Human STING (SEQ ID NO:306) and Tasmanian devil STING (SEQ ID NO:349):

```
Human               1 MPHSSLHPSIPCPRGHGAQKAALVLLSACLVTLWGLGEPPEHTLRYLVLH   50
                      ||.|.||||||.|||.||||||.||||.|:..::.|||....||::|:.:
Tasmanian           1 MPRSHLHPSIPQPRGWGAQKAACVLLSLCMAAVYILGESAAFTLQWLLFY   50

Human              51 LASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLRRGALLL  100
                      ..::|:||||.|...|||||.||.||::||||:.::||:..|.:|.:|||
Tasmanian          51 FTTVQVGLLLKGAYCLAEELYHIQSRHQGSYWQAIQACIHYPFQRISLLL  100

Human             101 LSIYFYYSLPNAVGPPFTWMLALLGLSQALNILLGLKGLAPAEISAVCEK  150
                      ||.|||.:|.|...|..||..||||||.||:.:|||:.|..||||.||||
Tasmanian         101 LSGYFYVTLSNKPNPSLTWTFALLGLSHALSFILGLQNLTSAEISEVCEK  150

Human             151 GNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGAVSQRLYI  200
                      .:.|||||||||||||:||||.||.||:.|||...::||.....||:|
Tasmanian         151 RHLNVAHGLAWSYYIGYLKLILPGLQTRIQIYNQFNKDVLRSPEGHRLHI  200

Human             201 LLPLDCGVPDNLSMADPNIRFLDKLPQQTGDHAGIKDRVYSNSIYELLEN  250
                      |:||||.||||||.|||||:||.:|||...|.||||.|:|:||||::.|:
Tasmanian         201 LIPLDCSVPDNLSQADPNIQFLQELPQHKLDRAGIKGRIYTNSIYKISED  250

Human             251 GQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCRTLEDILA  300
                      ||.|..||||:||||||||||.::|||||||||||||||||||||||||.
Tasmanian         251 GQPAEVCVLEFATPLQTLFAMSQDARAGFSREDRLEQAKLFCRTLEDILE  300

Human             301 DAPESQNNCRLIAYQEPADD--SSFSLSQEVLRHLRQEEKEEVTVGSLKT  348
                      ||||:::.|||:.||||.|.  |:||||:|:|||||||.:||..:|..:.
Tasmanian         301 DAPEARDCCRLVVYQEPEDKAVSNFSLSKEILRHLRQERQEEFAIGPKRA  350

Human             349 SAVPSTSTMSQEPELLISGMEKPLPLRTD-FS   379
                      ..|.::||:||||:|||||||:||.|||| |
Tasmanian         351 MTVTTSSTLSQEPQLLISGMEQPLSLRTDGF-   381
```

FIGURE 1

Human STING (SEQ ID NO:306) and Marmoset STING (SEQ ID NO:359):

```
Human               1 MPHSSLHPSIPCPRGHGAQKAALVLLSACLVTLWGLGEPPEHTLRYLVLH   50
                      ||||||||||.|||||||:|||||||.||||||.|.|.|.||..||:||||
Marmoset            1 MPHSSLHPSIPHPRGHGAQEAALVLLSVCLVTLWWLREAPEDILRFLVLH   50

Human              51 LASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLRRGALLL  100
                      ||||||||||.:|||||||||:|:||:||||||.||||||||:|.||.||
Marmoset           51 LASLQLGLLLNRLCSLAEELRHVHTRYQGSYWRAVRACLGCPIRLGAQLL  100

Human             101 LSIYFYYSLPNAVGPPFTWMLALLGLSQALNILLGLKGLAPAEISAVCEK  150
                      ||||||..|||  |.||||||||.|||||||||||||||||||||||||||
Marmoset          101 LSIYFYCFLPN--GRPFTWMLALLGFSQALNILLGLKGLAPAEISAVCEK  148

Human             151 GNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGAVSQRLYI  200
                      .|||||||||||||||||||..|||||||||.||:|||..||||||
Marmoset          149 RNFNVAHGLAWSYYIGYLRLILPGFQARIRTYNQHNNNVLRGPASQRLYI  198

Human             201 LLPLDCGVPDNLSMADPNIRFLDKLPQQTGDHAGIKDRVYSNSIYELLEN  250
                      |.||||||||||.|||||||||||||:|.|.||||.|||:|||||||||
Marmoset          199 LFPLDCGVPDNLSTADPNIRFLDKLPQETIDRAGIKGRVYTNSIYELLEN  248

Human             251 GQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCRTLEDILA  300
                      |||||.||||||:||||||||||.|||||||||||||||||||||||||||
Marmoset          249 GQRAGACVLEYASPLQTLFAMSQYGQAGFSREDRLEQAKLFCRTLEDILA  298

Human             301 DAPESQNNCRLIAYQEPADDSSFSLSQEVLRHLRQEEKEEVTVGSLKTSA  350
                      ||||||||||||.|:||||.|||.||||||:||||||:||||||||||.
Marmoset          299 DAPESQNNCRLIVYEEPADGSSFLLSQEVLQHLRQEEEEEVTVGSLKTSE  348

Human             351 VPSTSTMSQEPELLISGMEKPLPLRTDFS   379
                      |||||||||||||||||||||||||:|..
Marmoset          349 VPSTSTMSQEPELLISGMEKPLPLRSDLF   377
```

FIGURE 2

Human STING (SEQ ID NO:306) and cattle STING (SEQ ID NO:360):

```
Human              1 MPHSSLHPSIPCPRGHGAQKAALVLLSACLVTLWGLGEPPEHTLRYLVLH   50
                     ||||||||||.|||..|||||||||||||.||||||||::||::||||
Cattle             1 MPHSSLHPSIPQPRGLRAQKAALVLLSACLVALWGLGEPPDYTLKWLVLH   50

Human             51 LASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLRRGALLL  100
                     |||.|:|||:.|:||||||||.|:|||||.||||||.|||||...:|.|||||
Cattle            51 LASQQMGLLIKGICSLAEELCHVHSRYHGSYWRAVRACLCSSMRCGALLL  100

Human            101 LSIYFYYSLPNAVGPPFTWMLALLGLSQALNILLGLKGLAPAEISAVCEK  150
                     ||.|||.||||....||||||||||||||||||:||||||:||:|||
Cattle           101 LSCYFYCSLPNMADLPFTWMLALLGLSQALNILLGLQGLAPAEVSAICEK  150

Human            151 GNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGAVSQRLYI  200
                     .|||||||||||||||||||.|.|||:.|||.:||.|:||.|.||:|
Cattle           151 RNFNVAHGLAWSYYIGYLRLILPGLPARIQIYNQFHNNTLQGAGSHRLHI  200

Human            201 LLPLDCGVPDNLSMADPNIRFLDKLPQQTGDHAGIKDRVYSNSIYELLEN  250
                     |.||||||||:|::||||||||.:||||:.|.||||.|||:|||||||||
Cattle           201 LFPLDCGVPDDLNVADPNIRFLHELPQQSADRAGIKGRVYTNSIYELLEN  250

Human            251 GQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCRTLEDILA  300
                     |||||.||||||||||||||..:|||||||||||||||||||||||||
Cattle           251 GQRAGVCVLEYATPLQTLFAMSQDGRAGFSREDRLEQAKLFCRTLEDILA  300

Human            301 DAPESQNNCRLIAYQEPADDSSFSLSQEVLRHLRQEEKEEVTVGSLKTSA  350
                     :|||||||||||.|||||:.||||||||:|:|||||| |||:||.:|||.
Cattle           301 NAPESQNNCRLIVYQEPAEGSSFSLSQEILQHLRQEER-EVTMGSTETSV  349

Human            351 VPSTSTMSQEPELLISGMEKPLPLRTDFS   379
                     :|.:|.:||||||||||:|||||||:|..
Cattle           350 MPGSSVLSQEPELLISGLEKPLPLRSDVF   378
```

FIGURE 3

Human STING (SEQ ID NO:306) and cat STING (SEQ ID NO:356):

```
Human              1 MPHSSLHPSIPCPRGHGAQKAALVLLSACLVTLWGLGEPPEHTLRYLVLH   50
                     ||.:.||||||.|||.||||||||||:.||..||.|||.|:||||:||||
Cat                1 MPRTGLHPSIPRPRGMGAQKAALVLLAVCLAALWRLGESPDHTLRWLVLH   50

Human             51 LASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLRRGALLL  100
                     |||||||||..|||.|.|||.|:||||:|||||.::|||||.|:|.|||||
Cat               51 LASLQLGLLFTGVCHLTEELCHLHSRYQGSYWRAMKACLGSPVRSGALLL  100

Human            101 LSIYFYYSLPNAVGPPFTWMLALLGLSQALNILLGLKGLAPAEISAVCEK  150
                     ||.|||.:|| :...||||||||||||||||||.|:|||||||||||||
Cat              101 LSCYFYSTLP-STDLPFTWMLALLGLSQALNILLDLQGLAPAEVSAVCEK  149

Human            151 GNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGAVSQRLYI  200
                     .||||||||||||||||||||.|.||:.|.||.:||:|||..|.||:|
Cat              150 KNFNVAHGLAWSYYIGYLRLILPGLPARVLTCNQLHNNILRGTGSHRLHI  199

Human            201 LLPLDCGVPDNLSMADPNIRFLDKLPQQTGDHAGIKDRVYSNSIYELLEN  250
                     |.||||||||::|:||||||||.:||||:.|.||||.|||:||:|.||||
Cat              200 LFPLDCGVPDDMSVADPNIRFLYELPQQSADRAGIKGRVYTNSVYALLEN  249

Human            251 GQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCRTLEDILA  300
                     ||:||.||||||||||||||..:||||||||||||||||.||||||
Cat              250 GQQAGICVLEYATPLQTLFAMSQDGRAGFSREDRLEQAKLFCRILEDILA  299

Human            301 DAPESQNNCRLIAYQEPADDSSFSLSQEVLRHLRQEEKEEVTVGSLKTSA  350
                     |.||.|||||||.||||.:.|:||||||:||||||||: ||||||:.||.
Cat              300 DTPECQNNCRLIVYQEPEEGSNFSLSQEILRHLRQEER-EVTVGSVGTSM  348

Human            351 VPSTSTMSQEPELLISGMEKPLPLRTDFS   379
                     |.:.|.:||||.|||||||:|||||||..
Cat              349 VRNPSVLSQEPNLLISGMEQPLPLRTDVF   377
```

FIGURE 4

Human STING (SEQ ID NO:306) and ostrich STING (SEQ ID NO:361):

```
Human              1 MPHSSLHPS------IPCPRGHGAQKAALVLLSACLVTLWGLGEPPEHTL   44
                     |.|.|..||      ||..|...||.||.|||:.|...|:..|||..|..
Ostrich            1 MAHESGTPSNPATPLIPKAREGRAQHAAYVLLALCAAALYLAGEPVVHIA   50

Human             45 RYLVLHLASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLR   94
                     |....|..:||:|.||.|:|.|.||:.|:.:|:|||:.|.:.|||  .||
Ostrich           51 RSFTSHFVALQIGALLKGICYLVEEIFHLETRHRGSFRRALSACL--HLR   98

Human             95 -RGALLLLSIYFYYSLPNAVGPPFTWMLALLGLSQALNILLGLKGLAPAE  143
                      ...|||:....|.:|.:....|....|.|..|.|.|.:.|||...:..|
Ostrich           99 WHVTLLLVCGSAYVALLDGDEQPLGLHLGLACLCQLLILALGLHKPSAVE  148

Human            144 ISAVCEKGNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGA  193
                     ||.:.|:...|||||||||||:|||:::||.|:..:....:...|:|...
Ostrich          149 ISEMSERSKQNVAHGLAWSYYVGYLKIVLPRLKESMENIGRTNPNMLAHK  198

Human            194 VSQRLYILLPLDCGVPDNLSMADPNIRFLDKLPQQTGDHAGIKDRVYSNS  243
                     .:.:|:||:||.|.:.|:|..||.||::...||:.|...||.|.|||.|:
Ostrich          199 ETWKLHILVPLSCNICDDLEKADSNIQYAMDLPETTLTRAGTKKRVYRNT  248

Human            244 IYELLENGQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCR  293
                     :|: :::..:...||:|||||||:|:||||...|.||||||:||||||.|
Ostrich          249 LYK-IKDEDKFRFCVVEYATPLQSLYAMSQDECAAFSREDRIEQAKLFYR  297

Human            294 TLEDILADAPESQNNCRLIAYQEPADDSSFSLSQEVLRHLRQEEKEEVTV  343
                     |||:||..|.|.....|||.|:|..:..:..||:|:||||:|:.:||.||
Ostrich          298 TLEEILQSAKECAGTYRLIVYEESGEAETHFLSREILRHLQQQRQEEYTV  347

Human            344 --GSLKTSAVPSTSTMSQEPELLISGMEKPLPLRTDFS   379
                       |:|          .|.:..|.||..:.|.|||:|..
Ostrich          348 CDGTL----------CSTDLSLQISESDLPQPLRSDCL   375
```

FIGURE 5

Human STING (SEQ ID NO:306) and crested ibis STING (SEQ ID NO:362):

```
Human               1 ---MPHSSLHPS---IPCPRGHGAQKAALVLLSACLVTLWGLGEPPEHTL   44
                        .|....||:   ||..||..||.|..:||:.|...|:..|||...:.
Crested             1 MSQEPQWLSHPTALLIPKARGGRAQHAVYLLLALCAAVLYLAGEPLVPSA   50

Human              45 RYLVLHLASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLR   94
                        |.|:.|..:||:|:||.|.|.||||:.|:.||:.||:||.:.||.  |||
Crested            51 RSLISHFMALQIGVLLKGTCYLAEEIFHLQSRHHGSFWRALSACF--PLR   98

Human              95 RGALLLLSIYFYYSLPNAVGPPFTWMLALLGLSQALNILLGLKGLAPAEI  144
                        ...|:||.....|......|.|....|.|..|.|.|.:.|||...:..|:
Crested            99 WHGLMLLVCGSAYVALLEDGQPLGLHLGLASLCQLLILALGLHKPSAVEM  148

Human             145 SAVCEKGNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGAV  194
                        |.:.|:...||||||||||:|||:::||.::..:..:::...|:|....
Crested           149 SEMSERSKQNVAHGLAWSYYVGYLKIVLPRVKKSMEEFSRANPNVLARRE  198

Human             195 SQRLYILLPLDCGVPDNLSMADPNIRFLDKLPQQTGDHAGIKDRVYSNSI  244
                        :.:|:||:||.|.|.|:|..||.||::|..||:.|...||.|.|||.:|:
Crested           199 TWKLHILVPLSCDVYDDLEKADSNIQYLMDLPETTLTRAGTKKRVYKHSL  248

Human             245 YELLENGQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCRT  294
                        |.:.:.|.:...|.:|||||||:|:||||...|.||||||||||||.||
Crested           249 YTIRDEGNKLWHCAVEYATPLQSLYAMSQDEYAAFSREDRLEQAKLFYRT  298

Human             295 LEDILADAPESQNNCRLIAYQEPADDSSFSLSQEVLRHLRQEEKEEVTVG  344
                        ||:||..:.|.....|||.|:|..:..:.|||:::|.||||:..||.||.
Crested           299 LEEILKGSKECAGTYRLIVYEESGEAETHSLSRDILWHLRQQCHEEYTVY  348

Human             345 SLKTSAVPSTSTMSQEPELLISGMEKPLPLRTDFS   379
                        .......|||:..|.|..|.||..:.|.|||:|.
Crested           349 EGNQPHNPSTTLHSTELNLQISESDLPQPLRSDC-   382
```

FIGURE 6

Human STING (SEQ ID NO:306) and coelacanth (variant with SEQ ID NO:363) STING:

```
Human               1 MPHSSLHPSIPCPRGHGAQKAALVLLSACLVTLWGLGEPPEHTLRYLVLH   50
                      ....::...||.|||:.|.:.|..:::..|:.||......::.|..:.||
Coelacanth          1 FGLQNMSAIIPQPRGNRANQMAYFIITVILMLLWIFRNIMDNVLEVIALH   50

Human              51 LASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLRRGALLL  100
                      :..||...::.|:|:.|||:.|:..||.||||:.:.|||.........::
Coelacanth         51 ILLLQGAAIMKGICNFAEEVNHVQPRYGGSYWKALEACLNLSKYDVMKIV  100

Human             101 LS--IYFYYSLPNAVGPPFTWMLALL--GLSQALNILLGLKGLAPAEISA  146
                      .:  :::::|....|    .|.|.||  .|...||.:||:...:|.|:|.
Coelacanth        101 FAGVLWWHFSSSLFV----VWFLHLLVSCLCHLLNNVLGVLKPSPVEVSE  146

Human             147 VCEKGNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGAVSQ  196
                      :.|:....||||||||||:|||:|:||||:.||::||..:.|||:...:.
Coelacanth        147 IYERNRIGVAHGLAWSYYLGYLKLVLPELEDRIKSYNVSHGNLLKHKETW  196

Human             197 RLYILLPLDCGVPDNLSMADPNIRFLDKLPQQTGDHAGIKDRVYSNSIYE  246
                      ||:||||||.|.:.|||:..|.||.|||.|.:...:.||||.|.|.:|:|:
Coelacanth        197 RLHILLPLSCSIFDNLADVDSNIEFLDNLSELQINRAGIKGRSYKHSLYQ  246

Human             247 LLENGQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCRTLE  296
                      :|:..:|...|:|||||||::|..||:.:.|.|::||||||.|||.|||:
Coelacanth        247 VLDEDKRPHYCILEYATPLKSLLEMSKEASAEFTKEDRLEQTKLFYRTLK  296

Human             297 DILADAPESQNNCRLIAY--QEPADDSSFSLSQEVLRHLRQEEKEEVTVG  344
                      |||.::.|.:...||:.|  :|.:..|.| ||:|:||||.|::|||..:.
Coelacanth        297 DILDNSQECRGRFRLVIYDGREDSGKSHF-LSKELLRHLNQQQKEEYFMS  345

Human             345 SLKTSAVPSTSTMSQEPELLISGMEKPLPLRTDFS   379
                      ........|||.:|.||:|:||..:.|..|:....
Coelacanth        346 EQTQPNSSSTSCLSTEPQLMISDTDAPHTLKRQVC   380
```

FIGURE 7

Human STING (SEQ ID NO:306) and zebrafish STING (SEQ ID NO:348):



FIGURE 8

Human STING (SEQ ID NO:305) and boar STING (SEQ ID NO:365):

```
Human               1 MPHSSLHPSIPCPRGHGAQKAALVLLSACLVTLWGLGEPPEHTLRYLVLH   50
                      ||:||||||||.|||..||.||||||.||||.||||||.||:|||:||||
Boar                1 MPYSSLHPSIPQPRGLRAQVAALVLLGACLVALWGLGELPEYTLRWLVLH   50

Human              51 LASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLRRGALLL  100
                      |||.|:|||:.|:||||||.|:||||:.||||..|||||||:|.|||||
Boar               51 LASQQIGLLVKGLCSLAEELCHVHSRYQSSYWRAARACLGCPIRCGALLL  100

Human             101 LSIYFYYSLPNAVGPPFTWMLALLGLSQALNILLGLKGLAPAEISAVCEK  150
                      ||.|||:|:.:..|.|..||||||||||||||||:.|||||:||:|||
Boar              101 LSCYFYFSIRDKAGLPLPWMLALLGLSQALNILLGLQHLAPAEVSAICEK  150

Human             151 GNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGAVSQRLYI  200
                      .|||||||||||||||||||.|:|||:.|||.:.|:|.|..:.||:|
Boar              151 RNFNVAHGLAWSYYIGYLRLILPGLRARIQAYNQRHKNVLGGIGNHRLHI  200

Human             201 LLPLDCGVPDNLSMADPNIRFLDKLPQQTGDRAGIKDRVYSNSIYELLEN  250
                      |.||||||||:||:||||||||.:||||:.||||||.|||:|||||||||
Boar              201 LFPLDCGVPDDLSVADPNIRFLHELPQQSADRAGIKGRVYTNSIYELLEN  250

Human             251 GQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCRTLEDILA  300
                      ||.||.|||.||||||||||||..:|||||||||||||||||||||||
Boar              251 GQPAGVCVLGYATPLQTLFAMSQDGRAGFSREDRLEQAKLFCRTLEDILA  300

Human             301 DAPESQNNCRLIAYQEPADDSSFSLSQEVLRHLRQEEKEEVTVGSLKTSA  350
                      ||||:|||||||.||||.:..|||||||:||||||||: |||:||.:||.
Boar              301 DAPEAQNNCRLIVYQEPTEGGSFSLSQEILRHLRQEER-EVTMGSAETSV  349

Human             351 VPSTSTMSQEPELLISGMEKPLPLRTDFS   379
                      ||::||:||||||||||||:|||||:|..
Boar              350 VPTSSTLSQEPELLISGMEQPLPLRSDIF   378
```

FIGURE 9

Human STING (SEQ ID NO:305) and bat STING (SEQ ID NO:366):

```
Human              1 MPHSSLHPSIPCPRGHGAQK-AALVLLSACLVTLWGLGEPPEHTLRYLVL   49
                     |.|||||||:|.|||..|:. ||.|||..||..||..|:|.|:|||.|||
Bat                1 MSHSSLHPSVPRPRGRRARNIAAFVLLIVCLAALWLSGKPSEYTLRCLVL   50

Human             50 HLASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLRRGALL   99
                     ||||.|||||.|.||.|||||.|||||:|:|||.|||||.||:|.|.:|
Bat               51 HLASQQLGLLSNRVCYLAEELSHIHSRYQGNYWRAVRACLSCPIRFGVVL  100

Human            100 LLSIYFYYSLPNAVGPPFTWMLALLGLSQALNILLGLKGLAPAEISAVCE  149
                     |:|.:||.||||....|.|||||.||||:||||||||:||.|||:|.|||
Bat              101 LVSFFFYTSLPNIDDLPLTWMLAHLGLSEALNILLGLRGLTPAEVSTVCE  150

Human            150 KGNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGAVSQRLY  199
                     :.:|||||||||||||||||||.|:|||.||||.:.|.|:|..|.|||
Bat              151 QRHFNVAHGLAWSYYIGYLRLILPGLRARIHTYNQLHGNTLQGVGSHRLY  200

Human            200 ILLPLDCGVPDNLSMADPNIRFLDKLPQQTGDRAGIKDRVYSNSIYELLE  249
                     ||.||||||.|:||.||||||||.:||:|:.||||||:|||:||:|||||
Bat              201 ILFPLDCGVLDDLSAADPNIRFLRELPRQSSDRAGIKNRVYTNSVYELLE  250

Human            250 NGQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCRTLEDIL  299
                     .|:..||||||||||||||||.::||||:||||||||||||||.|||
Bat              251 KGKPVGTCVLEYATPLQTLFAMSQDARAGFSQEDRLEQAKLFCRTLADIL  300

Human            300 ADAPESQNNCRLIAYQEPADDSSFSLSQEVLRHLRQEEKEEVTVGSLKTS  349
                     ||.||||.:||||.||||.::|.||||||.:|:|||||||||||||:.|.
Bat              301 ADDPESQKSCRLIVYQEPTEESDFSLSQAILKHLRQEEKEEVTVGTVGTY  350

Human            350 AVPSTSTMSQEPELLISGMEKPLPLRTDFS   379
                     ..|.:||:.||||||||::|||||||..
Bat              351 EAPGSSTLHQEPELLISGMDQPLPLRTDIF   380
```

FIGURE 10

Human STING (SEQ ID NO:305) and manatee STING (SEQ ID NO:367):

```
Human               1 ---MPHSSLHPSIPCPRGHGAQKAALVLLSACLVTLWGLGEPPEHTLRYL   47
                        ||||||||||..||||.||||.|||.||||.||.|||||.|||::|
Manatee             1 MVEMPHSSLHPSIPRHRGHGIQKAAFVLLVACLVALWELGEPPGHTLQWL   50

Human              48 VLHLASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLRRGA   97
                        |..||||||||||..:|||||||.|:||||:.||||.||||:|||:||||
Manatee            51 VCQLASLQLGLLLKVICSLAEELCHVHSRYQSSYWRAVRACMGCPIRRGA  100

Human              98 LLLLSIYFYYSLPNAVGPPFTWMLALLGLSQALNILLGLKGLAPAEISAV  147
                        |||||.|||:..||....|.||.||||||.||:||||.|:||.||||||:
Manatee           101 LLLLSCYFYFCFPNMADLPLTWTLALLGLLQAMNILLSLQGLTPAEISAI  150

Human             148 CEKGNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGAVSQR  197
                        |||.|.|||||||||||||||||.||.|||.||..:||:||||..|||
Manatee           151 CEKRNLNVAHGLAWSYYIGYLRLILPGLQDRIRIYNLQHNNMLRGTGSQR  200

Human             198 LYILLPLDCGVPDNLSMADPNIRFLDKLPQQTGDRAGIKDRVYSNSIYEL  247
                        |:||.|||||||::||:||.|||||.|||||:.|.||||.|||:||:|:|
Manatee           201 LHILFPLDCGVPNDLSVADANIRFLQKLPQQSADCAGIKGRVYTNSVYQL  250

Human             248 LENGQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCRTLED  297
                        ||:||.||.||||||||||||||..:||||||||||||||||||||
Manatee           251 LEHGQPAGICVLEYATPLQTLFAMSQDGRAGFSREDRLEQAKLFCRTLED  300

Human             298 ILADAPESQNNCRLIAYQEPADDSSFSLSQEVLRHLRQEEKEEVTVGSLK  347
                        |||||||.|||||||.|||.|:.||||||||:||||||||:|||||||:.
Manatee           301 ILADAPEYQNNCRLIVYQESAEGSSFSLSQEILRHLRQEEREEVTVGSVG  350

Human             348 TSAV-----PSTSTMSQEPELLISGMEKPLPLRTDFS   379
                        ||.|     ||||::||||:|||||||:|||||||..
Manatee           351 TSVVPSPSSPSTSSLSQEPKLLISGMEQPLPLRTDVF   387
```

FIGURE 11

Human STING (SEQ ID NO:305) and ghost shark STING (SEQ ID NO:368):

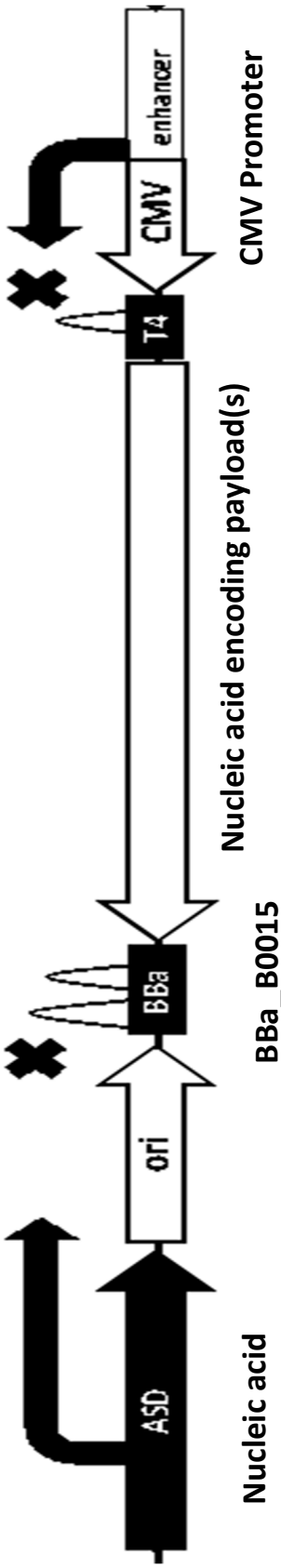
```
Human              1 MPHSSLHPSIPCPRGHGAQKAALVLLS--ACLVTLWGLGEPPEHTLRYLV   48
                       :..|||.|||..|....|:|:|  |||..:.    .|::.::::|
GhostShark         1 -----MSDSIPRPRGKVATYVGLILMSGLACLYFML----TPDYHIKFIV   41

Human             49 LHLASLQL-----GLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPL   93
                     ..:|. ||     .|.|..:|...|||.|..:||:.|:.|.:.|.|...
GhostShark        42 QQVAQ-QLIVSFFALCLLRLCEFVEELGHKQTRYQNSWVRALNASLDWK-   89

Human             94 RRGALLLLSIYFYYSLPNAVGPPFTWMLALLGLSQALNI---------LL  134
                     :.|..||:|:.|.:.||......:    |:..:.|.:::         :.
GhostShark        90 KYGFCLLISLLFNWVLPYEKHMSY----AVPTVGQTISLTCFCVLFLKVF  135

Human            135 GLKGLAPAEISAVCEKGNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQ  184
                     .|..|:||:||.:.|....||||||||||:|||:::||:|:.:|..|::
GhostShark       136 QLDVLSPAQISEISETNKCNVAHGLAWSYYLGYLKIVLPKLEEKINQYHR  185

Human            185 HYNNLLRGAVSQRLYILLPLDCGVPDNLSMADPNIRFLDKLPQQTGDRAG  234
                     .|.|:|: ...::||||:|..|.|.|.|...|.||.|...||:...||||
GhostShark       186 EYGNVLQ-QKGKKLYILIPFSCKVLDKLEKVDTNIVFYQNLPELLVDRAG  234

Human            235 IKDRVYSNSIYELL-ENGQRAGTCVLEYATPLQTLFAMSQYSQAGFSRED  283
                     ||.|.|.:|||.:. :..|:...|:|||||||::||.|:..|.|.||:|.
GhostShark       235 IKSRSYKHSIYLIYDQKKQQPHHCILEYATPLRSLFEMTNDSAAAFSKEQ  284

Human            284 RLEQAKLFCRTLEDILADAPESQNNCRLIAYQEPADDSSFS---LSQEVL  330
                     ||:|||||.|||:.||.:.||...:.|||.|.:..:.:...   :|:|:|
GhostShark       285 RLDQAKLFYRTLKSILNNVPEVTGSYRLIPYDDDLEGAELGPHFVSEEIL  334

Human            331 RHLRQEEKEEVTVGSLKTSAVPSTSTMSQEPELLISGMEKPLPLRTDFS  379
                     :|:|||..|....   :.|....|..||.||.|:||  :.|.|||:...
GhostShark       335 KHMRQELTEYPVA---EPSNANETDCMSSEPHLMIS--DDPKPLRSYCP  378
```

FIGURE 12

Human STING (SEQ ID NO:305) and mouse STING (SEQ ID NO:369):

```
Human              1 MPHSSLHPSIPCPRGHGAQKAALVLLSACLVTLWGLGEPPEHTLRYLVLH   50
                     ||:|:|||:||.||||.::..||:.|.|.|:.||...:||.|||:||.||
Mouse              1 MPYSNLHPAIPRPRGHRSKYVALIFLVASLMILWVAKDPPNHTLKYLALH   50

Human             51 LASLQLGLLLNGVCSLAEELRHIHSRYRGSYWRTVRACLGCPLRRGALLL  100
                     |||.:|||||..:|.|||||.|:.|||:||||:.||||||||:...|::|
Mouse             51 LASHELGLLLKNLCCLAEELCHVQSRYQGSYWKAVRACLGCPIHCMAMIL  100

Human            101 LSIYFYYSLPNAVGPPFTWMLALLGLSQALNILLGLKGLAPAEISAVCEK  150
                     ||.|||: |.|......:||..||.|.::|::||||:.|.|||:||||:
Mouse            101 LSSYFYF-LQNTADIYLSWMFGLLVLYKSLSMLLGLQSLTPAEVSAVCEE  149

Human            151 GNFNVAHGLAWSYYIGYLRLILPELQARIRTYNQHYNNLLRGAVSQRLYI  200
                     ...||||||||||||||||||.||||||.:||.:||:|.||.|:||||
Mouse            150 KKLNVAHGLAWSYYIGYLRLILPGLQARIRMFNQLHNNMLSGAGSRRLYI  199

Human            201 LLPLDCGVPDNLSMADPNIRFLDKLPQQTGDRAGIKDRVYSNSIYELLEN  250
                     |.||||||||||:.|||||||.|.|||||..||||||:||||||:||:|||
Mouse            200 LFPLDCGVPDNLSVVDPNIRFRDMLPQQNIDRAGIKNRVYSNSVYEILEN  249

Human            251 GQRAGTCVLEYATPLQTLFAMSQYSQAGFSREDRLEQAKLFCRTLEDILA  300
                     ||.||.|:||||||||||||.::||||||||||||||||||:||.
Mouse            250 GQPAGVCILEYATPLQTLFAMSQDAKAGFSREDRLEQAKLFCRTLEEILE  299

Human            301 DAPESQNNCRLIAYQEPADDSSFSLSQEVLRHLRQEEKEEVTVGSLKTSA  350
                     |.|||:||||||.||||.|.:||||||||||:|||||||||:.:..||.
Mouse            300 DVPESRNNCRLIVYQEPTDGNSFSLSQEVLRHIRQEEKEEVTMNAPMTSV  349

Human            351 VPSTSTMSQEPELLISGMEKPLPLRTDFS   379
                     .|..|.:||||.||||||::|||||||..
Mouse            350 APPPSVLSQEPRLLISGMDQPLPLRTDLI   378
```

FIGURE 13



Plasmid construct in which the expression cassette is reversed on the plasmid and is followed by the BBa_B0015 terminator, and the T4 terminator is inserted downstream of the CMV promoter.

FIGURE 14