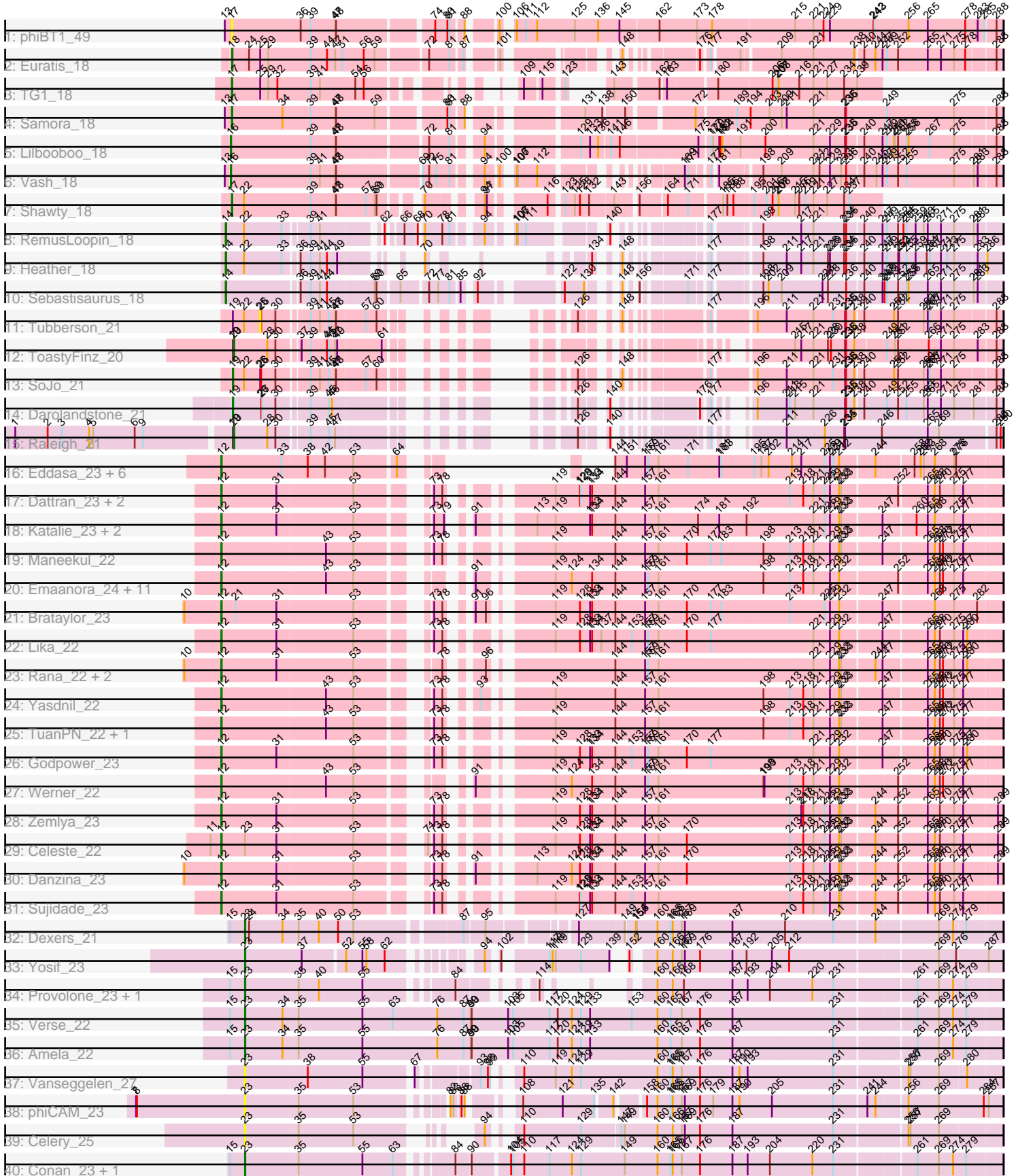


Pham 202924



Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. If this default region is judged to be packed too tightly with annotated starts, the track will be further scaled to only show that region of the ORF with annotated starts. This action will be indicated by adding "Zoomed" to the title. For starts, yellow indicates the location of called starts comprised solely of Glimmer/GeneMark auto-annotations, green indicates the location of called starts with at least 1 manual gene annotation.

## Pham 202924 Report

This analysis was run 01/18/25 on database version 583.

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 202924 has 66 members, 6 are drafts.

Phages represented in each track:

- Track 1 : phiBT1\_49
- Track 2 : Euratis\_18
- Track 3 : TG1\_18
- Track 4 : Samora\_18
- Track 5 : Lilbooboo\_18
- Track 6 : Vash\_18
- Track 7 : Shawty\_18
- Track 8 : RemusLoopin\_18
- Track 9 : Heather\_18
- Track 10 : Sebastisaurus\_18
- Track 11 : Tubberson\_21
- Track 12 : ToastyFinz\_20
- Track 13 : SoJo\_21
- Track 14 : Darolandstone\_21
- Track 15 : Raleigh\_21
- Track 16 : Eddasa\_23, Izzy\_23, EnochSoames\_24, Oliynyk\_23, Jash\_23, Rusticus\_23, BryanRecycles\_23
- Track 17 : Dattran\_23, Goby\_22, Toma\_22
- Track 18 : Katalie\_23, RedBear\_24, South40\_23
- Track 19 : Maneekul\_22
- Track 20 : Emaanora\_24, TagePhighter\_23, Asten\_22, Triste\_22, OzzyJ\_23, Hippo\_22, BarryBee\_24, Dwayne\_22, SarahRose\_22, Chucky\_22, Whatever\_22, Snorlax\_22
- Track 21 : Brataylor\_23
- Track 22 : Lika\_22
- Track 23 : Rana\_22, Lorelei\_22, Nabi\_22
- Track 24 : Yasdnii\_22
- Track 25 : TuanPN\_22, Ejemplo\_22
- Track 26 : Godpower\_23
- Track 27 : Werner\_22
- Track 28 : Zemlya\_23
- Track 29 : Celeste\_22
- Track 30 : Danzina\_23

- Track 31 : Sujidade\_23
- Track 32 : Dexers\_21
- Track 33 : Yosif\_23
- Track 34 : Provolone\_23, ElGato\_23
- Track 35 : Verse\_22
- Track 36 : Amela\_22
- Track 37 : Vanseggelen\_27
- Track 38 : phiCAM\_23
- Track 39 : Celery\_25
- Track 40 : Conan\_23, Pavo\_23

### **Summary of Final Annotations (See graph section above for start numbers):**

The start number called the most often in the published annotations is 12, it was called in 39 of the 60 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Asten\_22, BarryBee\_24, Brataylor\_23, BryanRecycles\_23, Celeste\_22, Chucky\_22, Danzina\_23, Dattran\_23, Dwayne\_22, Eddasa\_23, Ejemplo\_22, Emaanora\_24, EnochSoames\_24, Goby\_22, Godpower\_23, Hippo\_22, Izzy\_23, Jash\_23, Katalie\_23, Lika\_22, Lorelei\_22, Maneekul\_22, Nabi\_22, Oliynyk\_23, OzzyJ\_23, Rana\_22, RedBear\_24, Rusticus\_23, SarahRose\_22, Snorlax\_22, South40\_23, Sujidade\_23, TagePhighter\_23, Toma\_22, Triste\_22, TuanPN\_22, Werner\_22, Whatever\_22, Yasdnil\_22, Zemlya\_23,

Genes that have the "Most Annotated" start but do not call it:

- 

Genes that do not have the "Most Annotated" start:

- Amela\_22, Celery\_25, Conan\_23, Darolandstone\_21, Dexers\_21, ElGato\_23, Euratis\_18, Heather\_18, Lilbooboo\_18, Pavo\_23, Provolone\_23, Raleigh\_21, RemusLoopin\_18, Samora\_18, Sebastisaurus\_18, Shawty\_18, SoJo\_21, TG1\_18, ToastyFinz\_20, Tubberson\_21, Vanseggelen\_27, Vash\_18, Verse\_22, Yosif\_23, phiBT1\_49, phiCAM\_23,

### **Summary by start number:**

Start 12:

- Found in 40 of 66 ( 60.6% ) of genes in pham
- Manual Annotations of this start: 39 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Asten\_22 (BD1), BarryBee\_24 (BD1), Brataylor\_23 (BD1), BryanRecycles\_23 (BD1), Celeste\_22 (BD1), Chucky\_22 (BD1), Danzina\_23 (BD1), Dattran\_23 (BD1), Dwayne\_22 (BD1), Eddasa\_23 (BD1), Ejemplo\_22 (BD1), Emaanora\_24 (BD1), EnochSoames\_24 (BD1), Goby\_22 (BD1), Godpower\_23 (BD1), Hippo\_22 (BD1), Izzy\_23 (BD1), Jash\_23 (BD1), Katalie\_23 (BD1), Lika\_22 (BD1), Lorelei\_22 (BD1), Maneekul\_22 (BD1), Nabi\_22 (BD1), Oliynyk\_23 (BD1), OzzyJ\_23 (BD1), Rana\_22 (BD1), RedBear\_24 (BD1), Rusticus\_23 (BD1), SarahRose\_22 (BD1), Snorlax\_22 (BD1), South40\_23 (BD1), Sujidade\_23 (BD1), TagePhighter\_23 (BD1), Toma\_22 (BD1), Triste\_22 (BD1),

TuanPN\_22 (BD1), Werner\_22 (BD1), Whatever\_22 (BD1), Yasdnil\_22 (BD1), Zemlya\_23 (BD1),

Start 14:

- Found in 3 of 66 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 3 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Heather\_18 (BB2), RemusLoopin\_18 (BB2), Sebastisaurus\_18 (BB2),

Start 16:

- Found in 2 of 66 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 2 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lilbooboo\_18 (BB1), Vash\_18 (BB1),

Start 17:

- Found in 4 of 66 ( 6.1% ) of genes in pham
- Manual Annotations of this start: 3 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Samora\_18 (BB1), Shawty\_18 (BB1), TG1\_18 (BB1), phiBT1\_49 (BB1),

Start 18:

- Found in 1 of 66 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 1 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Euratis\_18 (BB1),

Start 19:

- Found in 5 of 66 ( 7.6% ) of genes in pham
- Manual Annotations of this start: 2 of 60
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Darolandstone\_21 (BC2), SoJo\_21 (BC1),

Start 20:

- Found in 2 of 66 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 2 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Raleigh\_21 (BC2), ToastyFinz\_20 (BC1),

Start 23:

- Found in 12 of 66 ( 18.2% ) of genes in pham
- Manual Annotations of this start: 8 of 60
- Called 91.7% of time when present
- Phage (with cluster) where this start called: Amela\_22 (BD3), Celery\_25 (BD3), Conan\_23 (BD3), Dexers\_21 (BD3), ElGato\_23 (BD3), Pavo\_23 (BD3), Provolone\_23 (BD3), Vanseggelen\_27 (BD3), Verse\_22 (BD3), Yosif\_23 (BD3), phiCAM\_23 (BD3),

Start 25:

- Found in 4 of 66 ( 6.1% ) of genes in pham

- No Manual Annotations of this start.
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Tubberson\_21 (BC1),

### **Summary by clusters:**

There are 6 clusters represented in this pham: BC1, BD1, BB1, BD3, BB2, BC2,

Info for manual annotations of cluster BB1:

- Start number 16 was manually annotated 2 times for cluster BB1.
- Start number 17 was manually annotated 3 times for cluster BB1.
- Start number 18 was manually annotated 1 time for cluster BB1.

Info for manual annotations of cluster BB2:

- Start number 14 was manually annotated 3 times for cluster BB2.

Info for manual annotations of cluster BC1:

- Start number 19 was manually annotated 1 time for cluster BC1.
- Start number 20 was manually annotated 1 time for cluster BC1.

Info for manual annotations of cluster BC2:

- Start number 19 was manually annotated 1 time for cluster BC2.
- Start number 20 was manually annotated 1 time for cluster BC2.

Info for manual annotations of cluster BD1:

- Start number 12 was manually annotated 39 times for cluster BD1.

Info for manual annotations of cluster BD3:

- Start number 23 was manually annotated 8 times for cluster BD3.

### **Gene Information:**

Gene: Amela\_22 Start: 18357, Stop: 20531, Start Num: 23

Candidate Starts for Amela\_22:

(15, 18318), (Start: 23 @18357 has 8 MA's), (34, 18465), (35, 18507), (55, 18693), (76, 18912), (87, 18990), (89, 19011), (90, 19014), (103, 19122), (105, 19137), (117, 19245), (120, 19269), (124, 19311), (129, 19338), (133, 19365), (160, 19563), (165, 19602), (167, 19635), (176, 19689), (187, 19785), (231, 20073), (261, 20292), (269, 20355), (274, 20397), (279, 20436),

Gene: Asten\_22 Start: 17336, Stop: 19312, Start Num: 12

Candidate Starts for Asten\_22:

(Start: 12 @17336 has 39 MA's), (43, 17639), (53, 17717), (91, 17915), (119, 18080), (124, 18125), (134, 18185), (144, 18251), (157, 18332), (159, 18341), (161, 18371), (198, 18665), (213, 18743), (218, 18782), (221, 18812), (229, 18854), (232, 18881), (252, 19034), (265, 19112), (268, 19133), (270, 19148), (272, 19157), (275, 19187), (277, 19211),

Gene: BarryBee\_24 Start: 17346, Stop: 19322, Start Num: 12

Candidate Starts for BarryBee\_24:

(Start: 12 @17346 has 39 MA's), (43, 17649), (53, 17727), (91, 17925), (119, 18090), (124, 18135), (134, 18195), (144, 18261), (157, 18342), (159, 18351), (161, 18381), (198, 18675), (213, 18753), (218, 18792), (221, 18822), (229, 18864), (232, 18891), (252, 19044), (265, 19122), (268, 19143),

(270, 19158), (272, 19167), (275, 19197), (277, 19221),

Gene: Brataylor\_23 Start: 17360, Stop: 19348, Start Num: 12

Candidate Starts for Brataylor\_23:

(10, 17252), (Start: 12 @17360 has 39 MA's), (21, 17396), (31, 17516), (53, 17735), (73, 17888), (78, 17909), (91, 17942), (96, 17972), (119, 18110), (128, 18179), (133, 18209), (134, 18215), (144, 18284), (157, 18365), (161, 18404), (170, 18482), (177, 18545), (183, 18575), (213, 18776), (225, 18872), (229, 18887), (232, 18914), (247, 19028), (268, 19166), (275, 19220), (282, 19280),

Gene: BryanRecycles\_23 Start: 17521, Stop: 19164, Start Num: 12

Candidate Starts for BryanRecycles\_23:

(Start: 12 @17521 has 39 MA's), (33, 17692), (38, 17764), (42, 17815), (53, 17896), (64, 18007), (144, 18103), (151, 18136), (157, 18184), (159, 18193), (161, 18223), (171, 18304), (181, 18388), (183, 18394), (195, 18490), (197, 18511), (202, 18532), (214, 18601), (217, 18628), (225, 18691), (229, 18706), (231, 18715), (232, 18733), (244, 18829), (258, 18925), (262, 18943), (263, 18952), (268, 18985), (275, 19039), (276, 19045),

Gene: Celery\_25 Start: 18018, Stop: 19919, Start Num: 23

Candidate Starts for Celery\_25:

(Start: 23 @18018 has 8 MA's), (35, 18168), (53, 18327), (94, 18528), (110, 18576), (129, 18744), (147, 18855), (149, 18864), (160, 18960), (166, 19005), (167, 19032), (169, 19041), (176, 19086), (187, 19182), (231, 19470), (256, 19662), (257, 19668), (269, 19749),

Gene: Celeste\_22 Start: 17352, Stop: 19334, Start Num: 12

Candidate Starts for Celeste\_22:

(11, 17322), (Start: 12 @17352 has 39 MA's), (Start: 23 @17412 has 8 MA's), (31, 17505), (53, 17724), (71, 17868), (73, 17877), (78, 17898), (119, 18099), (128, 18168), (133, 18198), (134, 18204), (144, 18273), (157, 18354), (161, 18393), (170, 18471), (213, 18765), (218, 18804), (221, 18834), (225, 18861), (229, 18876), (232, 18903), (233, 18909), (244, 18999), (252, 19056), (265, 19134), (268, 19155), (270, 19170), (275, 19209), (277, 19233), (289, 19320),

Gene: Chucky\_22 Start: 17347, Stop: 19323, Start Num: 12

Candidate Starts for Chucky\_22:

(Start: 12 @17347 has 39 MA's), (43, 17650), (53, 17728), (91, 17926), (119, 18091), (124, 18136), (134, 18196), (144, 18262), (157, 18343), (159, 18352), (161, 18382), (198, 18676), (213, 18754), (218, 18793), (221, 18823), (229, 18865), (232, 18892), (252, 19045), (265, 19123), (268, 19144), (270, 19159), (272, 19168), (275, 19198), (277, 19222),

Gene: Conan\_23 Start: 17786, Stop: 19858, Start Num: 23

Candidate Starts for Conan\_23:

(15, 17747), (Start: 23 @17786 has 8 MA's), (35, 17936), (55, 18122), (63, 18212), (84, 18332), (90, 18362), (104, 18461), (105, 18467), (110, 18500), (117, 18575), (124, 18641), (129, 18668), (149, 18794), (160, 18890), (165, 18929), (166, 18935), (167, 18962), (176, 19016), (187, 19112), (193, 19157), (204, 19223), (220, 19346), (231, 19400), (261, 19619), (269, 19682), (274, 19724), (279, 19763),

Gene: Danzina\_23 Start: 17562, Stop: 19547, Start Num: 12

Candidate Starts for Danzina\_23:

(10, 17454), (Start: 12 @17562 has 39 MA's), (31, 17718), (53, 17937), (73, 18090), (78, 18111), (91, 18144), (113, 18258), (124, 18357), (128, 18381), (133, 18411), (134, 18417), (144, 18486), (157, 18567), (161, 18606), (170, 18684), (213, 18978), (218, 19017), (221, 19047), (225, 19074), (229, 19089), (232, 19116), (233, 19122), (244, 19212), (252, 19269), (265, 19347), (268, 19368), (270, 19383), (275, 19422), (277, 19446), (289, 19533),

Gene: Darolandstone\_21 Start: 16738, Stop: 18312, Start Num: 19

Candidate Starts for Darolandstone\_21:

(Start: 19 @16738 has 2 MA's), (26, 16822), (27, 16825), (30, 16864), (39, 16948), (45, 17002), (46, 17011), (126, 17371), (140, 17425), (176, 17569), (177, 17587), (196, 17629), (211, 17713), (213, 17722), (215, 17737), (221, 17791), (235, 17881), (236, 17884), (238, 17908), (240, 17926), (249, 17989), (252, 18022), (255, 18046), (263, 18094), (265, 18106), (271, 18145), (275, 18184), (281, 18235), (288, 18295),

Gene: Dattran\_23 Start: 17351, Stop: 19336, Start Num: 12

Candidate Starts for Dattran\_23:

(Start: 12 @17351 has 39 MA's), (31, 17507), (53, 17726), (73, 17879), (78, 17900), (119, 18101), (128, 18170), (129, 18173), (133, 18200), (134, 18206), (144, 18275), (157, 18356), (161, 18395), (213, 18767), (218, 18806), (221, 18836), (225, 18863), (229, 18878), (232, 18905), (233, 18911), (252, 19058), (265, 19136), (268, 19157), (270, 19172), (275, 19211), (277, 19235),

Gene: Dexers\_21 Start: 17767, Stop: 19797, Start Num: 23

Candidate Starts for Dexers\_21:

(15, 17728), (Start: 23 @17767 has 8 MA's), (24, 17779), (34, 17875), (35, 17917), (40, 17977), (50, 18031), (53, 18076), (87, 18358), (95, 18409), (127, 18622), (149, 18751), (154, 18772), (155, 18775), (160, 18835), (165, 18874), (166, 18880), (167, 18907), (169, 18916), (187, 19057), (210, 19210), (231, 19345), (244, 19459), (269, 19627), (274, 19669), (279, 19702),

Gene: Dwayne\_22 Start: 17343, Stop: 19310, Start Num: 12

Candidate Starts for Dwayne\_22:

(Start: 12 @17343 has 39 MA's), (43, 17637), (53, 17715), (91, 17913), (119, 18078), (124, 18123), (134, 18183), (144, 18249), (157, 18330), (159, 18339), (161, 18369), (198, 18663), (213, 18741), (218, 18780), (221, 18810), (229, 18852), (232, 18879), (252, 19032), (265, 19110), (268, 19131), (270, 19146), (272, 19155), (275, 19185), (277, 19209),

Gene: Eddasa\_23 Start: 17521, Stop: 19164, Start Num: 12

Candidate Starts for Eddasa\_23:

(Start: 12 @17521 has 39 MA's), (33, 17692), (38, 17764), (42, 17815), (53, 17896), (64, 18007), (144, 18103), (151, 18136), (157, 18184), (159, 18193), (161, 18223), (171, 18304), (181, 18388), (183, 18394), (195, 18490), (197, 18511), (202, 18532), (214, 18601), (217, 18628), (225, 18691), (229, 18706), (231, 18715), (232, 18733), (244, 18829), (258, 18925), (262, 18943), (263, 18952), (268, 18985), (275, 19039), (276, 19045),

Gene: Ejemplo\_22 Start: 17343, Stop: 19334, Start Num: 12

Candidate Starts for Ejemplo\_22:

(Start: 12 @17343 has 39 MA's), (43, 17646), (53, 17724), (73, 17877), (78, 17898), (119, 18099), (144, 18273), (157, 18354), (161, 18393), (198, 18687), (213, 18765), (218, 18804), (221, 18834), (229, 18876), (232, 18903), (233, 18909), (247, 19017), (265, 19134), (268, 19155), (270, 19170), (272, 19179), (275, 19209), (277, 19233),

Gene: ElGato\_23 Start: 17789, Stop: 19504, Start Num: 23

Candidate Starts for ElGato\_23:

(15, 17750), (Start: 23 @17789 has 8 MA's), (35, 17939), (40, 17999), (55, 18125), (84, 18335), (114, 18452), (160, 18536), (166, 18581), (168, 18614), (187, 18758), (193, 18803), (204, 18869), (220, 18992), (231, 19046), (261, 19265), (269, 19328), (274, 19370), (279, 19409),

Gene: Emaanora\_24 Start: 17346, Stop: 19322, Start Num: 12

Candidate Starts for Emaanora\_24:

(Start: 12 @17346 has 39 MA's), (43, 17649), (53, 17727), (91, 17925), (119, 18090), (124, 18135), (134, 18195), (144, 18261), (157, 18342), (159, 18351), (161, 18381), (198, 18675), (213, 18753), (218, 18792), (221, 18822), (229, 18864), (232, 18891), (252, 19044), (265, 19122), (268, 19143), (270, 19158), (272, 19167), (275, 19197), (277, 19221),

Gene: EnochSoames\_24 Start: 17517, Stop: 19160, Start Num: 12

Candidate Starts for EnochSoames\_24:

(Start: 12 @17517 has 39 MA's), (33, 17688), (38, 17760), (42, 17811), (53, 17892), (64, 18003), (144, 18099), (151, 18132), (157, 18180), (159, 18189), (161, 18219), (171, 18300), (181, 18384), (183, 18390), (195, 18486), (197, 18507), (202, 18528), (214, 18597), (217, 18624), (225, 18687), (229, 18702), (231, 18711), (232, 18729), (244, 18825), (258, 18921), (262, 18939), (263, 18948), (268, 18981), (275, 19035), (276, 19041),

Gene: Euratis\_18 Start: 14331, Stop: 16187, Start Num: 18

Candidate Starts for Euratis\_18:

(Start: 18 @14331 has 1 MA's), (24, 14379), (25, 14412), (29, 14436), (39, 14562), (44, 14610), (47, 14634), (51, 14655), (56, 14715), (59, 14745), (72, 14880), (81, 14937), (87, 14967), (101, 15036), (148, 15258), (176, 15393), (177, 15411), (191, 15480), (209, 15579), (221, 15669), (238, 15786), (240, 15804), (244, 15837), (247, 15855), (249, 15867), (252, 15900), (265, 15984), (271, 16023), (275, 16062), (278, 16095), (288, 16173),

Gene: Goby\_22 Start: 17357, Stop: 19342, Start Num: 12

Candidate Starts for Goby\_22:

(Start: 12 @17357 has 39 MA's), (31, 17513), (53, 17732), (73, 17885), (78, 17906), (119, 18107), (128, 18176), (129, 18179), (133, 18206), (134, 18212), (144, 18281), (157, 18362), (161, 18401), (213, 18773), (218, 18812), (221, 18842), (225, 18869), (229, 18884), (232, 18911), (233, 18917), (252, 19064), (265, 19142), (268, 19163), (270, 19178), (275, 19217), (277, 19241),

Gene: Godpower\_23 Start: 17368, Stop: 19353, Start Num: 12

Candidate Starts for Godpower\_23:

(Start: 12 @17368 has 39 MA's), (31, 17524), (53, 17743), (73, 17896), (78, 17917), (119, 18118), (128, 18187), (133, 18217), (134, 18223), (144, 18292), (153, 18340), (157, 18373), (159, 18382), (161, 18412), (170, 18490), (177, 18553), (221, 18853), (229, 18895), (232, 18922), (247, 19036), (265, 19153), (268, 19174), (270, 19189), (275, 19228), (277, 19252), (280, 19261),

Gene: Heather\_18 Start: 14244, Stop: 15737, Start Num: 14

Candidate Starts for Heather\_18:

(Start: 14 @14244 has 3 MA's), (22, 14298), (33, 14409), (36, 14445), (39, 14475), (41, 14502), (44, 14523), (49, 14553), (70, 14664), (134, 14781), (148, 14811), (177, 14958), (198, 15072), (211, 15141), (217, 15183), (221, 15219), (228, 15258), (229, 15264), (234, 15306), (236, 15312), (240, 15354), (247, 15405), (249, 15417), (252, 15450), (253, 15453), (255, 15474), (259, 15501), (264, 15531), (267, 15540), (271, 15573), (273, 15591), (275, 15612), (283, 15675), (286, 15696),

Gene: Hippo\_22 Start: 17346, Stop: 19322, Start Num: 12

Candidate Starts for Hippo\_22:

(Start: 12 @17346 has 39 MA's), (43, 17649), (53, 17727), (91, 17925), (119, 18090), (124, 18135), (134, 18195), (144, 18261), (157, 18342), (159, 18351), (161, 18381), (198, 18675), (213, 18753), (218, 18792), (221, 18822), (229, 18864), (232, 18891), (252, 19044), (265, 19122), (268, 19143), (270, 19158), (272, 19167), (275, 19197), (277, 19221),

Gene: Izzy\_23 Start: 17568, Stop: 19211, Start Num: 12

Candidate Starts for Izzy\_23:



(Start: 12 @17568 has 39 MA's), (33, 17739), (38, 17811), (42, 17862), (53, 17943), (64, 18054), (144, 18150), (151, 18183), (157, 18231), (159, 18240), (161, 18270), (171, 18351), (181, 18435), (183, 18441), (195, 18537), (197, 18558), (202, 18579), (214, 18648), (217, 18675), (225, 18738), (229, 18753), (231, 18762), (232, 18780), (244, 18876), (258, 18972), (262, 18990), (263, 18999), (268, 19032), (275, 19086), (276, 19092),

Gene: Jash\_23 Start: 17521, Stop: 19164, Start Num: 12

Candidate Starts for Jash\_23:

(Start: 12 @17521 has 39 MA's), (33, 17692), (38, 17764), (42, 17815), (53, 17896), (64, 18007), (144, 18103), (151, 18136), (157, 18184), (159, 18193), (161, 18223), (171, 18304), (181, 18388), (183, 18394), (195, 18490), (197, 18511), (202, 18532), (214, 18601), (217, 18628), (225, 18691), (229, 18706), (231, 18715), (232, 18733), (244, 18829), (258, 18925), (262, 18943), (263, 18952), (268, 18985), (275, 19039), (276, 19045),

Gene: Katalie\_23 Start: 17609, Stop: 19588, Start Num: 12

Candidate Starts for Katalie\_23:

(Start: 12 @17609 has 39 MA's), (31, 17771), (53, 17987), (73, 18140), (79, 18164), (91, 18185), (113, 18299), (119, 18353), (133, 18452), (134, 18458), (144, 18527), (157, 18608), (161, 18647), (174, 18755), (181, 18812), (192, 18893), (221, 19088), (225, 19115), (229, 19130), (232, 19157), (233, 19163), (247, 19271), (260, 19355), (265, 19388), (268, 19409), (275, 19463), (277, 19487),

Gene: Lika\_22 Start: 17372, Stop: 19357, Start Num: 12

Candidate Starts for Lika\_22:

(Start: 12 @17372 has 39 MA's), (31, 17528), (53, 17747), (73, 17900), (78, 17921), (119, 18122), (128, 18191), (133, 18221), (134, 18227), (137, 18254), (144, 18296), (153, 18344), (157, 18377), (159, 18386), (161, 18416), (170, 18494), (177, 18557), (221, 18857), (229, 18899), (232, 18926), (247, 19040), (265, 19157), (268, 19178), (270, 19193), (275, 19232), (277, 19256), (280, 19265),

Gene: Lilbooboo\_18 Start: 14344, Stop: 16377, Start Num: 16

Candidate Starts for Lilbooboo\_18:

(Start: 16 @14344 has 2 MA's), (39, 14578), (47, 14650), (48, 14653), (72, 14893), (81, 14950), (94, 15016), (129, 15226), (133, 15250), (136, 15274), (141, 15304), (146, 15328), (175, 15535), (177, 15562), (179, 15568), (181, 15586), (182, 15589), (184, 15595), (191, 15649), (200, 15721), (221, 15859), (229, 15904), (235, 15949), (236, 15952), (240, 15994), (247, 16045), (249, 16057), (250, 16078), (251, 16081), (252, 16090), (255, 16114), (256, 16120), (267, 16180), (275, 16252), (288, 16363),

Gene: Lorelei\_22 Start: 17342, Stop: 19327, Start Num: 12

Candidate Starts for Lorelei\_22:

(10, 17234), (Start: 12 @17342 has 39 MA's), (31, 17498), (53, 17717), (78, 17891), (96, 17954), (144, 18266), (157, 18347), (159, 18356), (161, 18386), (221, 18827), (229, 18869), (232, 18896), (233, 18902), (244, 18992), (247, 19010), (265, 19127), (268, 19148), (270, 19163), (272, 19172), (275, 19202), (277, 19226), (280, 19235),

Gene: Maneekul\_22 Start: 17342, Stop: 19333, Start Num: 12

Candidate Starts for Maneekul\_22:

(Start: 12 @17342 has 39 MA's), (43, 17645), (53, 17723), (73, 17876), (78, 17897), (119, 18098), (144, 18272), (157, 18353), (161, 18392), (170, 18470), (177, 18533), (183, 18563), (198, 18686), (213, 18764), (218, 18803), (221, 18833), (229, 18875), (232, 18902), (233, 18908), (247, 19016), (265, 19133), (268, 19154), (270, 19169), (272, 19178), (275, 19208), (277, 19232),

Gene: Nabi\_22 Start: 17342, Stop: 19327, Start Num: 12

Candidate Starts for Nabi\_22:

(10, 17234), (Start: 12 @17342 has 39 MA's), (31, 17498), (53, 17717), (78, 17891), (96, 17954), (144, 18266), (157, 18347), (159, 18356), (161, 18386), (221, 18827), (229, 18869), (232, 18896), (233, 18902), (244, 18992), (247, 19010), (265, 19127), (268, 19148), (270, 19163), (272, 19172), (275, 19202), (277, 19226), (280, 19235),

Gene: Oliynyk\_23 Start: 17521, Stop: 19164, Start Num: 12

Candidate Starts for Oliynyk\_23:

(Start: 12 @17521 has 39 MA's), (33, 17692), (38, 17764), (42, 17815), (53, 17896), (64, 18007), (144, 18103), (151, 18136), (157, 18184), (159, 18193), (161, 18223), (171, 18304), (181, 18388), (183, 18394), (195, 18490), (197, 18511), (202, 18532), (214, 18601), (217, 18628), (225, 18691), (229, 18706), (231, 18715), (232, 18733), (244, 18829), (258, 18925), (262, 18943), (263, 18952), (268, 18985), (275, 19039), (276, 19045),

Gene: OzzyJ\_23 Start: 17337, Stop: 19313, Start Num: 12

Candidate Starts for OzzyJ\_23:

(Start: 12 @17337 has 39 MA's), (43, 17640), (53, 17718), (91, 17916), (119, 18081), (124, 18126), (134, 18186), (144, 18252), (157, 18333), (159, 18342), (161, 18372), (198, 18666), (213, 18744), (218, 18783), (221, 18813), (229, 18855), (232, 18882), (252, 19035), (265, 19113), (268, 19134), (270, 19149), (272, 19158), (275, 19188), (277, 19212),

Gene: Pavo\_23 Start: 18059, Stop: 20131, Start Num: 23

Candidate Starts for Pavo\_23:

(15, 18020), (Start: 23 @18059 has 8 MA's), (35, 18209), (55, 18395), (63, 18485), (84, 18605), (90, 18635), (104, 18734), (105, 18740), (110, 18773), (117, 18848), (124, 18914), (129, 18941), (149, 19067), (160, 19163), (165, 19202), (166, 19208), (167, 19235), (176, 19289), (187, 19385), (193, 19430), (204, 19496), (220, 19619), (231, 19673), (261, 19892), (269, 19955), (274, 19997), (279, 20036),

Gene: Provolone\_23 Start: 17789, Stop: 19504, Start Num: 23

Candidate Starts for Provolone\_23:

(15, 17750), (Start: 23 @17789 has 8 MA's), (35, 17939), (40, 17999), (55, 18125), (84, 18335), (114, 18452), (160, 18536), (166, 18581), (168, 18614), (187, 18758), (193, 18803), (204, 18869), (220, 18992), (231, 19046), (261, 19265), (269, 19328), (274, 19370), (279, 19409),

Gene: Raleigh\_21 Start: 16919, Stop: 18523, Start Num: 20

Candidate Starts for Raleigh\_21:

(1, 16298), (2, 16394), (3, 16436), (4, 16517), (5, 16529), (6, 16652), (9, 16676), (Start: 19 @16916 has 2 MA's), (Start: 20 @16919 has 2 MA's), (28, 17018), (30, 17042), (39, 17126), (45, 17180), (47, 17198), (126, 17567), (140, 17621), (177, 17783), (211, 17909), (226, 18017), (234, 18074), (235, 18077), (246, 18182), (265, 18317), (269, 18350), (288, 18503), (290, 18515),

Gene: Rana\_22 Start: 17342, Stop: 19327, Start Num: 12

Candidate Starts for Rana\_22:

(10, 17234), (Start: 12 @17342 has 39 MA's), (31, 17498), (53, 17717), (78, 17891), (96, 17954), (144, 18266), (157, 18347), (159, 18356), (161, 18386), (221, 18827), (229, 18869), (232, 18896), (233, 18902), (244, 18992), (247, 19010), (265, 19127), (268, 19148), (270, 19163), (272, 19172), (275, 19202), (277, 19226), (280, 19235),

Gene: RedBear\_24 Start: 17609, Stop: 19588, Start Num: 12

Candidate Starts for RedBear\_24:

(Start: 12 @17609 has 39 MA's), (31, 17771), (53, 17987), (73, 18140), (79, 18164), (91, 18185), (113, 18299), (119, 18353), (133, 18452), (134, 18458), (144, 18527), (157, 18608), (161, 18647), (174, 18755), (181, 18812), (192, 18893), (221, 19088), (225, 19115), (229, 19130), (232, 19157), (233,

19163), (247, 19271), (260, 19355), (265, 19388), (268, 19409), (275, 19463), (277, 19487),

Gene: RemusLoopin\_18 Start: 14319, Stop: 16106, Start Num: 14

Candidate Starts for RemusLoopin\_18:

(Start: 14 @14319 has 3 MA's), (22, 14373), (33, 14484), (39, 14550), (41, 14577), (62, 14721), (66, 14754), (68, 14787), (70, 14793), (78, 14841), (81, 14862), (94, 14928), (106, 14973), (107, 14976), (111, 15000), (140, 15171), (177, 15327), (198, 15441), (217, 15552), (221, 15588), (234, 15675), (236, 15681), (240, 15723), (247, 15774), (249, 15786), (252, 15819), (254, 15834), (255, 15843), (259, 15870), (263, 15891), (265, 15903), (271, 15942), (275, 15981), (281, 16032), (283, 16044),

Gene: Rusticus\_23 Start: 17521, Stop: 19164, Start Num: 12

Candidate Starts for Rusticus\_23:

(Start: 12 @17521 has 39 MA's), (33, 17692), (38, 17764), (42, 17815), (53, 17896), (64, 18007), (144, 18103), (151, 18136), (157, 18184), (159, 18193), (161, 18223), (171, 18304), (181, 18388), (183, 18394), (195, 18490), (197, 18511), (202, 18532), (214, 18601), (217, 18628), (225, 18691), (229, 18706), (231, 18715), (232, 18733), (244, 18829), (258, 18925), (262, 18943), (263, 18952), (268, 18985), (275, 19039), (276, 19045),

Gene: Samora\_18 Start: 14521, Stop: 16503, Start Num: 17

Candidate Starts for Samora\_18:

(13, 14509), (Start: 17 @14521 has 3 MA's), (34, 14671), (39, 14755), (47, 14827), (48, 14830), (59, 14938), (80, 15112), (81, 15118), (88, 15151), (131, 15397), (138, 15442), (150, 15496), (172, 15646), (189, 15748), (194, 15781), (203, 15835), (209, 15871), (211, 15886), (221, 15961), (235, 16051), (236, 16054), (249, 16171), (275, 16366), (288, 16483),

Gene: SarahRose\_22 Start: 17343, Stop: 19319, Start Num: 12

Candidate Starts for SarahRose\_22:

(Start: 12 @17343 has 39 MA's), (43, 17646), (53, 17724), (91, 17922), (119, 18087), (124, 18132), (134, 18192), (144, 18258), (157, 18339), (159, 18348), (161, 18378), (198, 18672), (213, 18750), (218, 18789), (221, 18819), (229, 18861), (232, 18888), (252, 19041), (265, 19119), (268, 19140), (270, 19155), (272, 19164), (275, 19194), (277, 19218),

Gene: Sebastisaurus\_18 Start: 14267, Stop: 16123, Start Num: 14

Candidate Starts for Sebastisaurus\_18:

(Start: 14 @14267 has 3 MA's), (36, 14468), (39, 14498), (41, 14525), (44, 14546), (59, 14675), (60, 14681), (65, 14738), (72, 14807), (77, 14834), (81, 14864), (85, 14885), (92, 14909), (122, 15092), (130, 15149), (148, 15194), (156, 15209), (171, 15305), (177, 15347), (198, 15461), (202, 15476), (209, 15515), (223, 15629), (228, 15644), (236, 15698), (240, 15740), (247, 15791), (248, 15797), (249, 15803), (252, 15836), (255, 15860), (256, 15866), (265, 15920), (271, 15959), (275, 15998), (281, 16049), (283, 16061),

Gene: Shawty\_18 Start: 14444, Stop: 16054, Start Num: 17

Candidate Starts for Shawty\_18:

(Start: 17 @14444 has 3 MA's), (22, 14480), (39, 14678), (47, 14750), (48, 14753), (57, 14837), (59, 14861), (60, 14867), (70, 14948), (94, 15062), (97, 15068), (116, 15191), (123, 15224), (125, 15251), (128, 15266), (132, 15293), (143, 15362), (156, 15416), (164, 15485), (171, 15536), (185, 15623), (186, 15635), (188, 15653), (195, 15704), (201, 15734), (206, 15752), (207, 15767), (208, 15770), (215, 15815), (216, 15827), (219, 15845), (221, 15869), (227, 15902), (234, 15950), (237, 15965),

Gene: Snorlax\_22 Start: 17346, Stop: 19322, Start Num: 12

Candidate Starts for Snorlax\_22:

(Start: 12 @17346 has 39 MA's), (43, 17649), (53, 17727), (91, 17925), (119, 18090), (124, 18135), (134, 18195), (144, 18261), (157, 18342), (159, 18351), (161, 18381), (198, 18675), (213, 18753),

(218, 18792), (221, 18822), (229, 18864), (232, 18891), (252, 19044), (265, 19122), (268, 19143), (270, 19158), (272, 19167), (275, 19197), (277, 19221),

Gene: SoJo\_21 Start: 16588, Stop: 18240, Start Num: 19

Candidate Starts for SoJo\_21:

(Start: 19 @16588 has 2 MA's), (22, 16621), (25, 16669), (26, 16672), (30, 16714), (39, 16798), (41, 16825), (45, 16852), (47, 16870), (48, 16873), (57, 16951), (60, 16981), (126, 17221), (148, 17284), (177, 17449), (196, 17557), (211, 17641), (221, 17719), (231, 17773), (235, 17809), (236, 17812), (238, 17836), (240, 17854), (250, 17938), (252, 17950), (263, 18022), (265, 18034), (267, 18040), (271, 18073), (275, 18112), (288, 18223),

Gene: South40\_23 Start: 17609, Stop: 19588, Start Num: 12

Candidate Starts for South40\_23:

(Start: 12 @17609 has 39 MA's), (31, 17771), (53, 17987), (73, 18140), (79, 18164), (91, 18185), (113, 18299), (119, 18353), (133, 18452), (134, 18458), (144, 18527), (157, 18608), (161, 18647), (174, 18755), (181, 18812), (192, 18893), (221, 19088), (225, 19115), (229, 19130), (232, 19157), (233, 19163), (247, 19271), (260, 19355), (265, 19388), (268, 19409), (275, 19463), (277, 19487),

Gene: Sujidade\_23 Start: 17648, Stop: 19633, Start Num: 12

Candidate Starts for Sujidade\_23:

(Start: 12 @17648 has 39 MA's), (31, 17804), (53, 18023), (73, 18176), (78, 18197), (119, 18398), (128, 18467), (129, 18470), (133, 18497), (134, 18503), (144, 18572), (153, 18620), (157, 18653), (161, 18692), (213, 19064), (218, 19103), (221, 19133), (225, 19160), (229, 19175), (232, 19202), (233, 19208), (244, 19298), (252, 19355), (265, 19433), (268, 19454), (270, 19469), (275, 19508), (277, 19532),

Gene: TG1\_18 Start: 14295, Stop: 15701, Start Num: 17

Candidate Starts for TG1\_18:

(Start: 17 @14295 has 3 MA's), (25, 14376), (29, 14400), (32, 14427), (39, 14526), (41, 14553), (54, 14655), (56, 14679), (109, 14898), (115, 14940), (123, 14982), (143, 15012), (162, 15120), (163, 15132), (180, 15255), (206, 15399), (207, 15414), (208, 15417), (216, 15474), (221, 15516), (227, 15549), (234, 15597), (239, 15633),

Gene: TagePhighter\_23 Start: 17346, Stop: 19322, Start Num: 12

Candidate Starts for TagePhighter\_23:

(Start: 12 @17346 has 39 MA's), (43, 17649), (53, 17727), (91, 17925), (119, 18090), (124, 18135), (134, 18195), (144, 18261), (157, 18342), (159, 18351), (161, 18381), (198, 18675), (213, 18753), (218, 18792), (221, 18822), (229, 18864), (232, 18891), (252, 19044), (265, 19122), (268, 19143), (270, 19158), (272, 19167), (275, 19197), (277, 19221),

Gene: ToastyFinz\_20 Start: 16273, Stop: 17871, Start Num: 20

Candidate Starts for ToastyFinz\_20:

(Start: 19 @16270 has 2 MA's), (Start: 20 @16273 has 2 MA's), (28, 16372), (30, 16396), (37, 16453), (39, 16480), (44, 16528), (45, 16534), (47, 16552), (49, 16558), (61, 16678), (215, 17287), (217, 17305), (221, 17341), (228, 17380), (230, 17389), (235, 17431), (236, 17434), (238, 17458), (249, 17539), (251, 17563), (252, 17572), (266, 17659), (271, 17695), (275, 17734), (283, 17803), (288, 17851),

Gene: Toma\_22 Start: 17357, Stop: 19342, Start Num: 12

Candidate Starts for Toma\_22:

(Start: 12 @17357 has 39 MA's), (31, 17513), (53, 17732), (73, 17885), (78, 17906), (119, 18107), (128, 18176), (129, 18179), (133, 18206), (134, 18212), (144, 18281), (157, 18362), (161, 18401), (213, 18773), (218, 18812), (221, 18842), (225, 18869), (229, 18884), (232, 18911), (233, 18917),

(252, 19064), (265, 19142), (268, 19163), (270, 19178), (275, 19217), (277, 19241),

Gene: Triste\_22 Start: 17337, Stop: 19313, Start Num: 12

Candidate Starts for Triste\_22:

(Start: 12 @17337 has 39 MA's), (43, 17640), (53, 17718), (91, 17916), (119, 18081), (124, 18126), (134, 18186), (144, 18252), (157, 18333), (159, 18342), (161, 18372), (198, 18666), (213, 18744), (218, 18783), (221, 18813), (229, 18855), (232, 18882), (252, 19035), (265, 19113), (268, 19134), (270, 19149), (272, 19158), (275, 19188), (277, 19212),

Gene: TuanPN\_22 Start: 17343, Stop: 19334, Start Num: 12

Candidate Starts for TuanPN\_22:

(Start: 12 @17343 has 39 MA's), (43, 17646), (53, 17724), (73, 17877), (78, 17898), (119, 18099), (144, 18273), (157, 18354), (161, 18393), (198, 18687), (213, 18765), (218, 18804), (221, 18834), (229, 18876), (232, 18903), (233, 18909), (247, 19017), (265, 19134), (268, 19155), (270, 19170), (272, 19179), (275, 19209), (277, 19233),

Gene: Tubberson\_21 Start: 16668, Stop: 18239, Start Num: 25

Candidate Starts for Tubberson\_21:

(Start: 19 @16587 has 2 MA's), (22, 16620), (25, 16668), (26, 16671), (30, 16713), (39, 16797), (41, 16824), (45, 16851), (47, 16869), (48, 16872), (57, 16950), (60, 16980), (126, 17220), (148, 17283), (177, 17448), (196, 17556), (211, 17640), (221, 17718), (231, 17772), (235, 17808), (236, 17811), (238, 17835), (240, 17853), (250, 17937), (252, 17949), (263, 18021), (265, 18033), (267, 18039), (271, 18072), (275, 18111), (288, 18222),

Gene: Vanseggelen\_27 Start: 17719, Stop: 19728, Start Num: 23

Candidate Starts for Vanseggelen\_27:

(Start: 23 @17719 has 8 MA's), (38, 17896), (55, 18058), (67, 18184), (93, 18316), (98, 18337), (99, 18343), (110, 18376), (119, 18469), (124, 18517), (129, 18544), (160, 18769), (165, 18808), (166, 18814), (167, 18841), (176, 18895), (187, 18991), (190, 19012), (193, 19036), (231, 19279), (256, 19471), (257, 19477), (269, 19558), (280, 19636),

Gene: Vash\_18 Start: 14304, Stop: 16169, Start Num: 16

Candidate Starts for Vash\_18:

(13, 14292), (Start: 16 @14304 has 2 MA's), (39, 14538), (41, 14565), (47, 14610), (48, 14613), (69, 14838), (72, 14856), (75, 14877), (81, 14913), (94, 14979), (100, 15009), (106, 15024), (107, 15027), (112, 15081), (169, 15342), (171, 15351), (177, 15393), (181, 15402), (198, 15507), (209, 15561), (221, 15651), (222, 15666), (229, 15696), (233, 15729), (236, 15744), (240, 15786), (245, 15822), (247, 15837), (249, 15849), (252, 15882), (255, 15906), (275, 16044), (281, 16095), (283, 16107), (288, 16155),

Gene: Verse\_22 Start: 18351, Stop: 20525, Start Num: 23

Candidate Starts for Verse\_22:

(15, 18312), (Start: 23 @18351 has 8 MA's), (34, 18459), (35, 18501), (55, 18687), (63, 18777), (76, 18906), (87, 18984), (89, 19005), (90, 19008), (103, 19116), (105, 19131), (117, 19239), (120, 19263), (124, 19305), (129, 19332), (133, 19359), (153, 19482), (160, 19557), (165, 19596), (167, 19629), (176, 19683), (187, 19779), (231, 20067), (261, 20286), (269, 20349), (274, 20391), (279, 20430),

Gene: Werner\_22 Start: 17347, Stop: 19323, Start Num: 12

Candidate Starts for Werner\_22:

(Start: 12 @17347 has 39 MA's), (43, 17650), (53, 17728), (91, 17926), (119, 18091), (124, 18136), (134, 18196), (144, 18262), (157, 18343), (159, 18352), (161, 18382), (198, 18676), (199, 18679), (213, 18754), (218, 18793), (221, 18823), (229, 18865), (232, 18892), (252, 19045), (265, 19123), (268, 19144), (270, 19159), (272, 19168), (275, 19198), (277, 19222),

Gene: Whatever\_22 Start: 17347, Stop: 19323, Start Num: 12

Candidate Starts for Whatever\_22:

(Start: 12 @17347 has 39 MA's), (43, 17650), (53, 17728), (91, 17926), (119, 18091), (124, 18136), (134, 18196), (144, 18262), (157, 18343), (159, 18352), (161, 18382), (198, 18676), (213, 18754), (218, 18793), (221, 18823), (229, 18865), (232, 18892), (252, 19045), (265, 19123), (268, 19144), (270, 19159), (272, 19168), (275, 19198), (277, 19222),

Gene: Yasdniil\_22 Start: 17339, Stop: 19330, Start Num: 12

Candidate Starts for Yasdniil\_22:

(Start: 12 @17339 has 39 MA's), (43, 17642), (53, 17720), (73, 17873), (78, 17894), (93, 17942), (119, 18095), (144, 18269), (157, 18350), (161, 18389), (198, 18683), (213, 18761), (218, 18800), (221, 18830), (229, 18872), (232, 18899), (233, 18905), (247, 19013), (265, 19130), (268, 19151), (270, 19166), (272, 19175), (275, 19205), (277, 19229),

Gene: Yosif\_23 Start: 18289, Stop: 20154, Start Num: 23

Candidate Starts for Yosif\_23:

(Start: 23 @18289 has 8 MA's), (37, 18442), (52, 18550), (55, 18595), (58, 18607), (62, 18661), (94, 18826), (102, 18847), (117, 18949), (118, 18958), (119, 18967), (129, 19042), (139, 19126), (152, 19132), (160, 19180), (166, 19225), (167, 19252), (169, 19261), (176, 19306), (187, 19402), (192, 19444), (205, 19519), (212, 19567), (269, 19972), (276, 20023), (287, 20113),

Gene: Zemlya\_23 Start: 17368, Stop: 19353, Start Num: 12

Candidate Starts for Zemlya\_23:

(Start: 12 @17368 has 39 MA's), (31, 17524), (53, 17743), (73, 17896), (78, 17917), (119, 18118), (128, 18187), (133, 18217), (134, 18223), (144, 18292), (157, 18373), (161, 18412), (213, 18784), (217, 18817), (218, 18823), (221, 18853), (225, 18880), (229, 18895), (232, 18922), (233, 18928), (244, 19018), (252, 19075), (265, 19153), (270, 19189), (275, 19228), (277, 19252), (289, 19339),

Gene: phiBT1\_49 Start: 14512, Stop: 16590, Start Num: 17

Candidate Starts for phiBT1\_49:

(13, 14500), (Start: 17 @14512 has 3 MA's), (36, 14716), (39, 14746), (47, 14818), (48, 14821), (74, 15070), (80, 15103), (81, 15109), (88, 15142), (100, 15205), (106, 15220), (111, 15247), (112, 15277), (125, 15385), (136, 15454), (145, 15517), (162, 15616), (173, 15724), (178, 15769), (215, 16003), (221, 16057), (224, 16087), (229, 16105), (242, 16231), (243, 16234), (256, 16333), (265, 16390), (278, 16498), (283, 16528), (285, 16546), (288, 16570),

Gene: phiCAM\_23 Start: 20017, Stop: 21960, Start Num: 23

Candidate Starts for phiCAM\_23:

(7, 19699), (8, 19702), (Start: 23 @20017 has 8 MA's), (35, 20167), (53, 20326), (82, 20536), (83, 20545), (86, 20560), (88, 20569), (108, 20659), (121, 20770), (135, 20860), (142, 20902), (158, 20968), (160, 20998), (165, 21037), (166, 21043), (167, 21070), (169, 21079), (176, 21124), (179, 21163), (187, 21220), (190, 21241), (205, 21337), (231, 21508), (241, 21598), (244, 21622), (256, 21700), (269, 21790), (284, 21910), (287, 21919),