIATTNKVVGVDVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMKYFTD
FSKFVTFCPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKL
RSQMKA YAIVKNAYYKQQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQYS
YNLF EINGYDMISLEKLTSSQFKKSFPTVDSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDN
DVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHK
IYFVQDNKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTDCRNMFMKQSRTDKS
LYNKPSYETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 20

>Cas12L_15_70724743 (SEQ ID NO:115)

MASHKKTESNQIIKTFSEFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
 KKNSGYALTLSDEWKDKPMYMMFKKGYPANNRDNAIYETLNTCNTTEHYTGNILNFSDTYYRR
 FGYVASAISNYVTKISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
 SKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKSMYIMGGSNTPF
 DITQIGGNSLNIKFSKNLNVDFGRYDVIKDNLTLLVDIINGHGASFVLKIINGEYIDINVSVFPDKKI
 ATTNKVVGVVDVNIKHMLLATNILDGNGVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
 CPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
 YAIVKNAYYKQKSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF
 EINGYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKDIYSVIKKGYYDIFDNDVVTDA
 KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
 NKSGKLKLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
 YETFIKTQGSAAVAKLKEGFKILDEASV*

Repeat: ATTGTTGTAACCTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2P

>Cas12L_16_70731038 (SEQ ID NO:116)

MAHKKNIGAEIVKTYSEFKVKNITNGITMEKLMNAIDEYQSYYNLCSDWICKNLTTMTIGDLDRYIP
 EKAKDNIYATVLLDEVWKNQPLYKIFGKKYSSNNRINALYCTLSSVIDINKKNILGLSQTYYARNG
 YILNVISNYASKLSKLNTGVKRHTIKETSDEATIVEQVIYEMEHNKWESIEDWKNQIEYLNKSTDY
 NPTYMERMKTL SAYYSEHKSEVDAKMQEMAVENLVKFGGCRRNNSKKSMFIMGSSKTTYTIS
 YIGDNCFNINFANILNFDVYGRRDVVKNGEVLVDIMANHGDSIVLKIVNGELYADVPCSTTLNKV
 ESTFDKVAGIDVNMKHMILLSTSVTDNGNSDFVNIYKEMSNNAEFMALCPEEDRKYYKDISQYV
 TFAPLELDLLFSRISKQGKVKMEKAYSEILEALKWKFFANGDNKNRIYVENIQKIRQKIKALCVIK
 NAYYEQQSAYDIDKTQEYIEAHPFSLTEKGMSIKSKMDNICRTIIGCRNNIIDYAYSFFERNDYSII
 GLEKLTSSQFEKTKSLPTCKSLLNFHKVLGHTLSELETLPINDVVKKGYYTFTTDNEGRITDASL
 SEKGKVRKMKDDFFNQAIKAIHFADVVDYFATLSNNGQTGIFFVPSQFTSQMDSNTHTLTYFENA
 KNGGLKLASKYKVRKSQEYHLNGLPADYNAARNIAYIGLDEIMRNTFLKKANSNKSLYNQPIYDT
 GIKKTAGVFSRMKKLKKYKVI*

Repeat: TATTGTTGTAGATACCTTTTTGTAAAGGATTAAACAAC (SEQ ID NO:7)

Spacer length: 30

FIG. 2Q

>Cas12L_17_70959391 (SEQ ID NO:117)

MASHKKTESNQIIKTF SFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
KKNSGYALT LISDEWKDKPMYMMFKKGYPANSRD NAIYEALNTCNTEHYTGNILNFSDTYRR
FGYVASTISNYVT KISKMSTGSRSKNISNDS DVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
SKTDSNP NFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKSKSMYIMGGSNTPF
DITQIGGNSLNIKFSKNLNVDFGRYDVIKDN TLLVDIINGHGASFVLKIINGEYIDINVSVPFDKKI
ATTNKVVGVDVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMQYFTDFS FVTF
CPLEFDLFSRVCNQKGIYNDNSAMEKSFS DVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
YAIVKNAYYKQ QSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLFEIN
GYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
YETFIKTQGS AVAKLKKEGFVKIIDEASV*

FIG. 2R

>Cas12L_18_71078086 (SEQ ID NO:118)

MASHKKTESNQIIKTF SFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
KKNSGYALT LISDEWKDKPMYMMFKKGYPANNRD NAIYEALNTCNTEHYTGNILNFSDTYRR
FGYVASTISNYVT KISKMSTGSRSKNISNDS DVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
SKTDSNP NFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKSKSMYIMGGSNTPF
DITQIGGNSLNIKFSKNLNVDFGRYDVIKDN TLLVDIINGHGASFVLKIINGEYIDINVSVPFDKKI
ATTNKVVGVDVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFS FVTF
CPLEFDLFSRVCNQKGIYNDNSAMEKSFS DVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
YAIVKNAYYKQ QSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLFEIN
GYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNGVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
YETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2S

>Cas12L_19_71193509_partial (SEQ ID NO:119)

EKKNSGYALTLSDEWKDKPMYMMFKKGYPANNRDNAIYETLNTCNTEHYTGNILNFSDTYYR
RFGYVASAISNYVTKISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEYL
ESKTDSPNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKSKSMYIMGGSNTP
FDITQIGGNSLNIKFSKLNVDVFGRYDVIKDNLTLLVDIINEHGASFVLKIINDEIYIDINVSVFPDKK
IATTNKVVGVVDVNIKHMLLATNILDGNGVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVT
FCPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
AYAIVKNAYYKQQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKKILGCRNNIIQYSYNLFEI
NGYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVD
AKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTVGVSLVPSYFTSQMDSIDHKIYFVQ
DNKSGKLKLANKHKVRSSQEKHINGLNADYNAARNIAYIMENNECRNMFMKQSRTDKSLYNKP
SYETFIKTQGSAAVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTAACCTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2T

>Cas12L_20_71210958_partial (SEQ ID NO:120)

DAKMQEMAVENLVKFGGCRRNNSKKSMFIMGSSKTTYTISYIGDNCFNINFANILNFDVYGRRD
VVKNGEVLVDIMANHGDIVLKIYNGELYADVPCSTTLNKVESTFDKVAGIDVNMKHMLLSTSVT
DNGNSDFVNIYKEISNNAEFMALCPEEDRKYYKDISQYVTFAPLELDLLFSRISKQGKVKMEKAY
SEILETLKWKFFANGDNKNRIYVESIQKIRQQIKALCVIKNAYYEQQSAYDIDKTQEYIEAHPFSLT
EKGMSIKSKMDNICRTIIGCRNNIIDYAYSFFERNDYSIIGLEKLTSSQFEKTKSLPTCKSLLNFHK
VLGHTLSELETLPIINDVVKKGYTFTTDNEGRITDASLSEKGVKRMKDDFFNQAIKAIHFADVK
DYFATLSNNGQTGIFFVPSQFTSQMDSNTHLTLYFENAKNGGLKLASKYQVRQTQEYHLNGLPA
DYNAARNIAYIGLDETMRNTFLKKANSNKSLYNQPIYDTGIKKTAGVFSRMKKLKRYEII*

Repeat: AATGTTGTAGATGCCTTTTATAAGGATTAAACAACCTTG (SEQ ID NO:9)

Spacer length: 27

FIG. 2U

>Cas12L_21_71317321_partial (SEQ ID NO:121)

DVDTIMEQVIYEMEHNGWTSVKDWENQMEYLESKTDSNPNFVYRMTTLYEFYKSHIDEVNSK
METMSIDSLIKFGGCRRKDSKKSMMYIMGGSNTPFDITQIGGNSLNIKFSKNLNVDFGRYDVIKD
NTLLVDIINGHGASFVLKIINGEYIDINVSPFDKKIATTNKVVGVDVNIKHMLLATNILDGNGVNG
YVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTFCPLEFDLFSRVCNQKGIYNDNSAMEKSF
SDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMKA YAIVKNAYYKQQSEYDFGKSEEFIQEHF
SNTDKGIEILNKLDNISKILGCRNNIIQYSYNLFEINGYDMISLEKLTSSQFKKKPFPTVNSLLKYH
KILGCTQEEMEKKDIYSVIKGGYYDIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDY
FITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQDNKSGKLLANKHKVRSSQEKHINGLNADY
NAARNIAYIMENTECRNMFMKQSRTDKSLYNKPSYETFIKTQGSAAVAKLKKEGFVKIIDEASV*

Repeat: ATTGTTGTAACCTCTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2V

>Cas12L_22_71456687 (SEQ ID NO:122)

MASHKKTESNQIKTFSFKIKNANGLSLDVLNDAITEYQNYNICSDWIKDHLTMKIGELYKYIPDE
KKNSGYALTSLISDEWKDKPMYMMFKKGYPANSRDIAIYEALNTCNTEHYTGNILNFSDTYYRR
FGYVASAISNYVTKISKMSTGSRSKNISNDSVDVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
SKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKSMMYIMGGSNTPF
DITQIGGNSLNIKFSKNLNVDFGRYDVIKDNTLLVDIINEHGASFVLKIINDEIYIDINVSPFDKKI
ATTNKVVGVDVNIKHMLLATNILDGNGVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
CPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMKA
YAIVKNAYYKQQSEYDFGKSEEFIQEHFPSNTDKGIEILNKLDNISKILGCRNNIIQYSYNLFEIN
GYDMISLEKLTSSQFEKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKGGYYDIIFDNDVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
YETFIKTQGSAAVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTAACCTCTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2W

>Cas12L_23_71708971 (SEQ ID NO:123)

DVDTIMEQVIYEMEHNGWTSVKDWENQMEYLESKTDSPNPFVYRMTTLYEFYKSHIDEVNSK
METMSIDSLIKFGGCRRKDSKKS MYIMGGSNTPFDITQIGGNSLNIKFSKLNVDVFGRYDVIKD
NTLLVDIINEHGASFVLKIINDEIYIDINVSVPFDKKIATTNKVVGVDVNIKHMLLATNILDGDNVNG
YVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTFCPLEFDLFSRVCNQKGIYNDNSAMEKSF
SDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMKAYAIVKNAYYKQQSEYDFGKSEEFIQEHF
SNTDKGIEILNKLDNISKILGCRNNIIQYSYNLFEINGYDMISLEKLTSSQFKKKPFPTVDSLLKYH
KILGCTQEEMEKKDIYSVIKGGYYDIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDY
FITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQDNKSGKLLANKHKVRSSQEKHINGLNADY
NAARNIAYIMENTDCRNMFMKQSRTDKSLYNKPSYETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2X

>Cas12L_24_46035167_partial (SEQ ID NO:124)

FVLSLYQLNQYIMASHKKTESNQIIKTSFKIKNANGLSLDVLNDAITEYQNYNICS DWIKDHILT
MKIGELYKYIPDEKKNSGYALTLSDEWKDKPMYMMFKKGYPANNRDNAIYETLNTCNTEHYTG
NILNFSDTYRRFGYVASTISNYVTKISKMSTGSRSKNISNDS DVDTIMEQVIYEMEHNGWTSVK
DWENQMEYLESKTDSPNPFVYRMTTLYEFYKSHIDEVNSK METMSIDSLIKFGGCRRKDSKKS
MYIMGGSNTPFDITQIGGNSLNIKFSKLNVDVFGRYDVIKDNTLLVDIINGHGASFVLKIINGEIIYI
DINVSVPFDKKIATTNKVVGVDVNIKHMLLATNILDGDNVNGYVNIYKEVINDSDFKKVCNSTVM
KYFTDFSKFVTFCPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYE
NVMKLRSQMKAYAIVKNAYYKQQSEYDFGKSEEFIQEHF SNTDKGIEILNKLDNISKILGCRN
NIIQYSYNLFEINGYDMISLEKLTSSQFKKKSFTPTVDSLLKYHKILGCTQEEMEKKDIYSVIKGGYY
DIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQM
DSIDHKIYFVQDNKSGKLLANKHKVRSSQEKHINGLNADY NAARNIAYIMENNECRNMFMKQS
RTDKSLYNKPSYETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2Y

>Cas12L_25_46784254_partial (SEQ ID NO:125)

GSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEYLESKTDSNPNFVYRMTTLYEF
 YKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKS MYIMGGSNTPFDITQIGGNSLNIKFSKNLNV
 DVFGRYDVIKDN TLLVDIINGHGASFVLKIINGEIIYIDINVSVPFDKKIATTNKVVGVDVNIKHMLLA
 TNILDDGNVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF CPLEFDFLFSRVCNQKGIY
 NDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMKA YAIVKNAYYKQQSEYDFG
 KSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQYSYNLFEINGYDMISLEKLTSSQFKKKS
 FPTVDSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDAKLSTKGELSKFKDDFFNLM
 IKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQDNKSGKLLANKHKVRSSQE
 KHINGLNADYNAARNIAYIMENNECRNMFMKQSRTDKSLYNKPSYETFIKTQGS AVAKLKEGF
 VKILDEASV*

Repeat: ATTGTTGTAAC TCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2Z

>Cas12L_26_46464451 (SEQ ID NO:126)

MASHKKTESNQIIKTF SFKIKNANGLSLDVLNDAITEYQNYNICSDWIKDHLTMKIGELYKYIPDE
 KKN SGYALT LISDEWKDKPMYMMFKKGYPANNRDNAIYETLNTCNTEHYTGNILNFSDTYRR
 FGYVASTISNYVT KISK MSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
 SKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKS MYIMGGSNTPF
 DITQIDGNSLNIKFSKNLNV DVFGRYDVIKDN TLLVDIINGHGASFVLKIINGEIIYIDINVSVPFDKKI
 ATTNKVVGVDVNIKHMLLATN ILDDGNVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
 CPLEFDFLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMKA
 YAIVKNAYYKQQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQYSYNLFEIN
 GYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNGVVIDA
 KLSAKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVDFCPR*

Repeat: ATTGTTGTAAC TCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2AA

>Cas12L_27_254489164 (SEQ ID NO:102)

MASHKKTESNQIIKTF SFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKISELYKYIPNE
KKNSGYALT LISDEWKDKPMYMMFKKGY PANNRDNAIYETLNTCNTEHYTGNILNFSDTYRR
FGYVASAISNYVTKISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
SKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKSKSMYIMGGSNTPF
DITQIGGNSLNIKF SKNLNVDVFGRYDVIKNTLLVDIINGHGASFVLKIINDEIYIDINVSPFDKKI
ATTNKVVGIDVNIKHMLLATNILDG NVKGYVNIYKEVINDSDFKKVCNSTVMQYFTDFSKFVTF
CPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
YAIVKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIELNKLDNISKILGCRNNIIQSYNLF
GYDMVSLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDV
AKLSAKGELSFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQ
DNKSGKLKLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTDCRNMFMKQSRTDKSLYNKP
SYETFIKTQGS AVAKLKKEG FVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2BB

>Cas12L_28_255238293 (SEQ ID NO:127)

MAHKKNLEGENLQVKTIC LKANLSKEEVKEKWL PVINEYNVYYNRMSDYICSL LGTNITIGFAE
QLSIEKRNGYFTICQDDKFKNESLYKIFHKSFPINHG TNNIINIISEKNIDQYDGNTLGFRPTMYR
LRGYVDSVIGNYRTTIRTIKPSVKRHKISVDSSFDEKMEQCIYEIQKGNLKT VSEWNNKIDYLLSK
SDMNPLTIDRFNLLRDFYVDNETEVNEKSNNSSIEQLVKFGGCHRGD NM TSLTEANFSIEID
DSYGYLLTLHTDSGDYKIPLMGSKMLKKGDKCLIDFVNCKKGKSLTAKIDNDYNLYFHFVVS
FEKIEDDNINN VGV DVNSKHMLLM TNVIDD NIDGYVNIYKALVN DDEFKSLVT KSEYDDYVTMS
KYVTF C PIELKYLYARYCVQKDYPISNKDVAIEQCISRVIDKLCKETLDSRANNYL CMVRRIRHYY
KSYVVLKMTYYDKMSEYDTNMEYNDISTTSKETMDQRRFENSFRETDCAKEILSKLDKIGNDIL
GCRNNILTYAYKLFEELGYDTIALENLESSQFDKMKS LPSQCQSM LKYHKLEGKT MEEVMSNTSV
KSLIENEYYDFSLNDNKTVENITYTKNGLMKG FDEFFNLFMKIIHFADIKDKFLQLYNNGSVKVI
LVPSYFTSQMDSSNHSIYMEKSKNDKLVFASKHKVRKTQETHLNLGNADYNAACN IAYIAKDIK
WREKFCKKTSNNGYSTPFYDCATKNQIEMVKRIKQLNAIKMLA*

Repeat: ATTGTTGAAATAGTACTTTTATAGTCTATATACAAC (SEQ ID NO:11)

Spacer length: 30

FIG. 2CC

>Cas12L_29_72167294 (SEQ ID NO:128)

MASHKKTESNQIIKTF SFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
 KKNSGYALT LISDEWKDKPMYMMFKKGY PANSRDNAIYEALNTCNTEHYTGNILNFSDTYRR
 FGYVASTISNYVTKISK MSTGSRSKNISNDS DSDVTIMEQVIYEMEHNGWTSVKDWENQMEYLE
 SKTDSNP NFVYRMTTLYEFYKSHIDEVNSK METMSIDSLIKFGGCRRKDSKKSMYIMGGSNTPF
 DITQIGGNSLNIKFSKNLNVDFGRYDVIK DNTLLVDIINGHGASFVLKIINDEIYIDINVSVPFDKKI
 ATTNKVVGV D VNIKHMLLATNILD DGNVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
 CPLEFDL FLSRVCNQKGIYNDNSAMEKSFS DVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
 YAIVKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF
 EINGYDMISLEKLTSSQFKKKSFPTVDSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDV
 VTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
 NKSGK LKLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
 YETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: TATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:13)

Spacer length: 29

FIG. 2DD

>Cas12L_30_72369269 (SEQ ID NO:129)

MASHKKTESNQIIKTF SFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
 KKNSGYALT LISDEWKDKPMYMMFKKGY PANSRDNAIYEALNTCNTEHYTGNILNFSDTYRR
 FGYVASAISNYVTKISK MSTGSRSKNISNDS DSDVTIMEQVIYEMEHNGWTSVKDWENQMEYLE
 SKTDSNP NFVYRMTTLYEFYKSHIDEVNSK METMSIDSLIKFGGCRRKDSKKSMYIMGGSNTPF
 DITQIDGNSLNIKFSKNLNVDFGRYDVIK DNTLLVDIINGHGASFVLKIINDEIYIDINVSVPFDKKI
 ATTNKVVGI D VNIKHMLLATNILD DGNVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
 CPLEFDL FLSRVCNQKGIYNDNSAMEKSFS NVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
 YAIVKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF
 EINGYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDV
 VTDAKLSAKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
 NKSGK LKLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTDCRNMFMKQSRTDKSLYNKPS
 YETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2EE

>Cas12L_31_72503976 (SEQ ID NO:130)

MASHKKTESNQIIKTF SFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
KKNSGYALT LISDEWKDKPMYMMFKKGY PANNRDNAIYETLNTCNTEHYTGNILNFSDTYRR
FGYVASTISNYVT KISKMSTRSRSKNISNDS DVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
SKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKSMYIMGGSNTPF
DITQIGGNSLNIKF SKNLNVDVFGRYDVIKDN TLLVDIINGHGASFVLKIINGEYIDINVSVPFDKKI
ATTNKVVGIDVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFS FVTF
CPLEFDLFLSRVCNQKGIYNDNSAMEKSFS DVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
YAIVKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF EIN
GYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTDCRNMFMKQSRTDKSLYNKPS
YETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2FF

>Cas12L_32_72547654_partial (SEQ ID NO:131)

NMF MKQSRTDKSLYNKPSYETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2GG

>Cas12L_33_72907394 (SEQ ID NO:132)

MASHKKTESNQIIKTF SFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
KKNSGYALT LISDEWKDKPMYMMFKKGY PANNRDNAIYETLNTCNTEHYTG NILNFSDTYRR
FGYVASTISNYVTKISK MSTGSRSKNISNDS DVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
SKTDSNPNFVYRMTTLYEFYKSHIDEVNSK METMSIDSLIKFGGCRRKDSKSKSMYIMGGSNTPF
DITQIGGNFLNIKF SKNLNVDVFGRYDVIK DNTLLVDIINEHGASFVLKIINDEIYIDINVSVPFDKKI
ATTNKVVGVDVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
CPLEFDLFSRVCNQKGIYNDNSAMEKSFS DVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
YAIVKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIELHKLDNISKILGCRNNIIQSYNLFEIN
GYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTE CRNMFMKQSRTDKSLYNKPS
YETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2HH

>Cas12L_34_73124743_partial (SEQ ID NO:133)

KKILGCRNNIIQSYNLFEINGYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIY
SVIKKGYYDIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLV
SYFTSQMDSIDHKIYFVQDNKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTE CR
NMFMKQSRTDKSLYNKPSYETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2II

>Cas12L_35_73503649_partial (SEQ ID NO:134)

NAYYKQSEYDFGKSEEFIQEHPFSNTDKGIELHKLDNISKILGCRNNIIQSYNLFEINGYDMI
SLEKLTSSQFEKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDAKLSTK
GELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTVGVSLVPSTV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2JJ

>Cas12L_36_73503649_partial (SEQ ID NO:135)

MANKHKVRSSQEKHINGLNADYNAARNIAYIIENTE CRNMFMKQSRTDKSLYNKPSYETFIKTQ
GSTVAKLKKEGFVKILDEASV*

FIG. 2KK

>Cas12L_37_73472625 (SEQ ID NO:136)

MAHKKQKEENEIIKTISLKVVDYAGYPIVEAMREYTKYYNKISQWINSNLLTIKIGELSAFMPDEC
KTHNYYTYMMSPDWVNEPLYKMFMKGFHAQHCDNLFNVVKT LNIDEYAGNSLGLSASCRR
SGYFQNVVSNYKSKFANPHISIRRNLSLPTDELVEQCIYEIQNGLSSKTKWEEQIEYLKERD
DSKQIYLTRLNTLFMYKANKDFVDEQIQIKSVESLANFGGCVRKDDKLSMNLVFSSNSPYKVV
LNEKRNGYILSYSNFSELYGNRMGLLNGVEVFNVGDKHSNNITFKMDNDEL FVNIPVSVNFV
KKANETNKVVGVDVNLKHSIFATNIIDDGKLDGFVNIRYRELLNDVDFVKSCPNELLNFILDVEKYA
FFMPLELGLLSSRVMNQCGYSTIGKYEKLTTEEHFFRVLRLQLEKRFQESGENQKRIYIENVIKM
RAQVKAYFTLKYAYNKANKDYDLKMGFVDESTANKETMDQRRFENQFVNTYTAKEILGKMRI
ANVITSCRNNIICYMYKIFENNGYGVVALEKLQSSQMKKEKRIPSLLSLLKKQKVEGYTINELKDK
SVFKFIERGYTDFDFFDDNKITGVQFSDAGEVVMETELHNLALKTIHFADAKDYFVTLNNGS
VSVALVPSQFTSQMDSTKHVLYAKKNNKGKLGIVSEHEVRPKQECHINGLNGDYNAACNIAYIF
ENDEWRNAFMKMNPNYEGKALFETNMESTSTIINTLKKINPDNIISFDEYEKTKKVAA*

Repeat: ATTGTTGTAACATCTATTTTGTAAAGGTGTAAACAAC (SEQ ID NO:15)

Spacer length: 30

FIG. 2LL

>Cas12L_38_73764039_partial (SEQ ID NO:137)

YPANSRDNAIYEALNTCNTEHYTGNILNFSDTYRRFGYVASAISNYVTKISKMSTGSRSKNISN
DSDVDTIMEQVIYEMEHNGWTSVKDWENQMEYLESKTDSPNPFVYRMTTLYEFYKSHIDEVN
SKMETMSIDSLIKFGGCRRKDSKKSIMYMGGSNTPFDTQIGGNSLNIFSKNLNVDFGRYDVI
KDNTLLVDIINGHGASFVLKIINGEYIDINVSVPFDKKIATTNKVVGVDVNIKHMLLATNILDGNNV
KGYVNIYKEVINSDFKKVCNSTVMKYFTDFSKFVTFPCLEFDLFSRVCNQKGIYNDNSAMEK
SFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMKAYAIKVNAYYKQQSEYDFGKSEEFIQEH
PFSNTDKGIEILNKLDNISKILGCRNNIIQYSYNLFEINGYDMISLEKLTSSQFKKKSFTVNSLLK
YHKILGCTQEEMEKKDIYSVIKGGYDIIFDNDVVTDKLSKLGELSKFKDDFFNLMIKSIHFADIK
DYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQDNKSGKLKLANKHKVRSSQEKHINGLNA
DYNAARNIAYIMENTECRNMFMKQSRDCKSLYNKPSYETFIKTQGSAAVAKLKEGFVKILDEAS
V*

Repeat: ATTGTTGTAACACTCTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2MM

>Cas12L_40_74037305 (SEQ ID NO:138)

MMKKMRISPHLFYIFFKKIWKCHFFVLSLYQLNQYIMASHKKTESNQIIKTFSFKIKNANGLSLDV
 LNDITEYQNYNNICSDWIKDHLTMKIGELYKYIPDEKKNSGYALT LISDEWKDKPMYMMFKKG
 YPANNRDNAIYETLNTCNTEHYTGNILNFSDTYRRFGYVASAISNYVTKISKMSTGSRSKNISN
 DSDVDTIMEQVIYEMEHNGWTSVKDWENQMEYLESKTDSPNPFVYRMTTLYEFYKSHIDEVN
 SKMETMSIDSLIKFGGCRRKDSKKS MYIMGGSNTPF DITQIGGNSLNIKFSKNLNVDVFGRYDVI
 KDNTLLVDIINEHGASFLVKIINDEIYIDINVSVPFDKKIATTNKVVGVDVNIKHMLLATNILDGNN
 NGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTFPCLEFDLFSRV CNQKGIYNDNSAMEK
 SFSNVLNKLKWNFIETGDNTKRIYIENVMLRSQMKAYAI VKNAYYKQQSEYDFGKSEEFIQEH
 PFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF EINGYDMISLEKLTSSQFKKKPFPTVNSLLK
 YHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIK
 DYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQDNKSGK LKLANKHKVRSSQEKHINGLNA
 DYNAARNIAYIMENTDCRNMFMKQSRTDKSLYNKPSYETFIKTQGS AVAKLKKEGFVKILDEAS
 V*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2NN

>Cas12L_41_74408273_partial (SEQ ID NO:139)

WTDEDYCKFFAKYGMSEECQKWMCRDVYDYRIKDFVDYEFDDSKIEEEQEEYSEIPVESED
 SSPSTSETLPKSIYDLRLRDPNPEIPEDEKYNEEDLKNAYPDKYERFEKDGEDYSYIFFKKIW
 KCHFFVLSLYQLNQYIMASHKKTESNQIIKTFSFKIKNANGLSLDVLNDITEYQNYNNICSDWIK
 DHLTMKIGELYKYIPDEKKNSGYALT LISDEWKDKPMYMMFKKGYPANNRDNAIYEALNTCNTE
 HYTGNILNFSDTYRRFGYVASTISNYVTKISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNG
 WTSVKDWENQMEYLESKTDSPNPFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRK
 DSKKS MYIMGGSNTPF DITQIDGNSLNIKFSKNLNVDVFGRYDVIKDNTLLVDIINGHGASFLVKI
 NDEIYIDINVSVPFDKKIATTNKVVGVDVNIKHMLLATNILDGNNVNGYVNIYKEVINDSDFKKVC
 NSTVMKYFTDFSKFVTFPCLEFDLFSRV CNQKGIYNDNSAMEKSFSVDVLNKLKWNFIETGDNT
 KRIYIENVMLRSQMKAYAI VKNAYYKQQSEYDFGKSEEFIQEH PFSNTDKGIEILNKLDNISKIL
 GCRNNIIQSYNLF EINGYDMISLEKLTSSQFEKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVI
 KKGYYDIIFDNGVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSY
 FTSQMDSIDHKIYFVQDNKSGK LKLANKHKVRSSQEKHINGLNA DYNAARNIAYIMENTECRNM
 FMKQSRTDKSLYNKPSYETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 200

>Cas12L_42_75186079_partial (SEQ ID NO:140)

YDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTEEEMEKKDIYSVIKKGYYDIIFDNDVVTDAKL
STKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQDNK
SGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPSYE
TFIKTQGSAAVAKLKKKEGFVKILDEASA*

Repeat: AATTGTTGTAACCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:17)

Spacer length: 29

FIG. 2PP

>Cas12L_43_75257103_partial (SEQ ID NO:141)

MKIGELYKYIPDEKKNSSGYALTLISDEWKDKPMYMMFKKGYPANNRDNAIYETLNTCNTEHYTG
NILNFSDTYYRRFGYVASAISNYVTKISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVK
DWENQMEYLESKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKS
MYIMGGSNTPFDITQIDGNSLNIKFSKNLNVDFGRYDVIKDNLTLLVDIINGHGASFVLKIINGEYI
DINVSVPFDKKIATTNKVVGVDVNIKHMLLATNILDDGNVNGYVNIYKEVINDSDFKKVCNSTVM
KYFTDFSFKVTFCPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIE
NVMKLRSQMKAYAIVKNAYYKQQSEYDFGKSEEFIQEYDFFGETYQFSI*

Repeat: ATTGTTGTAACCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2QQ

>Cas12L_44_75257103_partial (SEQ ID NO:142)

MISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKKGYYDIIFDNDVVTDAKLSTKGELS
KFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDRANKHKVRSSQEKHINGLN
ADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPSYETFIKTQGSAAVAKLKKKEGFVKILDEA
SV*

Repeat: ATTGTTGTAACCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2RR

>Cas12L_45_75616607_partial (SEQ ID NO:143)

YIMASHKKTESNQIIKTFSEFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIP
DEKKN SGYALT LISDEWKDKPMYMMFKKGY PANSRDNAIYETLNTCNTEHYTGNILNFSDTY
RRFGYVASTISNYVTKISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEY
LESKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKSKSMYIMGGSNT
PFDITQIGGNSLNIKFSKNLNVDVFGRYDVIKDN TLLVDIINGHGASFVLKIINGEYIDINVSVPFDK
KIATTNKVVGV DVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFV
TFCPLEFDFLFSRVCNQKGIYNDNSAMEKSFSNVLNKLKWNFIETGDNTKRIYIENVMKLRSQM
KAYAIVKNAYYKQQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF
INGYDMISLEKLTSSQFEKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNGVVT
DAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFV
QDNKSGKLKLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNK
PSYETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2SS

>Cas12L_46_75784289_partial (SEQ ID NO:144)

SLNIKFSKNLNVDVFGRYDVIKDN TLLVDIINGHGASFVLKIINGEYIDINVSVPFDK KIATTNKVV
GVDVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTFCPLEFDF
LFSRVCNQKGIYNDNSAMEKSFSNVLNKLKWNFIETGDNTKRIYIENVMKLRSQM KAYAIVKNA
YYKQQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF EINGYDMISL
EKL TSSQF KKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNGVVIDAKLSAKGE
LSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQDNKSGKLK
LANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPSYETFIKTQ
GSAVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2TT

>Cas12L_47_76512228 (SEQ ID NO:145)

MASHKKTESNQIIKTF SFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
KKNSGYALT LISDEWKDKPMYMMFKKGYPANNRD NAIYETLNTCNTEHYTGNILNFSDTYRR
FGYVASAISNYVT KISK MSTGSRSKNISNDS D V D T I M E Q V I Y E M E H N G W T S V K D W E N Q M E Y L E
SKTDSNP NFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKSMYIMGGSNTPF
DITQIGGNSLNIKFSKNLNVDFGRYDVIKDN TLLVDIINEHGASFVLKIINDEIYIDINVSVPFDKKI
ATTNKVVGIDVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
CPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
YAIVKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF
GYDMISLEKLTSSQFKKKSFP TVDSLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
YETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTAAC TTTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:19)

Spacer length: 30

FIG. 2UU

>Cas12L_48_76600450 (SEQ ID NO:146)

MASHKKTESNQIIKTF SFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
KKNSGYALT LISDEWKDKPMYMMFKKGYPANNRD NAIYETLNTCNTEHYTGNILNFSDTYRR
FGYVASAISNYVT KISK MSTGSRSKNISNDS D V D T I M E Q V I Y E M E H N G W T S V K D W E N Q M E Y L E
SKTDSNP NFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKSMYIMGGSNTPF
DITQIDGNSLNIKFSKNLNVDFGRYDVIKDN TLLVDIINGHGASFVLKIINDEIYIDINVSVPFDKKI
ATTNKVVGVDVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
CPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
YAIVKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF
GYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYYDIIFDNDVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
YETFIKTQGS AVAKLKKEGFMKILDEASV*

Repeat: ATTGTTGTAAC TCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2VV

>Cas12L_49_44880081 (SEQ ID NO:147)

MASHKKTESNQIIKTF SFKLKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPD
EKKNSGYALT LISDEWKDKPMYMMFKKGY PANNRDNAIYEALNTCNTEHYTGNILNFSDTYYR
RFGYVASTISNYVT KISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEYL
ESKTDSPNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKSKSMYIMGGSNTP
FDITQIGSNSLNKIFSKNLNVDVFGRYDVIKDNTLLVDIIKGHGASFALKIINDEIYIDINVSVPFDKK
IATTNKVVGIDVNIKHMLLATNILDGNGVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
CPLEFDLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
YAIVKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIELHKLDNISKILGCRNNIIQYSYNLFEIN
GYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMKKDIYSVIKKGYYDIFDNDVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSFFTSQMDSIDHKIYFVQD
NKSGKLKLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
YETFIKTQGS AVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTA ACTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2WW

>Cas12L_50_83012613 (SEQ ID NO:148)

MAHKKNIGAEIVKTY SFKVKNTNGITMEKLMNAIDEYQSYYNLCSDWICKNLTTMTIGDL DQYIP
EKAKDNTYATVLLDEAWKNQPLYKIFGKKYSSNNRDAVLYHALSSIVNASEKNILGISKTYARK
GYVLNVASNYASKLSKLNTGVKSRAIKETSDEETIIIEQVIYEMEHNKWESIEDWKNQIEYLSKT
DYNPTYMERMKTL SAYYSEHKSEVDAKMQEMAVENLVKFGGCRRNNSKSMFIMGTTNTNYT
ISYIGGNSFNINFANILNFDVYGRRDVVKNGEVLVDIMANHGDSIVLKIVNGELYADVPCSVTLNK
VESNFDKVVGIDVNMKHMLLSTSVTDNGSLDFLNIYKEMSNAEFMALCSEDDRKYYKDISQY
VTFAPLELDLLFSRISKQGVKMEKAYSEILEALKWKFFANGDNKNRIYVESIQKIRQQIKALCIK
NAYYEQQSAYDIDKTQEYIEAHPFSLTEKGMSIKSKMDNICRTIIGCRNNIIDYAYSFFERNDYSII
GLEKL TSAQFEKTKSLPTCKSLLNFHKVLGHTLSELGTL PINDVVKGYTFTT DNEGRITDASL
SEKGKVRKMKDDFFNQTIKAIHFADV KDYFATLSNNGQTGIFFVPSQFTSQMDSSTHNL YFENA
KNGGLKLAPKYKVRQM QEYHLNGLPADYNAARNIAYIGLDETMRNTFLKKANSNKSLYNQPIYD
TGIIKKTAGVFYRMKKLKRYEII*

Repeat: AATGTTGTAGATACCTTTTGTAAAGGATTGAACAAC (SEQ ID NO:21)

Spacer length: 30

FIG. 2XX

>Cas12L_51_82983331 (SEQ ID NO:149)

MKRNQKHINKNIEESETIKTISFKVKDYAGIPIVEAMHEYRNYYNRLSRFINSKLLTMTIGELASLLP
ERCKSKGYYLYMTSDEWWNEYVYKMFMESFNSQSCDNIWFNYIKMNNPEEYNGNIGISDSYY
RRNGYFINVISNYKTKFKSPQINVKSKLSESPTEEELKEQCVYEVKHNHLSKDWEEQIKYLD
ERGESKINILERIRTLYQYYKENIPTIKEYIELKSIESIEKFGGCVRKEDKLSMSLQYVSTHNYEIKL
NDTRNGYIISGISKDLSFEVYGNRMGLLGGEEILNPEKHSTSITFVMRNNSLYVDIPVAVPFPSKVI
NDCDGKTVGIDVNLKHALFATSEVDNGQFYDYVNVYAELLKDENVKVKCHKELLDYIKDVSKYV
FFAPIELNLLLSRVMKQKGYENIDNYKKLYKVEEAYLCVLDKLQKRFDENNTKRIYIENLKKMR
AQMAYYILKDTYSKYQKDYDIEMGFVDESTESKETMDARRSENPFIRSTDIAQDILKKMNNVGK
TVEACRNNIAYIKVFENSDFATIVLEKLQSSQMKKHKRIPTVNSLLKYHHVEGHTIEETKEMKIY
DVVEKGYNNFIVNEKNEIIDATLTDKGKVMIEAEFYNFALKSIHFADAKDYFITLSNNGSVNIALV
PSQFTSQMDSIRHAIFVTGKKGKGVIVDKKYVRPKQEKHINGLNGDYNASRNIAIFENEELRE
ELLKKEEEYNKYGKVLVYDTLIKFPSPGVINKLKKFGDKYMTTIENTLDEIQVEDVAYV*

Repeat: ATTGTTGTAATACTATTTTTGTAAAGTATAACAAC (SEQ ID NO:23)

Spacer length: 30

FIG. 2YY

>Cas12L_52_76767885 (SEQ ID NO:150)

MSKLNTGVKRHTIKETSDEATIVEQVIYEMEHNKWESIEDWKNQIEYLSKTDYNPTYMERMKT
LSAYYSEHKSEVDAKMQEMAVENLVKFGGCRNNSKSMFIMGSSKTTYTISYIGDNCFNINFA
NILNFDVYGRRDVVKNGEVLVDIMANHGDIVLVKIVNGELYADVPCSTTLNKVESTFDKVAGIDV
NMKHMILLSTSVTDNGNSDFVNIYKEMSNNAEFMALCPEEDRKYYKDISQYVTFAPLELDLLFSR
ISKQGVKMEKAYSEILETLKWKFFANGDNKNRIYVESIQKIRQQIKALCVIKNAYYEQQSAYDID
KTQEYIEAHPFSLTEKGMSIKSKMDNICRTIIGCRNNIIDYAYSFFERNDYSIIGLEKLTSSQFEKT
KSLPTCKSLLNFHVKVLGHTLSELETLPINDVVKKGYTFTTNDNEGRITDASLSEKGVKVRKMKDDF
FNQAIKAIHFADVVDYFATLSNNGQTGIFFVPSQFTSQMDSNTHLYFENAKNGGLKLASKYKV
RQTQEYHLNGLPADYNAARNIAYIGLDETMRNTFLKKANSNKSLYNQPIYDTGIKKTAGVFSRM
KKLKRYEII*

Repeat: AATGTTGTAGATGCCTTTTTATAAGGATTAAACAAC (SEQ ID NO:25)

Spacer length: 30

FIG. 2ZZ

>Cas12L_53_77216451 (SEQ ID NO:151)

MASHKKTESNQIIKTFSEFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
KKNSGYALTLSDEWKDKPMYMMFKKGYPANNRDNAIYEALNTCNTEHYTGNIILNFSDTYRR
FGYVASAISNYVTKISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
SKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKSMYIMGGSNTPF
DITQIGGNSLNIKFSEKLNVDVFGRYDVIKDNLTLLVDIINGHGASFVLKIINDEIYIDINVSVPFDKKI
ATTNKVVGIDVNIKHMLLATNILDDGNVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKEVTF
CPLEFDLFLSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
YAIVKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQSYNLF
GYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKDIYSVIKKGYYDIIFDNDVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTDCRNMFMKQSRTDKSLYNKPS
YETFIKTQGSAAVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTAACCTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2AAA

>Cas12L_54_77468912_partial (SEQ ID NO:152)

YETFIKTQGSAAVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTAACCTCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2BBB

>Cas12L_55_77738117 (SEQ ID NO:153)

MASHSSLSNNQIFKTF SFKVKSSNLSKDFFDVIKEYQEYYNKCSDVILENLTCIKIGDIFDMIPEKS
KKSDYAQY AISDEWKNVPLYNIFSKAFAPMHRDNLLYIWLTKLVPTGNLLKISDTFYKRNGFIK
SVISNYTTSFTNIKPVKFQKLTGDDSHEMLLTQTICDMVKFNLYDIKSWEEMVSYFEMKSETSE
DTLNRIHTLFDYKNNTPVEDKYNELVTESLSKFGGCRDMSKLTMSIQLSKKVIKVTGHYNTL
NYKYGKLIDLELWGRKDIINDELLINLENVCEMIVFKIKNGEIYVDIPFKVDFIKKDQITIDKIAGVD
ANIKHMLLSTSVKDENLIGYTNIIYKEVINDSDFQKVCNKTMKILQEISNYVTFAPIEFDMLF SRIS
KQREMKDKYINMEIAFTNVLNKLKQKFIVNSDNKNRIYIESILKIRSQLKSYAILEEVKYKKASEYD
SAIVEEFGVEYLETHPFKDTETYKEINKKILNISENIIIGCRNNIIQYAYKIFESNGFDMISLENLTNS
NFKKEKNMPTIKSLLSYHHVLGKTNEEIEKLDVYSVIKKGYTTFEYKDGKVVNAKLSEIGEMIKIK
TTMFNMMIKSIHFAEIKDYFITLANNGEVGVS LVPSSYTSQMDSTDHKVFGLLSKKGKWT LVDK
RKVRKNQETHINGLNADYNAAKNIAFILSDEVWRNKFTKKTTPKYNTPSYYSINSQGKMLRA
LKSLKAFKEFKI*

Repeat: ATTGTTGTAATACACTTTTTATAAGGTATGAACAAC (SEQ ID NO:27)

Spacer length: 30

FIG. 2CCC

>Cas12L_56_65286425 (SEQ ID NO:154)

MKIGELYKYIPDEKKN SGYALT LISDEWKDKPMYMMFKKGY PANNRDNAIYEALNTCNTEHYTG
NILNFSDTYYRRFGYVASAISNYVT KISK MSTGSRSKNISNDS DVDTIMEQVIYEMEHNGWTSVK
DWENQMEYLESKTDSNP NFVYRMTTLYEFYKSHIDEVN SKMETMSIDSLIKFGGCRRKDSKKS
MYIMGGSNTPFDITQIGGNSLN IFSKNLNVDFGRYDVIKDNTLLVDIINEHGASFVLKIINDEIYI
DINVSVPFDDKKIATTNKVV GIDVNIKHMLLATNILDG NVNGYVNIYKEVINDSDFKKVCNSTVMQ
YFTDFSKFVTFCPLEFDFLFSRVCNQKGIYNDNSAMEKSFSDVLNKLKWNFIETGDNTKRIYIEN
VMKLRSQMKAYAIVKNAYYKQQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKKILGCRNNI
IQYSYNLFEINGYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYDI
IFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDS
IDHKIYFVDNKGKGLKLAN KHVRSSQEKHINGLNADYN AARNIAYIMENTECRNMF MKQSRT
DKSLYNKPSYETFIKTQGS AVAKLKEGFVKILDEASV*

Repeat: ATTGTTGTAAC TCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2DDD

>Cas12L_57_65567118_partial (SEQ ID NO:155)

KIINDEIYIDINVSVPFDKKIATTNKVVGIDVNIKHMLLATNILDDGNVNGYVNIYKEVINDSDFKKV
CNSTVMKYFTDFSKFVTFPCLEFDLFSRVCNQKGIYNDNSAMEKSFSVDLNRKLWNFIETGD
NTKRIYIENVMKLRSQMKAYAIVKNAYYKQQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISK
KILGCRNNIIQYSYNLFEINGYDMISLEKLTSSQFKKKPFPTVNSLLKYHKIRGGTQEEMEKKDIY
SVIKKGYDDIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVP
SYFTSQMDSIDHKIYFVQDNKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENNECR
NMFMKQSRTDKSLYNKPSYETFIKTQGSAAVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTAACCTCTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2EEE

>Cas12L_58_66287853_partial (SEQ ID NO:156)

DDGNVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTFPCLEFDLFSRVCNQKGIYNDN
SAMEKSFSVDLNRKLWNFIETGDNTKRIYIENVMKLRSQMKAYAIVKNAYYKQQSEYDFGKSEE
FIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQYSYNLFEINGYDMISLEKLTSSQFKKKPFPTV
NSLLKYHKILGCTQEEMEKKDIYSVIKKGYDDIIFDNDVVTDAKLSTKGELSKFKDDFFNLMIKSIH
FADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQDNKSGKLLANKHKVRSSQEKHIN
GLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPSYETFIKTQGSAAVAKLKKDGFVKIL
DEASA*

Repeat: ATTGTTGTAACCTCTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

FIG. 2FFF

>Cas12L_39_73877227 (SEQ ID NO:157)

MASHKKTESNQIIKTFSEFKIKNANGLSLDVLNDAITEYQNYYNICSDWIKDHLTMKIGELYKYIPDE
KKNSGYALTLISDEWKDKPMYMMFKKGYPANSRDNAIYEALNTCNTEHYTGNILNFSDTYYRR
FGYVASAISNYVTKISKMSTGSRSKNISNDSVDTIMEQVIYEMEHNGWTSVKDWENQMEYLE
SKTDSNPNFVYRMTTLYEFYKSHIDEVNSKMETMSIDSLIKFGGCRRKDSKKSMYIMGGSNTPF
DITQIDGNSLNIKFSKNLNVDFVGRYDVIKDNLLVDIINGHGASFVLKIINGEYIDINVSVPFDKKI
ATTNKVVGIDVNIKHMLLATNILDGNNVNGYVNIYKEVINDSDFKKVCNSTVMKYFTDFSKFVTF
CPLEFDLFSRVCNQKGIYNDNSAMEKSFSVDVLNKLKWNFIETGDNTKRIYIENVMKLRSQMK
YAIVKNAYYKQSEYDFGKSEEFIQEHPFSNTDKGIEILNKLDNISKILGCRNNIIQYSYNLFEIN
GYDMISLEKLTSSQFKKKPFPTVNSLLKYHKILGCTQEEMEKKDIYSVIKKGYDYIIFDNDVVTDA
KLSTKGELSKFKDDFFNLMIKSIHFADIKDYFITLSNNGTAGVSLVPSYFTSQMDSIDHKIYFVQD
NKSGKLLANKHKVRSSQEKHINGLNADYNAARNIAYIMENTECRNMFMKQSRTDKSLYNKPS
YETFIKTQGSAAVAKLKKEGFVKILDEASV*

Repeat: ATTGTTGTAACCTTATTTTGTATGGAGTAAACAAC (SEQ ID NO:1)

Spacer length: 30

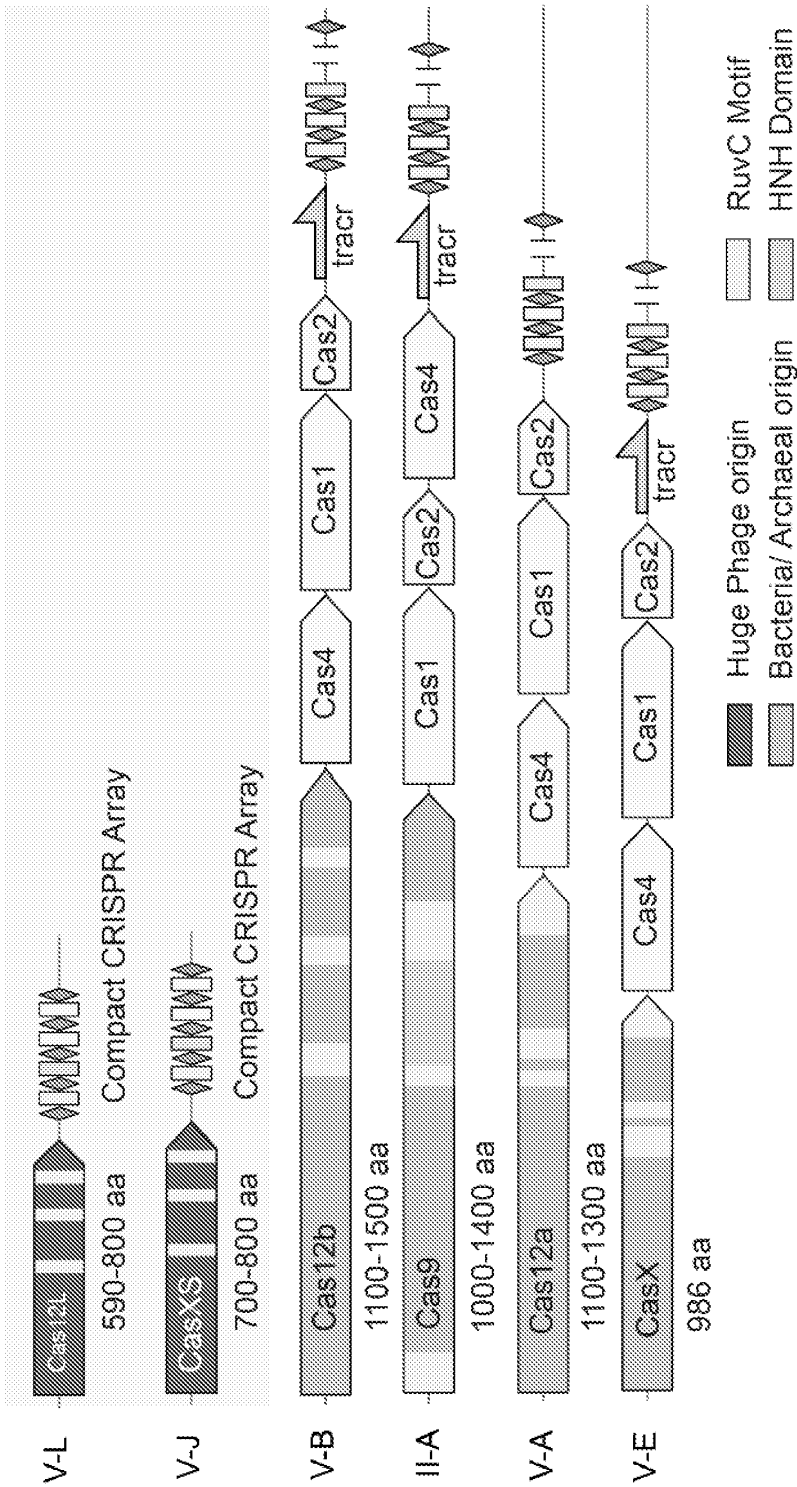
FIG. 3A

	RuvC-I	RuvC-II	RuvC-III
Cas12L_1_257905508	336	530	682
Cas12L_2_196848753	335	523	676
Cas12L_3_66741167	368	562	714
Cas12L_4_67031163	368	562	714
Cas12L_5_67793351	368	562	714
Cas12L_6_67912869_partial		139	292
Cas12L_7_68090316_partial	302	501	653
Cas12L_8_68328292_partial	359	553	705
Cas12L_9_68454124	336	530	682
Cas12L_10_68605313	372	566	718
Cas12L_11_69266821_partial			28
Cas12L_12_69417229_partial			28
Cas12L_13_69733214	336	530	682
Cas12L_14_70235246_partial	17	211	363
Cas12L_15_70724743	336	530	682
Cas12L_16_70731038	335	523	676
Cas12L_17_70959391	336	530	682
Cas12L_18_71078086	336	530	682
Cas12L_19_71193509_partial	270	464	616
Cas12L_20_71210958_partial	116	304	457
Cas12L_21_71317321_partial	175	369	521
Cas12L_22_71456687	336	530	682
Cas12L_23_71708971	175	369	521
Cas12L_24_46035167_partial	348	542	594
Cas12L_25_46784254_partial	186	380	532
Cas12L_26_46464451	336	530	
Cas12L_27_254489164	336	530	682
Cas12L_28_255238293	343	542	701
Cas12L_29_72167294	336	530	682
Cas12L_30_72369269	336	530	682
Cas12L_31_72503976	336	530	682
Cas12L_33_72907394	336	530	682
Cas12L_34_73124743_partial		29	181
Cas12L_35_73503649_partial		70	
Cas12L_36_73503649_partial			21
Cas12L_37_73472625	334	545	698
Cas12L_38_73764039_partial	242	436	588
Cas12L_39_73877227	336	530	682
Cas12L_40_74037305	372	566	718

FIG. 3B

Cas12L_41_74408273_partial	479	673	825
Cas12L_42_75186079_partial		7	159
Cas12L_43_75257103_partial	282		
Cas12L_44_75257103_partial		5	132
Cas12L_45_75616607_partial	338	532	684
Cas12L_46_75784289_partial	71	265	417
Cas12L_47_76512228	336	530	682
Cas12L_48_76600450	336	530	682
Cas12L_49_44880081	336	530	682
Cas12L_50_83012613	335	523	676
Cas12L_51_82983331	341	552	705
Cas12L_52_76767885	192	380	533
Cas12L_53_77216451	336	530	682
Cas12L_55_77738117	330	527	679
Cas12L_56_65286425	282	476	628
Cas12L_57_65567118_partial	31	225	377
Cas12L_58_66287853_partial		181	333

FIG. 4



Cas12L_1_257905508	.....
Cas12L_2_196848753	.....
Cas12L_3_66741167	.....
Cas12L_4_67931163	.....
Cas12L_5_67793351	.....
Cas12L_6_67912869 partial	.....
Cas12L_7_68090316 partial	.....
Cas12L_8_68328292 partial	.....
Cas12L_9_68454124	.....
Cas12L_10_68605313	.....
Cas12L_11_69266821 partial	.....
Cas12L_12_69417229 partial	.....
Cas12L_13_69733214	.....
Cas12L_14_70235246 partial	.....
Cas12L_15_70724743	.....
Cas12L_16_70731038	.....
Cas12L_17_70959391	.....
Cas12L_18_71078086	.....
Cas12L_19_71193509 partial	.....
Cas12L_20_71210958 partial	.....
Cas12L_21_71317321 partial	.....
Cas12L_22_71456687	.....
Cas12L_23_71708971	.....
Cas12L_24_746035167 partial	.....
Cas12L_25_746784254 partial	.....
Cas12L_26_746464451	.....
Cas12L_27_754489164	.....
Cas12L_28_755238293	.....
Cas12L_29_72167294	.....
Cas12L_30_72369269	.....
Cas12L_31_72503976	.....
Cas12L_32_72547654 partial	.....
Cas12L_33_72907394	.....
Cas12L_34_73124743 partial	.....
Cas12L_35_73503649 partial	.....
Cas12L_36_73503649 partial	.....
Cas12L_37_73472625	.....
Cas12L_38_73764039 partial	.....
Cas12L_39_73877227	.....
Cas12L_40_74037305	.....
Cas12L_41_74408273 partial	.....
Cas12L_42_75186079 partial	.....
Cas12L_43_75257103 partial	.....
Cas12L_44_75257103 partial	.....
Cas12L_45_75616607 partial	.....
Cas12L_46_75784289 partial	.....
Cas12L_47_76512228	.....
Cas12L_48_76600450	.....
Cas12L_49_76880081	.....
Cas12L_50_83012613	.....
Cas12L_51_82983331	.....
Cas12L_52_76767885	.....
Cas12L_53_77216451	.....
Cas12L_54_77468912 partial	.....
Cas12L_55_77738117	.....
Cas12L_56_65286425	.....
Cas12L_57_65567118 partial	.....
Cas12L_58_66287853 partial	.....

WTDDEDYCKFFAKYGMSEECQKWMCRDVVDYRINDFVDYKFDDBSKIEEEQEEYSEIPVES

.....MKRN.....

FIG. 5A

Cas12L_1_257905508	.....
Cas12L_2_196848753	.....
Cas12L_3_66741167	MRISPHL.....FY
Cas12L_4_67931163	MRISPHL.....FY
Cas12L_5_67793351	MRISPHL.....FY
Cas12L_6_67912869 partial	.....
Cas12L_7_68090316 partial	.....
Cas12L_8_68328292 partial	.....
Cas12L_9_68454124	.....
Cas12L_10_68605313	MMKKMRTNPHL.....FY
Cas12L_11_69266821 partial	.....
Cas12L_12_69417229 partial	.....
Cas12L_13_69733214	.....
Cas12L_14_70235246 partial	.....
Cas12L_15_70724743	.....
Cas12L_16_70731038	.....
Cas12L_17_70959391	.....
Cas12L_18_71078086	.....
Cas12L_19_71193509 partial	.....
Cas12L_20_71210958 partial	.....
Cas12L_21_71317321 partial	.....
Cas12L_22_71456687	.....
Cas12L_23_71708971	.....
Cas12L_24_746035167 partial	.....
Cas12L_25_746784254 partial	.....
Cas12L_26_746464451	.....
Cas12L_27_754489164	.....
Cas12L_28_755238293	.....
Cas12L_29_72167294	.....
Cas12L_30_72369269	.....
Cas12L_31_72503976	.....
Cas12L_32_72547654 partial	.....
Cas12L_33_72907394	.....
Cas12L_34_73124743 partial	.....
Cas12L_35_73503649 partial	.....
Cas12L_36_73503649 partial	.....
Cas12L_37_73472625	.....
Cas12L_38_73764039 partial	.....
Cas12L_39_73877227	.....
Cas12L_40_74037305	MMKKMRISPHL.....FY
Cas12L_41_74408273 partial	EDSSPSTSETLPKSIYDLDLRRLDENPEIPEDEKYNEEDLKNAYPDKYERFERKDGEDYSY
Cas12L_42_75186079 partial	.....
Cas12L_43_75257103 partial	.....
Cas12L_44_75257103 partial	.....
Cas12L_45_75616607 partial	.....
Cas12L_46_75784289 partial	.....
Cas12L_47_76512228	.....
Cas12L_48_76600450	.....
Cas12L_49_76880081	.....
Cas12L_50_83012613	.....
Cas12L_51_82983331	.....
Cas12L_52_76767885	.....
Cas12L_53_77216451	.....
Cas12L_54_77468912 partial	.....
Cas12L_55_77738117	.....
Cas12L_56_65286425	.....
Cas12L_57_65567118 partial	.....
Cas12L_58_66287853 partial	.....

FIG. 5B

	1	10	20	30
Cas12L_1_257905508		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_2_196848753		MAFEKNV..	GAEIVKTY	SFKVKNNGITMEKLMNAID
Cas12L_3_66741167	IFFKKIWKCHFFVLSLYQLNQYIMASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT	
Cas12L_4_67031163	IFFKKIWKSHFFVLSLYQLNQYIMASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT	
Cas12L_5_67793351	IFFKKIWKCHIFVLSLYQLNQYIMASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT	
Cas12L_6_67912869 partial				VLNDAIT
Cas12L_7_68090316 partial	IFFKKIWKCHIFVLSLYQLNQYIMASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT	
Cas12L_8_68328292 partial		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_9_68454124	ICFKKIWKCHFFALSLYQLNQYIMASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT	
Cas12L_10_68605313				
Cas12L_11_69266821 partial				
Cas12L_12_69417229 partial		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_13_69733214		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_14_70235246 partial		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_15_70724743		MAHKKNI..	GAEIVKTY	SFKVKNNGITMEKLMNAID
Cas12L_16_70731038		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_17_70959391		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_18_71078086				
Cas12L_19_71193509 partial				
Cas12L_20_71210958 partial				
Cas12L_21_71317321 partial				
Cas12L_22_71456687		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_23_71708971		FVLSLYQLNQYIMASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_24_46035167 partial				
Cas12L_25_46784254 partial		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_26_46464451		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_27_254489164		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_28_255238293		MAHKKNLEGENLQVKITCLKANLSKEEVKKEKWLFEVIN		
Cas12L_29_72167294		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_30_72369269		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_31_72503976		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_32_72547654 partial				
Cas12L_33_72907394		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_34_73124743 partial				
Cas12L_35_73503649 partial				
Cas12L_36_73503649 partial				
Cas12L_37_73472625		MAHKKQKE..	ENEIKTISLKVVDYAGY...	PIVEAMR
Cas12L_38_73764039 partial				
Cas12L_39_73877227		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_40_74037305	IFFKKIWKCHFFVLSLYQLNQYIMASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT	
Cas12L_41_74408273 partial	IFFKKIWKCHFFVLSLYQLNQYIMASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT	
Cas12L_42_75186079 partial				
Cas12L_43_75257103 partial				
Cas12L_44_75257103 partial				
Cas12L_45_75616607 partial		YIMASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_46_75784289 partial				
Cas12L_47_76512228		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_48_76600450		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_49_44880081		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_50_83012613		MAHKKNI..	GAEIVKTY	SFKVKNNGITMEKLMNAID
Cas12L_51_82983331		QKHINKIE..	ESEIKTISLKVVDYAGI...	PIVEAMH
Cas12L_52_76767885				
Cas12L_53_77216451		MASHKKTE..	SNQIIKTF	SFKIKNANGSLDVLNDAIT
Cas12L_54_77468912 partial				
Cas12L_55_77738117		MASHSSLS..	NNQIFRTFSFKVRSN...	LSKDDFFDVIR
Cas12L_56_65286425				
Cas12L_57_65567118 partial				
Cas12L_58_66287853 partial				

FIG. 5C

	40	50	60	70	80	90
Cas12L_1_257905508						
Cas12L_2_196848753						
Cas12L_3_66741167						
Cas12L_4_67931163						
Cas12L_5_67793351						
Cas12L_6_67912869 partial						
Cas12L_7_68090316 partial						
Cas12L_8_68328292 partial						
Cas12L_9_68454124						
Cas12L_10_68605313						
Cas12L_11_69266821 partial						
Cas12L_12_69417229 partial						
Cas12L_13_69733214						
Cas12L_14_70235246 partial						
Cas12L_15_70727473						
Cas12L_16_70731038						
Cas12L_17_70959391						
Cas12L_18_71078086						
Cas12L_19_71193509 partial						
Cas12L_20_71210958 partial						
Cas12L_21_71317321 partial						
Cas12L_22_71456687						
Cas12L_23_71708971						
Cas12L_24_76035167 partial						
Cas12L_25_76784254 partial						
Cas12L_26_76844451						
Cas12L_27_754489164						
Cas12L_28_755238293						
Cas12L_29_72167294						
Cas12L_30_72369269						
Cas12L_31_72503976						
Cas12L_32_72547654 partial						
Cas12L_33_72907394						
Cas12L_34_73124743 partial						
Cas12L_35_73503649 partial						
Cas12L_36_73503649 partial						
Cas12L_37_73472625						
Cas12L_38_73764039 partial						
Cas12L_39_73877227						
Cas12L_40_74037305						
Cas12L_41_74408273 partial						
Cas12L_42_75186079 partial						
Cas12L_43_75257103 partial						
Cas12L_44_75257103 partial						
Cas12L_45_75616607 partial						
Cas12L_46_75784289 partial						
Cas12L_47_76512228						
Cas12L_48_76600450						
Cas12L_49_76880081						
Cas12L_50_83012613						
Cas12L_51_82983331						
Cas12L_52_76767885						
Cas12L_53_77216451						
Cas12L_54_77468912 partial						
Cas12L_55_77738117						
Cas12L_56_65286425						
Cas12L_57_65567118 partial						
Cas12L_58_66287853 partial						

FIG. 5D

	100	110	120	130	140	150
Cas12L_1_257905508	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_2_196848753	YSSNNRRNALYCALSSV.IDMTKENVLGFSTHYIRNDYILNVISNYASKLSKLNIGV	KS				
Cas12L_3_66741167	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_4_67031163	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_5_67793351	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_6_67912869 partial	YPANSRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_7_68090316 partial	YPANSRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_8_68328292 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_9_68454124	YPANSRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_10_68605313	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_11_69266821 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_12_69417229 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_13_69733214	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_14_70235246 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_15_70724743	YSSNNRRNALYCTLSSV.IDINKKNILGLSQIYARNGYILNVISNYASKLSKLNIGV	KR				
Cas12L_16_70731038	YPANSRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_17_70959391	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_18_71078086	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_19_71193509 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_20_71210958 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_21_71317321 partial	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_22_71456687	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_23_71708971	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_24_76035167 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_25_76784254 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_26_76844451	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_27_768489164	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_28_7685238293	FPINRGITNIIINNIISEKNIDQYDGNLTGFRPTMYHLRGYVDSVIGNYRTIIRTIKPSV	RR				
Cas12L_29_76867294	YPANSRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_30_76869269	YPANSRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_31_76869376	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_32_76876554 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_33_76907394	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_34_769124743 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_35_769303649 partial	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_36_769303649 partial	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_37_769472625	FHAQCDNILENVYKTLNIDBYAGNSLGLSASCFFRRSGYFQNVVSNYKSKFANPHISLR	RR				
Cas12L_38_76964039 partial	YPANSRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_39_76977227	YPANSRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_40_76977305	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_41_7698273 partial	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_42_76986079 partial	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_43_76987103 partial	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_44_76987103 partial	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_45_76986607 partial	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_46_76984289 partial	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_47_76981228	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_48_76960450	YPANNRDNALYEILNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_49_76980081	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_50_769812613	YSSNNRRDALYHALSSI.VNASERNILGISTKIYAKKGVVLNVASNYASKLSKLNIGV	KS				
Cas12L_51_76983331	FNSQSCDNIFNYIKMNNPPEYTGNIILGISOYIYRRNGYFINVISNYKTKFKSPQINVK	KS				
Cas12L_52_76978885	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_53_769816451	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_54_76988912 partial	FAPMERDNLLEYIWLTR.LVPYTGNIILKISDTFYKRNKFIKSVISNYTTISFTNJKPKVK	KF				
Cas12L_55_7697738117	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_56_769866425	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_57_769867118 partial	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				
Cas12L_58_76987853 partial	YPANNRDNALYEALNTCNTEHYTGNIILNFSDITYYRRFGYVASAISNYVTIKISKMSTGSR	SS				

FIG. 5E

	160	170	180	190	200	210
Cas12L_1_257905508	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_2_196848753	RAIKETSDEATIIQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_3_66741167	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_4_67931163	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_5_67793551	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_6_67912869 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_7_68090316 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_8_68328292 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_9_68454124	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_10_68605313	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_11_69266821 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_12_69417229 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_13_69733214	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_14_70235246 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_15_70724743	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_16_70731038	HTIKETSDEATIIQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_17_70959391	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_18_71078086	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_19_71193569 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_20_71210958 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_21_71317321 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_22_71456687	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_23_71708971	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_24_76035167 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_25_76784254 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_26_76464451	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_27_754489164	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_28_755238293	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_29_72167294	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_30_72369269	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_31_72503976	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_32_72547654 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_33_72907394	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_34_73124743 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_35_73503649 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_36_73503649 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_37_73472625	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_38_73764039 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_39_73877227	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_40_74037305	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_41_74408273 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_42_75186079 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_43_75257103 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_44_75257103 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_45_75616607 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_46_75784289 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_47_76512228	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_48_76600450	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_49_44880081	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_50_83012613	RAIKETSDEATIIQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_51_82983331	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_52_76767885	HTIKETSDEATIIQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_53_77216451	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_54_77468912 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_55_77738117	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_56_65286425	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_57_65567118 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					
Cas12L_58_66287853 partial	KNISNDSDVDTIMEQVIYEMERHNGWTSVKDWNQMEYLSKTDSPNFVVRMTLYEFTYK					

FIG. 5F

	220	230	240	250	260	270
Cas12L_1_257905508	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_2_196848753	THKSEVDARK	QEM	AVENLVK	FGGCR	RNN	SKKSMFIM
Cas12L_3_66741167	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_4_67031163	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_5_67793351	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_6_67912869 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_7_68090316 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_8_68328292 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_9_68454124	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_10_68605313	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_11_69266821 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_12_69417229 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_13_69733214	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_14_70235246 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_15_70724743	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_16_70731038	EHKSEVDARK	QEM	AVENLVK	FGGCR	RNN	SKKSMFIM
Cas12L_17_70959391	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_18_71078086	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_19_71193509 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_20_71210958 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_21_71317321 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_22_71456687	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_23_71708971	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_24_76035167 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_25_76784254 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_26_76464451	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_27_754489164	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_28_755238293	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_29_72167294	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_30_72369269	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_31_72503976	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_32_72547654 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_33_72907394	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_34_73124743 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_35_73503649 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_36_73503649 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_37_73472625	ANKDFVDE	EQIQ	VESLA	FGGC	VRKDK	SKNLVFS
Cas12L_38_73764039 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_39_73877227	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_40_74037305	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_41_74408273 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_42_75186079 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_43_75257103 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_44_75257103 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_45_75616607 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_46_75784289 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_47_76512228	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_48_76600450	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_49_744880081	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_50_83012613	EHKSEVDARK	QEM	AVENLVK	FGGCR	RNN	SKKSMFIM
Cas12L_51_82983331	ENIP	IKKEY	TELE	IESIE	KFGGC	VRKDK
Cas12L_52_76767885	EHKSEVDARK	QEM	AVENLVK	FGGCR	RNN	SKKSMFIM
Cas12L_53_77216451	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_54_77468912 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_55_77738117	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_56_65286425	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_57_65567118 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG
Cas12L_58_66287853 partial	SHIDEVNSKME	IDS	SLIKFGG	CRK	SKK	SMYIMGG

FIG. 5G

	280	290	300	310	320
Cas12L_1_257905508	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_2_196848753	FANILNF	DVYGRD	DVVKNGEVLVDIMA	NHGDSFLKIVNG	ELYADVP
Cas12L_3_66741167	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_4_67931163	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_5_67793551	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_6_67912869 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_7_68090316 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_8_68328292 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_9_68454124	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_10_68605313	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_11_69266821 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_12_69417229 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_13_69733214	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_14_70235246 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_15_70724743	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_16_70731038	FANILNF	DVYGRD	DVVKNGEVLVDIMA	NHGDSFLKIVNG	ELYADVP
Cas12L_17_70959391	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_18_71078086	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_19_71193509 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_20_71210958 partial	FANILNF	DVYGRD	DVVKNGEVLVDIMA	NHGDSFLKIVNG	ELYADVP
Cas12L_21_71317321 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_22_71456687	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_23_71708971	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_24_76035167 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_25_76784254 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_26_76464451	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_27_754489164	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_28_255238293	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_29_72167294	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_30_72369269	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_31_72503976	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_32_72547654 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_33_72907394	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_34_73124743 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_35_73503649 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_36_73503649 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_37_73472625	YSNNFS	ELYGR	FMCLLNGVLFVNGO	FHGNMIFKMOND	ELFVNIPYSVPFVN
Cas12L_38_73764039 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_39_73877227	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_40_74037305	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_41_74408273 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_42_75186079 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_43_75257103 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_44_75257103 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_45_75616607 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_46_75784289 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_47_76512228	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_48_76600450	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_49_44880081	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_50_83012613	FANILNF	DVYGRD	DVVKNGEVLVDIMA	NHGDSFLKIVNG	ELYADVP
Cas12L_51_82983331	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_52_76767885	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_53_77216451	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_54_77468912 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_55_77738117	YKILID	ELWGR	DIINDELINLE	NVCEMVF	KIKMG
Cas12L_56_65266425	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_57_65567118 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA
Cas12L_58_66287853 partial	FSKNLNVDVGR	DVIRONTLLVDIIN	GHGASFLKIIING	EIIYIDINVSVPFDE	KIA

FIG. 5H

	330	340	350	360	370	380
Cas12L_1_257905508	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_2_196848753	NFD	XVVGIDVNMKRMLLSTVID	GNSSFLNIYKEMNN	AEFMALCP	EEPRKYK	DFS
Cas12L_3_66741167	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_4_67031163	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_5_67793551	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_6_67912869 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_7_68090316 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_8_68328292 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_9_68454124	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_10_68605313	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_11_69266821 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_12_69417229 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_13_69733214	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_14_70235246 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_15_70724743	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_16_70731038	TFD	XVAGIDVNMKRMLLSTVID	GNSSFLNIYKEMNN	AEFMALCP	EEPRKYK	DFS
Cas12L_17_70959391	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_18_71078086	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_19_71193509 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_20_71210958 partial	TFD	XVAGIDVNMKRMLLSTVID	GNSSFLNIYKEMNN	AEFMALCP	EEPRKYK	DFS
Cas12L_21_71317321 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_22_71456687	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_23_71708971	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_24_746035167 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_25_746784254 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_26_746464451	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_27_754489164	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_28_755238293	MIN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_29_72167294	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_30_72369269	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_31_72503976	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_32_72547654 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_33_72907394	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_34_73124743 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_35_73503649 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_36_73503649 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_37_73472625	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_38_73764039 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_39_73877227	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_40_74037305	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_41_74408273 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_42_75186079 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_43_75257103 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_44_75257103 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_45_75616607 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_46_75784289 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_47_76512228	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_48_76600450	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_49_76680081	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_50_83012613	NFD	XVVGIDVNMKRMLLSTVID	GNSSFLNIYKEMNN	AEFMALCP	EEPRKYK	DFS
Cas12L_51_82983331	BCDGN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_52_76767885	TFD	XVAGIDVNMKRMLLSTVID	GNSSFLNIYKEMNN	AEFMALCP	EEPRKYK	DFS
Cas12L_53_77216451	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_54_77468912 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_55_77738117	TFD	XIAGVDANIKHMLLSTV	KDEMLGYNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_56_65286425	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_57_65567118 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS
Cas12L_58_66287853 partial	TTN	XVVGIDVNIKHMLLATNILDG	GNVGYVNIYKEVIND	DFKVCN	STVMKYF	DFS

FIG. 51

	390	400	410	420	430	440
Cas12L_1_257905508	KFVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_2_196848753	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_3_66741167	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_4_67931163	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_5_67793551	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_6_67912869 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_7_68090316 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_8_68328292 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_9_68454124	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_10_68605313	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_11_69266821 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_12_69417229 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_13_69733214	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_14_70235246 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_15_70724743	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_16_70731038	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_17_70959391	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_18_71078086	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_19_71193509 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_20_71210958 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_21_71317321 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_22_71456687	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_23_71708971	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_24_76035167 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_25_76784254 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_26_76784451	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_27_767848164	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_28_76785238293	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_29_76786269	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_30_767869269	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_31_767893976	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_32_767897394 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_33_767907394	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_34_7679124743 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_35_7679303649 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_36_7679303649 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_37_7679472625	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_38_767964039 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_39_767977227	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_40_767977305	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_41_76798273 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_42_767986079 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_43_767987103 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_44_767987103 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_45_767986607 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_46_767984289 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_47_7679812228	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_48_76600450	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_49_76600081	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_50_83012613	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_51_82983331	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_52_76767885	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_53_77216451	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_54_77468912 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_55_77738117	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_56_65286425	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_57_65567118 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			
Cas12L_58_66287853 partial	KYVTFPLEDFLFSRVCHQKGI	YNDNSAMERKPSDVLNKLKWF	FETGDNTEKRI			

FIG. 5J

	450	460	470	480
Cas12L_1_257905508	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_2_196848753	YVESIQIRQQIKAKAVIKNAYYKQSEYDID	.....	KTQEYF	EAHPFSITEX
Cas12L_3_66741167	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_4_67031163	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_5_67793351	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_6_67912869 partial	YVESIQIRQQIKAKAVIKNAYYKQSEYDID	.....	KTQEYF	EAHPFSITEX
Cas12L_7_68090316 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_8_68328292 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_9_68454124	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_10_68605313	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_11_69266821 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_12_69417229 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_13_69733214	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_14_70235246 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_15_70724743	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_16_70731038	YVENIQIRQQIKAKAVIKNAYYKQSEYDID	.....	KTQEYF	EAHPFSITEX
Cas12L_17_70959391	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_18_71078086	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_19_71193509 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_20_71210958 partial	YVESIQIRQQIKAKAVIKNAYYKQSEYDID	.....	KTQEYF	EAHPFSITEX
Cas12L_21_71317321 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_22_71456687	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_23_71708971	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_24_76035167 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_25_76784254 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_26_76784451	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_27_767848164	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_28_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_29_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_30_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_31_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_32_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_33_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_34_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_35_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_36_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_37_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_38_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_39_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_40_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_41_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_42_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_43_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_44_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_45_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_46_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_47_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_48_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_49_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_50_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_51_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_52_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_53_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_54_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_55_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_56_767852293	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_57_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK
Cas12L_58_767852293 partial	YIENVMLRSQMKRAYAIVKNAYYKQSEYDFG	.....	KSEEFF	QEHFFSNTDK

FIG. 5K

	490	500	510	520	530	540
Cas12L_1_257905508	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMVSL	EKLTSQQF
Cas12L_2_196848753	GMILSKMDN	IKILGCRNNIIQ	SYNLFE	NGYDMVSL	EKLTSQQF	KKPFPTVNSL
Cas12L_3_66741167	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_4_67931163	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_5_67793551	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_6_67912869 partial	GMILSKMDN	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF	KKPFPTVNSL
Cas12L_7_68090316 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_8_68328292 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_9_68454124	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_10_68605313	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_11_69266821 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_12_69417229 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_13_69733214	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_14_70235246 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_15_70724743	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_16_70731038	GMILSKMDN	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF	KKPFPTVNSL
Cas12L_17_70959391	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_18_71078086	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_19_71193569 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_20_71210958 partial	GMILSKMDN	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF	KKPFPTVNSL
Cas12L_21_71317321 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_22_71456687	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_23_71708971	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_24_76035167 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_25_76784254 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_26_76464451	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_27_754489164	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_28_755238293	AKIEILSKLDN	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF	KKPFPTVNSL
Cas12L_29_72167294	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_30_72369269	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_31_72503976	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_32_72547654 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_33_72907394	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_34_73124743 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_35_73503649 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_36_73503649 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_37_73472625	AKIEILSKLDN	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF	KKPFPTVNSL
Cas12L_38_73764039 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_39_73877227	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_40_74037395	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_41_74408273 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_42_75186079 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_43_75257103 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_44_75257103 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_45_75616607 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_46_75784289 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_47_76512228	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_48_76600450	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_49_76680081	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_50_83012613	GMILSKMDN	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF	KKPFPTVNSL
Cas12L_51_82983331	AKIEILSKLDN	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF	KKPFPTVNSL
Cas12L_52_76767885	GMILSKMDN	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF	KKPFPTVNSL
Cas12L_53_77216451	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_54_77468912 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_55_77738117	AKIEILSKLDN	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF	KKPFPTVNSL
Cas12L_56_65286425	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_57_65567118 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF
Cas12L_58_66287853 partial	GIEILNKL	DNIS	IKILGCRNNIIQ	SYNLFE	NGYDMISLE	EKLTSQQF

FIG. 5L

	550	560	570	580	590	600
Cas12L_1_257905508	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_2_196848753	LNFRHVLGHTLSE	LETLPINLVVKKGGYIFITDNE	GITDAKLS	KGKVRKKKDDFFNL		
Cas12L_3_66741167	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_4_67031163	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_5_67793351	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_6_67912869 partial	LNFRHVLGHTLSE	LETLPINLVVKKGGYIFITDNE	GITDAKLS	KGKVRKKKDDFFNL		
Cas12L_7_68090316 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_8_68328292 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_9_68454124	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_10_68605313	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_11_69266821 partial						
Cas12L_12_69417229 partial						
Cas12L_13_69733214	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_14_70235246 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_15_70724743	LNFRHVLGHTLSE	LETLPINLVVKKGGYIFITDNE	GITDAKLS	KGKVRKKKDDFFNL		
Cas12L_16_70731038	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_17_70959391	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_18_71078086	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_19_71193509 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_20_71210958 partial	LNFRHVLGHTLSE	LETLPINLVVKKGGYIFITDNE	GITDAKLS	KGKVRKKKDDFFNL		
Cas12L_21_71317321 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_22_71456687	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_23_71708971	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_24_76035167 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_25_76784254 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_26_76844451	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_27_754489164	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_28_755238293	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_29_72167294	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_30_72369269	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_31_72503976	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_32_72547654 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_33_72907394	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_34_73124743 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_35_73503649 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_36_73503649 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_37_73472625	LNKORVSGTINE	LNKRSVFPIIRKGGYIFITDNE	KITGVQFS	AGEVVMKTELENL		
Cas12L_38_73764039 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_39_73877227	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_40_74037305	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_41_74408273 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_42_75186079 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_43_75257103 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_44_75257103 partial	LKYHKLGLCTQEE	MEK	KGYYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL	
Cas12L_45_75616607 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_46_75784289 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_47_76512228	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_48_76600450	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_49_76680081	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_50_83012613	LNFRHVLGHTLSE	LETLPINLVVKKGGYIFITDNE	GITDAKLS	KGKVRKKKDDFFNL		
Cas12L_51_82983331	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_52_76767885	LNFRHVLGHTLSE	LETLPINLVVKKGGYIFITDNE	GITDAKLS	KGKVRKKKDDFFNL		
Cas12L_53_77216451	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_54_77468912 partial						
Cas12L_55_77738117	LNFRHVLGHTLSE	LETLPINLVVKKGGYIFITDNE	GITDAKLS	KGKVRKKKDDFFNL		
Cas12L_56_65286425	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_57_65567118 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		
Cas12L_58_66287853 partial	LKYHKLGLCTQEE	MEKKDIYSVIRKGGYDIIFDND	VVTDAKLS	KGELSKFKDDFFNL		

FIG. 5M

	610	620	630	640	650	660
Cas12L_1_257905508	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_2_196848753	AIKAI	HFAD	VKD	YF	ATLSNNGQ	GIFVPSQFTSQMDS
Cas12L_3_66741167	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_4_67031163	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_5_67793551	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_6_67912869 partial	AIKAI	HFAD	VKD	YF	ATLSNNGQ	GIFVPSQFTSQMDS
Cas12L_7_68090316 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_8_68328292 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_9_68454124	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_10_68605313	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_11_69266821 partial						
Cas12L_12_69417229 partial						
Cas12L_13_69733214	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_14_70235246 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_15_70724743	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_16_70731038	AIKAI	HFAD	VKD	YF	ATLSNNGQ	GIFVPSQFTSQMDS
Cas12L_17_70959391	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_18_71078086	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_19_71193509 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_20_71210958 partial	AIKAI	HFAD	VKD	YF	ATLSNNGQ	GIFVPSQFTSQMDS
Cas12L_21_71317321 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_22_71456687	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_23_71708971	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_24_76035167 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_25_76784254 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_26_76784451	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_27_767848164	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_28_76785238293	FMK	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_29_767857294	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_30_767859269	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_31_767863976	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_32_767867654 partial						
Cas12L_33_76787394	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_34_767874743 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_35_76787503649 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_36_76787503649 partial						
Cas12L_37_767876225	ALRT	HFAD	AKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS	
Cas12L_38_7678764039 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_39_767877227	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_40_767877305	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_41_767878273 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_42_7678786079 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_43_7678787103 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_44_7678787103 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_45_7678786607 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_46_7678784289 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_47_767878228	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_48_7678780450	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_49_7678780081	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_50_7678782613	AIKAI	HFAD	VKD	YF	ATLSNNGQ	GIFVPSQFTSQMDS
Cas12L_51_7678783331	AIKAI	HFAD	VKD	YF	ATLSNNGQ	GIFVPSQFTSQMDS
Cas12L_52_767878885	AIKAI	HFAD	VKD	YF	ATLSNNGQ	GIFVPSQFTSQMDS
Cas12L_53_76787816451	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_54_7678788912 partial						
Cas12L_55_767878117	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_56_7678786425	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_57_767878118 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS
Cas12L_58_767878753 partial	MIKS	IH	FAD	IKD	YF	ITLSNNGTAGVSLVPSYFTSQMDS

FIG. 5N

	670	680	690	700	710	720
Cas12L_1_257905508	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_2_196848753	KVRQTQEHINGLADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_3_66741167	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_4_67031163	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_5_67793551	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_6_67912869 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_7_68090316 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_8_68328292 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_9_68454124	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_10_68605313	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_11_69266821 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_12_69417229 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_13_69733214	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_14_70235246 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_15_70724743	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_16_70731038	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_17_70959391	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_18_71078086	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_19_71193509 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_20_71210958 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_21_71317321 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_22_71456687	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_23_71708971	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_24_76035167 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_25_76784254 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_26_76784451	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_27_754489164	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_28_755238293	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_29_72167294	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_30_72369269	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_31_72503976	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_32_72547654 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_33_72907394	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_34_73124743 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_35_73503649 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_36_73503649 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_37_73472625	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_38_73764039 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_39_73877227	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_40_74037305	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_41_74408273 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_42_75186079 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_43_75257103 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_44_75257103 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_45_75616607 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_46_75784289 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_47_76512228	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_48_76600450	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_49_76680081	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_50_83012613	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_51_82983331	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_52_76767885	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_53_77216451	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_54_77468912 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_55_77738117	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_56_65286425	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_57_65567118 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR
Cas12L_58_66287853 partial	KVRSSQEKKHINGLNADYNAARNIAYIMENTDCRNMF	QKSR	QKSR	QKSR	QKSR	QKSR

FIG. 50

	730	740
Cas12L_1_257905508	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_2_196848753	ACVFGRMKKLEKKEEII	
Cas12L_3_66741167	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_4_67031163	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_5_67793351	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_6_67912869 partial	ACVFGRMKKLEKKEEII	
Cas12L_7_68090316 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_8_68328292 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_9_68454124	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_10_68605313	GSAAVAKLKKKGGFVXILD	EASA
Cas12L_11_69266821 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_12_69417229 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_13_69733214	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_14_70235246 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_15_70724743	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_16_70731038	ACVFGRMKKLEKKEEII	
Cas12L_17_70959391	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_18_71078086	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_19_71193509 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_20_71210958 partial	ACVFGRMKKLEKKEEII	
Cas12L_21_71317321 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_22_71456687	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_23_71708971	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_24_76035167 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_25_76784254 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_26_76784451	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_27_7678489164	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_28_76785238293	EMVVRIRKQLEKXMLE	
Cas12L_29_772167294	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_30_772369269	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_31_772503976	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_32_772547654 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_33_772907394	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_34_773124743 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_35_773503649 partial	GSAAVAKLKKKGGFVXILD	TV
Cas12L_36_773503649 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_37_773472625	STIINTLKKLEKKEEII	DEYERTK...VVA
Cas12L_38_773764039 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_39_773877227	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_40_774037305	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_41_774408273 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_42_775186079 partial	GSAAVAKLKKKGGFVXILD	EASA
Cas12L_43_775257103 partial	GSAAVAKLKKKGGFVXILD	SI
Cas12L_44_775257103 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_45_775616607 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_46_775784289 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_47_776512228	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_48_776600450	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_49_776880081	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_50_83012613	ACVFGRMKKLEKKEEII	
Cas12L_51_82983331	SCVINKLKKFGDEYMTI	ENLDEIQVEDVAV
Cas12L_52_77678885	ACVFGRMKKLEKKEEII	
Cas12L_53_77216451	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_54_77468912 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_55_77738117	GMMLALKKLEKKEEII	I
Cas12L_56_65286425	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_57_65567118 partial	GSAAVAKLKKKGGFVXILD	EASV
Cas12L_58_66287853 partial	GSAAVAKLKKKGGFVXILD	EASA

FIG. 5P

[illegible]

FIG. 6B

	270	280	290	300	310	320
Cas12L_2_196848753	FANILNPF	DVYGR	RDVVRNGE	LVDTMA	NHGLSTVLR	NG.ELLYALVPCSM
Cas12L_29_255238293	DSGDYKIP	ELNQS	KMLKGGDK	CLIDVNC	HGKSLTAKI	NDYNYLHFPVVS
Cas12L_38_73472625	YSNNFSI	ELLYG	RMCLLNGV	VFVHGD	KHSSNITFR	AND.ELFVNPVSV
Cas12L_42_74408273_partial	FSKNLNV	DVEGR	RDVVRKNT	LVDTIN	GHGASVIV	KIAND.ELFVNPVSV
Cas12L_45_75257103_partial	.....	.....	.....	.....	.....	.....
Cas12L_52_82983331	ISKDLSP	ZVYGR	RMCLLNGE	ELLNDE	KHSSITFV	AMN.SLYVNPVAVP
Cas12L_56_77738117	YKGLDID	ELVGR	KDIDINDE	ELLNDE	NHGLSTVLR	NGS.ELYVNPVAVP
	330	340	350	360	370	380
Cas12L_2_196848753	NFD.KVVGIDVNM	KHMLSTST	ITDNG.SSDFLNIYK	EMENNAEF	MAALCP	PEEDRKYYK
Cas12L_29_255238293	NIN.NVVGVDVN	KHMLMTNV	IDON.IDGVNHYK	ALVNDL	EFKSL	VIKSEYDDYV
Cas12L_38_73472625	ETN.KVVGVDVN	KHMLSTST	ITDNG.SSDFLNIYK	EMENNAEF	MAALCP	PEEDRKYYK
Cas12L_42_74408273_partial	TTN.KVVGVDVN	KHMLMTNV	IDON.IDGVNHYK	ALVNDL	EFKSL	VIKSEYDDYV
Cas12L_45_75257103_partial	.....	.....	.....	.....	.....	.....
Cas12L_52_82983331	DCDGGV	IGDVLKRAL	FATSEV	DNGQFYD	VNVVYAE	LLNDE
Cas12L_56_77738117	TID.KIAGVDAN	KHMLSTST	ITDNG.SSDFLNIYK	EMENNAEF	MAALCP	PEEDRKYYK
	390	400	410	420	430	
Cas12L_2_196848753	KYVFP	ELDL	LSA	SKG	KNV.....	KMKV
Cas12L_29_255238293	KYVFP	ELDL	LSA	SKG	KNV.....	KMKV
Cas12L_38_73472625	KYVFP	ELDL	LSA	SKG	KNV.....	KMKV
Cas12L_42_74408273_partial	KYVFP	ELDL	LSA	SKG	KNV.....	KMKV
Cas12L_45_75257103_partial	.....	.....	.....	.....	.....	.....
Cas12L_52_82983331	KYVFP	ELDL	LSA	SKG	KNV.....	KMKV
Cas12L_56_77738117	KYVFP	ELDL	LSA	SKG	KNV.....	KMKV
	440	450	460	470	480	
Cas12L_2_196848753	YVESY	KIR	QIR	QIR	QIR	QIR
Cas12L_29_255238293	YVESY	KIR	QIR	QIR	QIR	QIR
Cas12L_38_73472625	YVESY	KIR	QIR	QIR	QIR	QIR
Cas12L_42_74408273_partial	YVESY	KIR	QIR	QIR	QIR	QIR
Cas12L_45_75257103_partial	.....	.....	.....	.....	.....	.....
Cas12L_52_82983331	YVESY	KIR	QIR	QIR	QIR	QIR
Cas12L_56_77738117	YVESY	KIR	QIR	QIR	QIR	QIR
	490	500	510	520	530	540
Cas12L_2_196848753	KGM	IKSKM	NDIC	QITIG	CRNNIL	YAY
Cas12L_29_255238293	CAN	ELLS	SKL	KIG	NDIC	QITIG
Cas12L_38_73472625	TAK	ELLS	SKL	KIG	NDIC	QITIG
Cas12L_42_74408273_partial	KG	ELLS	SKL	KIG	NDIC	QITIG
Cas12L_45_75257103_partial	.....	.....	.....	.....	.....	.....
Cas12L_52_82983331	IA	ODIL	KMN	VGKT	VEAC	CRNNIL
Cas12L_56_77738117	TYK	ENK	KIL	LN	ISEN	IC
	550	560	570	580	590	600
Cas12L_2_196848753	L	FFH	V	L	H	L
Cas12L_29_255238293	M	KY	K	L	E	K
Cas12L_38_73472625	L	K	R	O	V	E
Cas12L_42_74408273_partial	L	KY	K	L	E	K
Cas12L_45_75257103_partial	.....	.....	.....	.....	.....	.....
Cas12L_52_82983331	L	KY	K	L	E	K
Cas12L_56_77738117	L	KY	K	L	E	K
	610	620	630	640	650	
Cas12L_2_196848753	QAY	QAY	QAY	QAY	QAY	QAY
Cas12L_29_255238293	QAY	QAY	QAY	QAY	QAY	QAY
Cas12L_38_73472625	QAY	QAY	QAY	QAY	QAY	QAY
Cas12L_42_74408273_partial	QAY	QAY	QAY	QAY	QAY	QAY
Cas12L_45_75257103_partial	.....	.....	.....	.....	.....	.....
Cas12L_52_82983331	QAY	QAY	QAY	QAY	QAY	QAY
Cas12L_56_77738117	QAY	QAY	QAY	QAY	QAY	QAY

FIG. 6C

	660	670	680	690	700	710
Cas12L_2_196848753	KK	IT	LL	PA	AR	YGLDEITM
Cas12L_29_255238293	KK	IT	LL	MA	AK	YAKDIKW
Cas12L_38_73472625	KK	IT	LL	MA	AK	YFENDEW
Cas12L_42_74408273_partial	KK	IS	LL	MA	AR	YFENITEC
Cas12L_45_75257103_partial	KK	IS	LL	MA	AR	YFENITEC
Cas12L_52_82983331	KK	IS	LL	MA	AR	YFENITEC
Cas12L_56_77738117	KK	IS	LL	MA	AK	YLSDEVK

	720	730
Cas12L_2_196848753	TACV	SRM
Cas12L_29_255238293	QIEMV	RI
Cas12L_38_73472625	TSI	IN
Cas12L_42_74408273_partial	QGS	AV
Cas12L_45_75257103_partial	QGS	AV
Cas12L_52_82983331	ESGV	IN
Cas12L_56_77738117	QGR	ML

FIG. 7

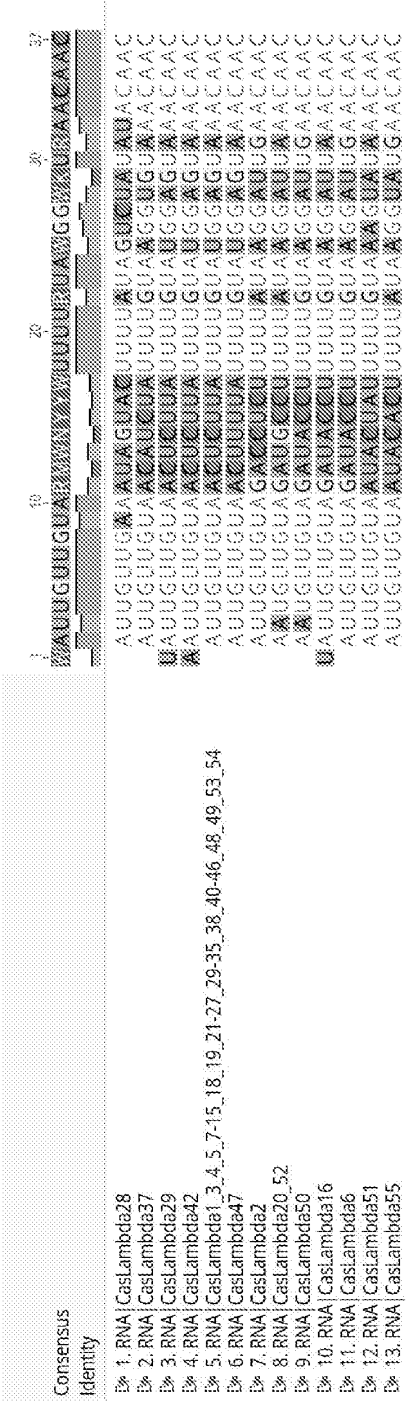


FIG. 8A

Cas λ 1 (SEQ ID NO:59)

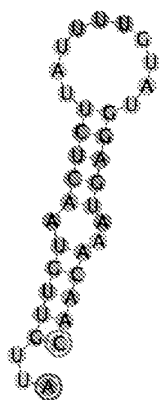


FIG. 8B

Cas λ 2 (SEQ ID NO:60)

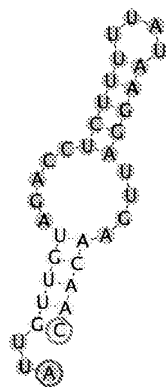


FIG. 8C

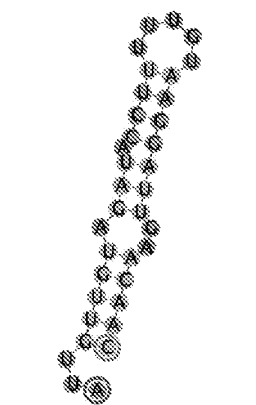
Cas λ 6 (SEQ ID NO:164)

FIG. 8D

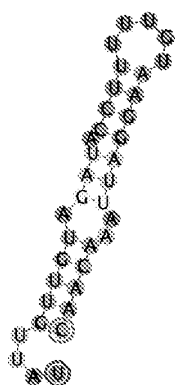
Cas λ 16 (SEQ ID NO:61)

FIG. 8E

Casλ20_52 (SEQ ID NO:68)

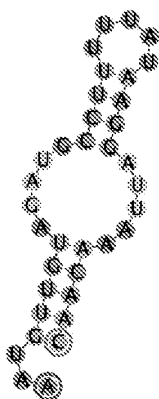


FIG. 8F

Casλ28 (SEQ ID NO:63)

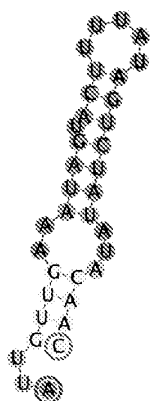


FIG. 8G

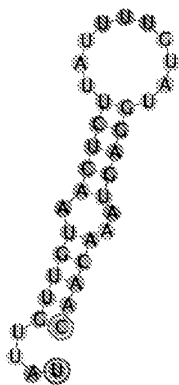
Cas λ 29 (SEQ ID NO:64)

FIG. 8H

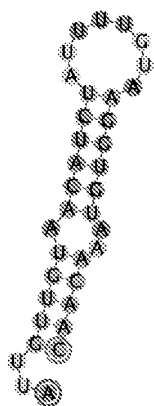
Cas λ 37 (SEQ ID NO:70)

FIG. 8I

Cas λ 42 (SEQ ID NO:163)

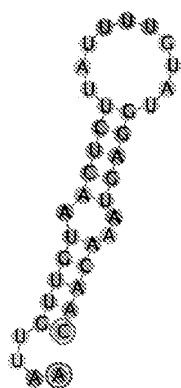


FIG. 8J

Cas λ 47 (SEQ ID NO:65)

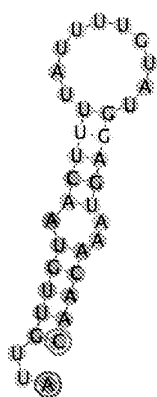


FIG. 8K

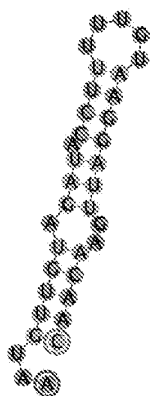
Cas λ 50 (SEQ ID NO:66)

FIG. 8L

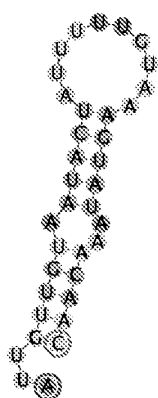
Cas λ 51 (SEQ ID NO:67)

FIG. 8M

Cas λ 55 (SEQ ID NO:69)

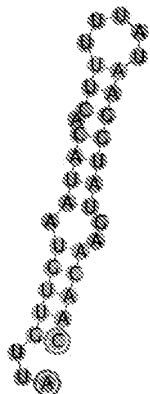


FIG. 9

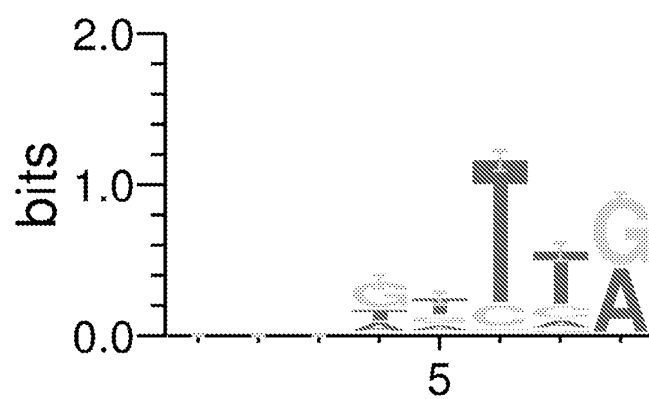


FIG. 10

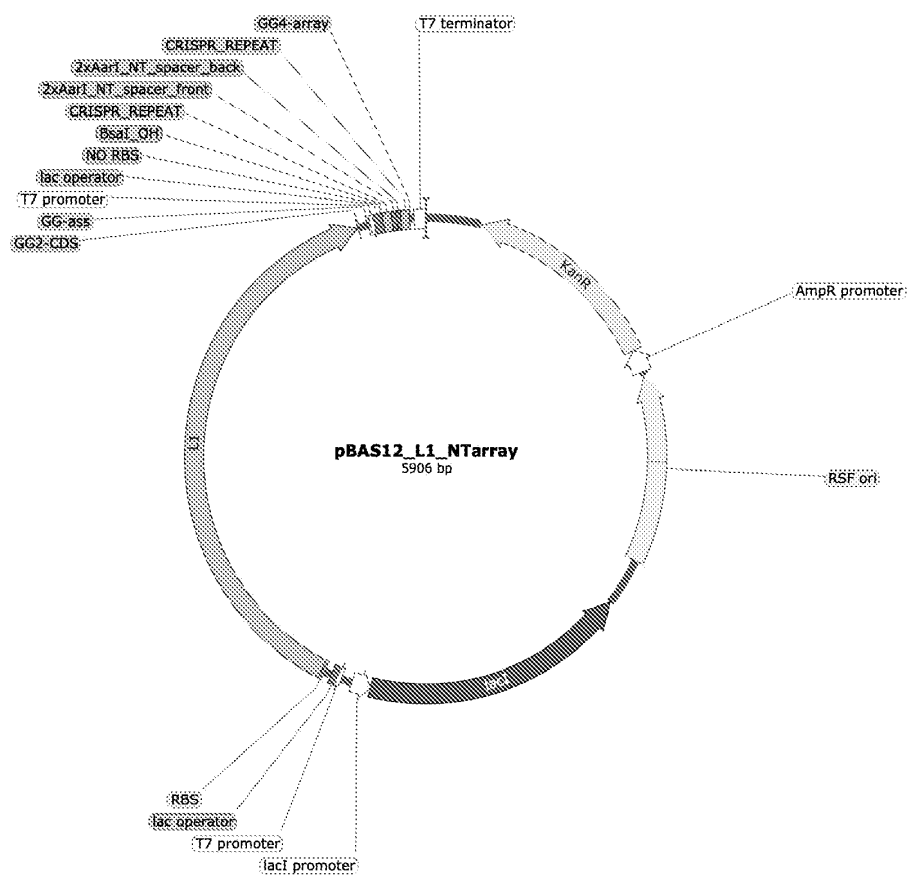


FIG. 11

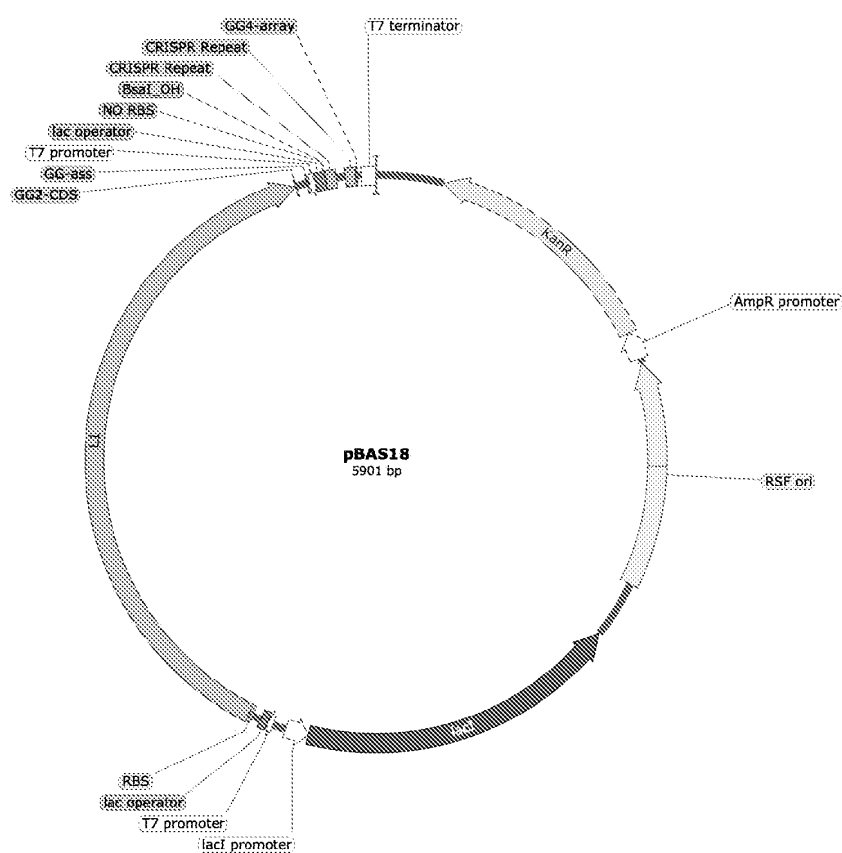


FIG. 12A

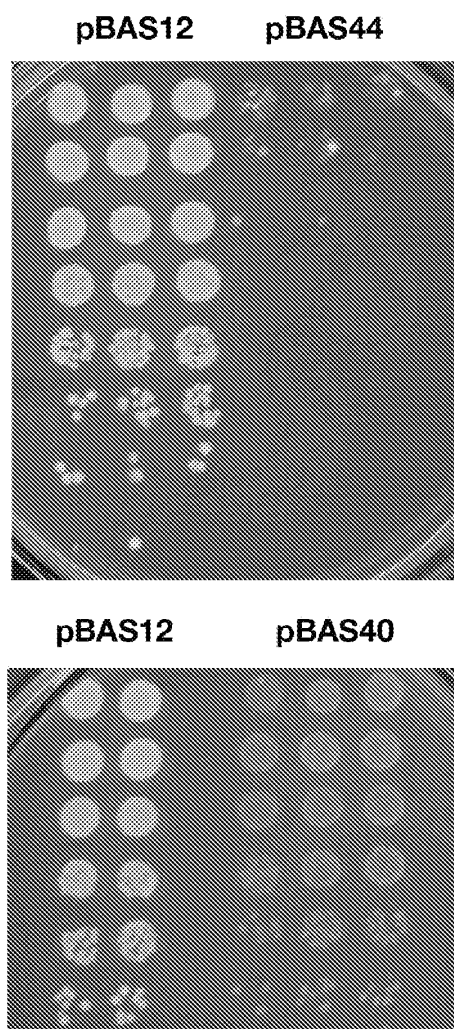


FIG. 12B

FIG. 12C

