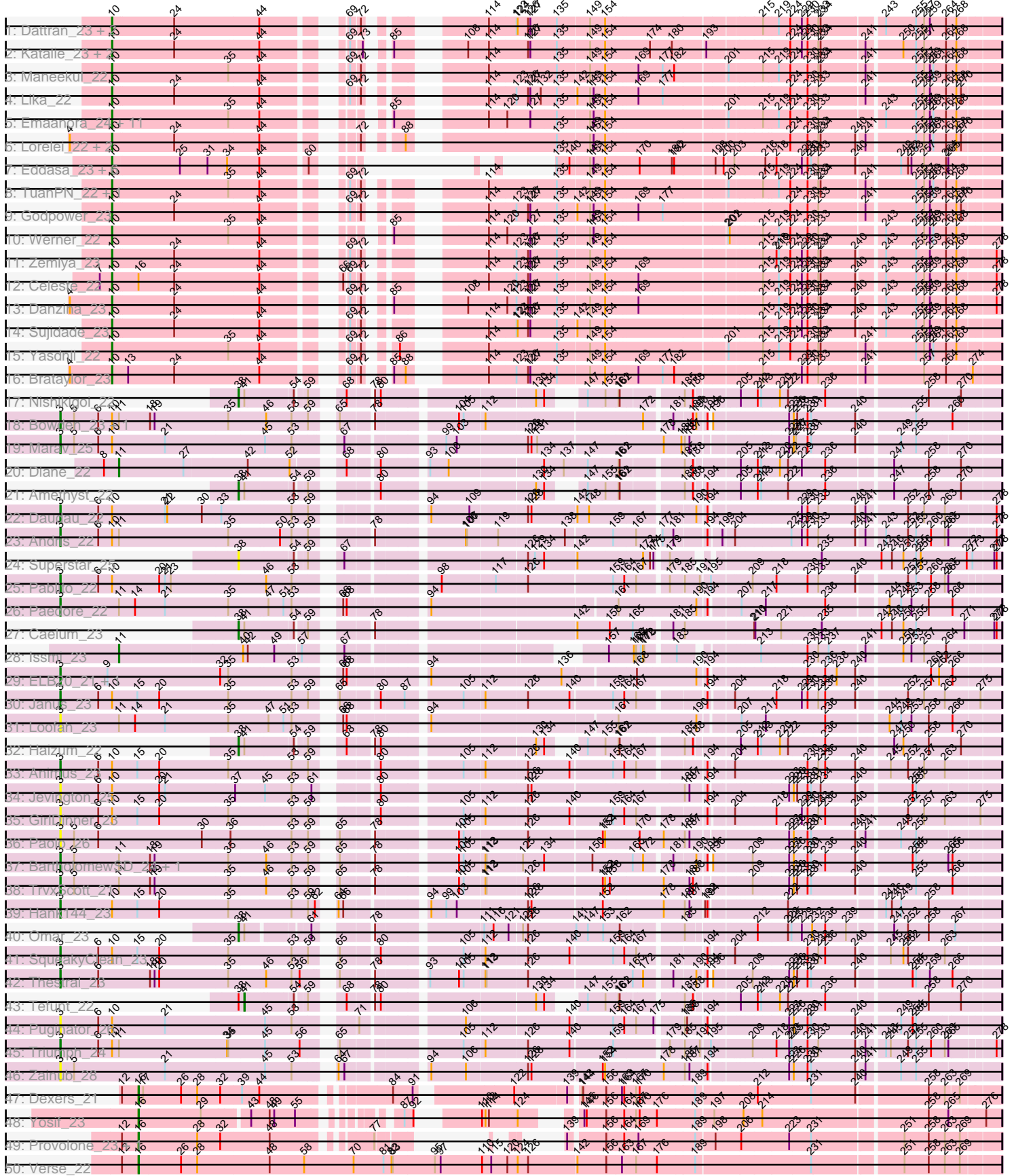


Pham 163538





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 163538 Report

This analysis was run 04/28/24 on database version 559.

Pham number 163538 has 84 members, 14 are drafts.

Phages represented in each track:

- Track 1 : Dattran\_23, Goby\_22, Toma\_22
- Track 2 : Katalie\_23, RedBear\_24, South40\_23
- Track 3 : Maneekul\_22
- Track 4 : Lika\_22
- Track 5 : Emaanora\_24, TagePhighter\_23, Asten\_22, OzzyJ\_23, Hippo\_22, BarryBee\_24, Dwayne\_22, SarahRose\_22, Chucky\_22, Whatever\_22, Snorlax\_22, Triste\_22
- Track 6 : Lorelei\_22, Nabi\_22, Rana\_22
- Track 7 : Eddasa\_23, EnochSoames\_24, Izzy\_23, Oliynyk\_23, Jash\_23, BryanRecycles\_23, Rusticus\_23
- Track 8 : TuanPN\_22, Ejemplo\_22
- Track 9 : Godpower\_23
- Track 10 : Werner\_22
- Track 11 : Zemlya\_23
- Track 12 : Celeste\_22
- Track 13 : Danzina\_23
- Track 14 : Sujidade\_23
- Track 15 : Yasdnil\_22
- Track 16 : Brataylor\_23
- Track 17 : Nishikigoi\_22
- Track 18 : Bowden\_23, TinaBelcher\_22
- Track 19 : Marav\_25
- Track 20 : Diane\_22
- Track 21 : Amethyst\_22
- Track 22 : Daudau\_22
- Track 23 : Andris\_22
- Track 24 : Superstar\_25
- Track 25 : Pablito\_22
- Track 26 : Paedore\_22
- Track 27 : Caelum\_23
- Track 28 : Issmi\_23
- Track 29 : ELB20\_21, R4\_22
- Track 30 : Janus\_23
- Track 31 : Loofah\_23
- Track 32 : Haizum\_22
- Track 33 : Animus\_23
- Track 34 : Jevington\_25

- Track 35 : GirlDinner\_23
- Track 36 : Paolo\_26
- Track 37 : BartholomewSD\_24, Alvy\_24
- Track 38 : TrvxScott\_21
- Track 39 : Hank144\_23
- Track 40 : Omar\_23
- Track 41 : SqueakyClean\_23
- Track 42 : Thestral\_23
- Track 43 : Tefunt\_22
- Track 44 : Puginator\_26
- Track 45 : Triumph\_24
- Track 46 : Zainub\_28
- Track 47 : Dexers\_21
- Track 48 : Yosif\_23
- Track 49 : Provolone\_23, ElGato\_24
- Track 50 : Verse\_22
- Track 51 : Amela\_22
- Track 52 : Vanseggelen\_27
- Track 53 : Alsaber\_23
- Track 54 : Celery\_25
- Track 55 : phiCAM\_23
- Track 56 : Conan\_25

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

The start number called the most often in the published annotations is 10, it was called in 38 of the 70 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:

- Andris\_22, Animus\_23, Bowden\_23, Daudau\_22, GirlDinner\_23, Hank144\_23, Janus\_23, Jevington\_25, Marav\_25, Pablito\_22, Puginator\_26, SqueakyClean\_23, TinaBelcher\_22, Triumph\_24,

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

- Alsaber\_23, Alvy\_24, Amela\_22, Amethyst\_22, BartholomewSD\_24, Caelum\_23, Celery\_25, Conan\_25, Dexers\_21, Diane\_22, ELB20\_21, ElGato\_24, Haizum\_22, Issmi\_23, Loofah\_23, Nishikigoi\_22, Omar\_23, Paedore\_22, Paolo\_26, Provolone\_23, R4\_22, Superstar\_25, Tefunt\_22, Thestral\_23, TrvxScott\_21, Vanseggelen\_27, Verse\_22, Yosif\_23, Zainub\_28, phiCAM\_23,

**Summary by start number:**

Start 3:

- Found in 24 of 84 ( 28.6% ) of genes in pham
- Manual Annotations of this start: 18 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alvy\_24 (BD2), Andris\_22 (BD2), Animus\_23 (BD2), BartholomewSD\_24 (BD2), Bowden\_23 (BD2), Daudau\_22 (BD2), ELB20\_21 (BD2), GirlDinner\_23 (BD2), Hank144\_23 (BD2), Janus\_23 (BD2), Jevington\_25 (BD2), Loofah\_23 (BD2), Marav\_25 (BD2), Pablito\_22 (BD2), Paedore\_22 (BD2), Paolo\_26 (BD2), Puginator\_26 (BD2), R4\_22 (BD2), SqueakyClean\_23 (BD2), Thestral\_23 (BD2), TinaBelcher\_22 (BD2), Triumph\_24 (BD2), TrvxScott\_21 (BD2), Zainub\_28 (BD2),

Start 10:

- Found in 54 of 84 ( 64.3% ) of genes in pham
- Manual Annotations of this start: 38 of 70
- Called 74.1% 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 11:

- Found in 11 of 84 ( 13.1% ) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 18.2% of time when present
- Phage (with cluster) where this start called: Diane\_22 (BD2), Issmi\_23 (BD2),

Start 16:

- Found in 12 of 84 ( 14.3% ) of genes in pham
- Manual Annotations of this start: 6 of 70
- Called 91.7% of time when present
- Phage (with cluster) where this start called: Alsaber\_23 (BD3), Amela\_22 (BD3), Celery\_25 (BD3), Conan\_25 (BD3), Dexers\_21 (BD3), ElGato\_24 (BD3), Provolone\_23 (BD3), Vanseggelen\_27 (BD3), Verse\_22 (BD3), Yosif\_23 (BD3), phiCAM\_23 (BD3),

Start 38:

- Found in 7 of 84 ( 8.3% ) of genes in pham
- Manual Annotations of this start: 5 of 70
- Called 85.7% of time when present
- Phage (with cluster) where this start called: Amethyst\_22 (BD2), Caelum\_23 (BD2), Haizum\_22 (BD2), Nishikigoi\_22 (BD2), Omar\_23 (BD2), Superstar\_25 (BD2),

Start 41:

- Found in 6 of 84 ( 7.1% ) of genes in pham

- Manual Annotations of this start: 1 of 70
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Tefunt\_22 (BD2),

### Summary by clusters:

There are 3 clusters represented in this pham: BD1, BD3, BD2,

Info for manual annotations of cluster BD1:

- Start number 10 was manually annotated 38 times for cluster BD1.

Info for manual annotations of cluster BD2:

- Start number 3 was manually annotated 18 times for cluster BD2.
- Start number 11 was manually annotated 2 times for cluster BD2.
- Start number 38 was manually annotated 5 times for cluster BD2.
- Start number 41 was manually annotated 1 time for cluster BD2.

Info for manual annotations of cluster BD3:

- Start number 16 was manually annotated 6 times for cluster BD3.

### Gene Information:

Gene: Alsaber\_23 Start: 18064, Stop: 19866, Start Num: 16

Candidate Starts for Alsaber\_23:

(12, 18025), (Start: 16 @18064 has 6 MA's), (17, 18076), (26, 18172), (28, 18214), (32, 18274), (44, 18373), (75, 18589), (156, 18904), (160, 18925), (164, 18949), (169, 18982), (180, 19069), (189, 19126), (212, 19279), (218, 19327), (223, 19360), (231, 19414), (258, 19696), (263, 19738), (269, 19771),

Gene: Alvy\_24 Start: 17376, Stop: 19559, Start Num: 3

Candidate Starts for Alvy\_24:

(Start: 3 @17376 has 18 MA's), (5, 17412), (Start: 11 @17529 has 2 MA's), (18, 17610), (19, 17622), (35, 17811), (46, 17904), (53, 17970), (59, 18012), (65, 18045), (78, 18111), (104, 18297), (105, 18309), (112, 18360), (113, 18363), (125, 18453), (134, 18504), (150, 18618), (165, 18717), (172, 18744), (181, 18804), (190, 18858), (194, 18879), (196, 18882), (209, 18969), (223, 19059), (226, 19068), (230, 19104), (231, 19113), (236, 19149), (240, 19227), (254, 19353), (255, 19362), (265, 19443), (266, 19452),

Gene: Amela\_22 Start: 18357, Stop: 20531, Start Num: 16

Candidate Starts for Amela\_22:

(12, 18318), (Start: 16 @18357 has 6 MA's), (26, 18465), (28, 18507), (48, 18693), (70, 18912), (81, 18990), (82, 19011), (83, 19014), (95, 19122), (97, 19137), (110, 19245), (115, 19269), (120, 19311), (124, 19338), (126, 19365), (156, 19563), (163, 19602), (167, 19635), (176, 19689), (189, 19785), (231, 20073), (251, 20292), (258, 20355), (263, 20397), (269, 20436),

Gene: Amethyst\_22 Start: 17833, Stop: 19476, Start Num: 38

Candidate Starts for Amethyst\_22:

(Start: 38 @17833 has 5 MA's), (Start: 41 @17845 has 1 MA's), (54, 17953), (59, 17974), (80, 18094), (130, 18445), (134, 18466), (147, 18514), (155, 18559), (161, 18592), (162, 18595), (185, 18736), (188, 18757), (194, 18781), (205, 18853), (212, 18895), (213, 18904), (222, 18970), (236, 19063), (247, 19219), (258, 19306), (270, 19381),

Gene: Andris\_22 Start: 17081, Stop: 19264, Start Num: 3

Candidate Starts for Andris\_22:

(Start: 3 @17081 has 18 MA's), (6, 17180), (Start: 10 @17216 has 38 MA's), (Start: 11 @17234 has 2 MA's), (35, 17516), (50, 17645), (53, 17675), (59, 17717), (78, 17822), (106, 18023), (107, 18026), (119, 18101), (138, 18260), (159, 18377), (167, 18434), (177, 18485), (181, 18512), (194, 18587), (199, 18617), (204, 18641), (225, 18773), (229, 18797), (230, 18812), (233, 18839), (240, 18935), (241, 18953), (243, 18992), (252, 19049), (255, 19070), (260, 19109), (263, 19142), (265, 19151), (278, 19250),

Gene: Animus\_23 Start: 17417, Stop: 19603, Start Num: 3

Candidate Starts for Animus\_23:

(Start: 3 @17417 has 18 MA's), (6, 17513), (Start: 10 @17549 has 38 MA's), (15, 17615), (20, 17672), (35, 17849), (53, 18008), (59, 18050), (80, 18164), (105, 18347), (112, 18398), (126, 18500), (140, 18605), (159, 18710), (164, 18737), (167, 18767), (194, 18920), (204, 18971), (230, 19145), (233, 19172), (236, 19190), (240, 19268), (245, 19337), (252, 19382), (257, 19424), (263, 19478),

Gene: Asten\_22 Start: 17336, Stop: 19312, Start Num: 10

Candidate Starts for Asten\_22:

(Start: 10 @17336 has 38 MA's), (35, 17639), (44, 17717), (85, 17915), (114, 18080), (120, 18125), (127, 18185), (135, 18251), (149, 18332), (151, 18341), (154, 18371), (201, 18665), (215, 18743), (219, 18782), (224, 18812), (230, 18854), (233, 18881), (243, 19034), (255, 19112), (257, 19133), (259, 19148), (261, 19157), (264, 19187), (268, 19211),

Gene: BarryBee\_24 Start: 17346, Stop: 19322, Start Num: 10

Candidate Starts for BarryBee\_24:

(Start: 10 @17346 has 38 MA's), (35, 17649), (44, 17727), (85, 17925), (114, 18090), (120, 18135), (127, 18195), (135, 18261), (149, 18342), (151, 18351), (154, 18381), (201, 18675), (215, 18753), (219, 18792), (224, 18822), (230, 18864), (233, 18891), (243, 19044), (255, 19122), (257, 19143), (259, 19158), (261, 19167), (264, 19197), (268, 19221),

Gene: BartholomewSD\_24 Start: 17376, Stop: 19559, Start Num: 3

Candidate Starts for BartholomewSD\_24:

(Start: 3 @17376 has 18 MA's), (5, 17412), (Start: 11 @17529 has 2 MA's), (18, 17610), (19, 17622), (35, 17811), (46, 17904), (53, 17970), (59, 18012), (65, 18045), (78, 18111), (104, 18297), (105, 18309), (112, 18360), (113, 18363), (125, 18453), (134, 18504), (150, 18618), (165, 18717), (172, 18744), (181, 18804), (190, 18858), (194, 18879), (196, 18882), (209, 18969), (223, 19059), (226, 19068), (230, 19104), (231, 19113), (236, 19149), (240, 19227), (254, 19353), (255, 19362), (265, 19443), (266, 19452),

Gene: Bowden\_23 Start: 17308, Stop: 19491, Start Num: 3

Candidate Starts for Bowden\_23:

(Start: 3 @17308 has 18 MA's), (5, 17344), (6, 17407), (Start: 10 @17443 has 38 MA's), (Start: 11 @17461 has 2 MA's), (18, 17542), (19, 17554), (35, 17743), (46, 17836), (53, 17902), (59, 17944), (65, 17977), (78, 18043), (104, 18229), (105, 18241), (112, 18292), (172, 18676), (181, 18736), (188, 18781), (190, 18790), (194, 18811), (196, 18814), (223, 18991), (226, 19000), (228, 19009), (230, 19036), (231, 19045), (240, 19159), (255, 19294), (266, 19384),

Gene: Brataylor\_23 Start: 17360, Stop: 19348, Start Num: 10

Candidate Starts for Brataylor\_23:

(4, 17252), (Start: 10 @17360 has 38 MA's), (13, 17396), (24, 17516), (44, 17735), (69, 17888), (72, 17909), (85, 17942), (88, 17972), (114, 18110), (123, 18179), (126, 18209), (127, 18215), (135, 18284), (149, 18365), (154, 18404), (169, 18482), (177, 18545), (182, 18575), (215, 18776), (229,

18872), (230, 18887), (233, 18914), (241, 19028), (257, 19166), (264, 19220), (274, 19280),

Gene: BryanRecycles\_23 Start: 17521, Stop: 19164, Start Num: 10

Candidate Starts for BryanRecycles\_23:

(Start: 10 @17521 has 38 MA's), (25, 17692), (31, 17764), (34, 17815), (44, 17896), (60, 18007), (135, 18103), (140, 18136), (149, 18184), (151, 18193), (154, 18223), (170, 18304), (180, 18388), (182, 18394), (198, 18490), (200, 18511), (203, 18532), (216, 18601), (218, 18628), (229, 18691), (230, 18706), (231, 18715), (233, 18733), (240, 18829), (249, 18925), (252, 18943), (253, 18952), (257, 18985), (264, 19039), (265, 19045),

Gene: Caelum\_23 Start: 17860, Stop: 19602, Start Num: 38

Candidate Starts for Caelum\_23:

(Start: 38 @17860 has 5 MA's), (Start: 41 @17872 has 1 MA's), (54, 17980), (59, 18001), (78, 18106), (142, 18571), (158, 18655), (165, 18712), (181, 18799), (185, 18829), (210, 18997), (211, 19000), (221, 19063), (235, 19162), (242, 19315), (246, 19342), (250, 19372), (255, 19405), (271, 19525), (277, 19582), (278, 19588),

Gene: Celery\_25 Start: 18018, Stop: 19919, Start Num: 16

Candidate Starts for Celery\_25:

(Start: 16 @18018 has 6 MA's), (28, 18168), (44, 18327), (87, 18528), (102, 18576), (124, 18744), (137, 18855), (139, 18864), (156, 18960), (164, 19005), (167, 19032), (170, 19041), (176, 19086), (189, 19182), (231, 19470), (247, 19662), (248, 19668), (258, 19749),

Gene: Celeste\_22 Start: 17352, Stop: 19334, Start Num: 10

Candidate Starts for Celeste\_22:

(7, 17322), (Start: 10 @17352 has 38 MA's), (Start: 16 @17412 has 6 MA's), (24, 17505), (44, 17724), (66, 17868), (69, 17877), (72, 17898), (114, 18099), (123, 18168), (126, 18198), (127, 18204), (135, 18273), (149, 18354), (154, 18393), (169, 18471), (215, 18765), (219, 18804), (224, 18834), (229, 18861), (230, 18876), (233, 18903), (234, 18909), (240, 18999), (243, 19056), (255, 19134), (257, 19155), (259, 19170), (264, 19209), (268, 19233), (278, 19320),

Gene: Chucky\_22 Start: 17347, Stop: 19323, Start Num: 10

Candidate Starts for Chucky\_22:

(Start: 10 @17347 has 38 MA's), (35, 17650), (44, 17728), (85, 17926), (114, 18091), (120, 18136), (127, 18196), (135, 18262), (149, 18343), (151, 18352), (154, 18382), (201, 18676), (215, 18754), (219, 18793), (224, 18823), (230, 18865), (233, 18892), (243, 19045), (255, 19123), (257, 19144), (259, 19159), (261, 19168), (264, 19198), (268, 19222),

Gene: Conan\_25 Start: 17786, Stop: 19858, Start Num: 16

Candidate Starts for Conan\_25:

(12, 17747), (Start: 16 @17786 has 6 MA's), (28, 17936), (48, 18122), (58, 18212), (77, 18332), (83, 18362), (96, 18461), (97, 18467), (102, 18500), (110, 18575), (120, 18641), (124, 18668), (139, 18794), (156, 18890), (163, 18929), (164, 18935), (167, 18962), (176, 19016), (189, 19112), (198, 19157), (206, 19223), (223, 19346), (231, 19400), (251, 19619), (258, 19682), (263, 19724), (269, 19763),

Gene: Danzina\_23 Start: 17562, Stop: 19547, Start Num: 10

Candidate Starts for Danzina\_23:

(4, 17454), (Start: 10 @17562 has 38 MA's), (24, 17718), (44, 17937), (69, 18090), (72, 18111), (85, 18144), (108, 18258), (120, 18357), (123, 18381), (126, 18411), (127, 18417), (135, 18486), (149, 18567), (154, 18606), (169, 18684), (215, 18978), (219, 19017), (224, 19047), (229, 19074), (230, 19089), (233, 19116), (234, 19122), (240, 19212), (243, 19269), (255, 19347), (257, 19368), (259, 19383), (264, 19422), (268, 19446), (278, 19533),



Gene: Dattran\_23 Start: 17351, Stop: 19336, Start Num: 10

Candidate Starts for Dattran\_23:

(Start: 10 @17351 has 38 MA's), (24, 17507), (44, 17726), (69, 17879), (72, 17900), (114, 18101), (123, 18170), (124, 18173), (126, 18200), (127, 18206), (135, 18275), (149, 18356), (154, 18395), (215, 18767), (219, 18806), (224, 18836), (229, 18863), (230, 18878), (233, 18905), (234, 18911), (243, 19058), (255, 19136), (257, 19157), (259, 19172), (264, 19211), (268, 19235),

Gene: Daudau\_22 Start: 17288, Stop: 19480, Start Num: 3

Candidate Starts for Daudau\_22:

(Start: 3 @17288 has 18 MA's), (6, 17387), (Start: 10 @17423 has 38 MA's), (21, 17561), (22, 17567), (30, 17657), (33, 17705), (53, 17882), (59, 17924), (94, 18134), (109, 18233), (126, 18371), (128, 18380), (142, 18494), (148, 18524), (190, 18776), (194, 18797), (229, 19007), (230, 19022), (233, 19049), (240, 19145), (241, 19163), (252, 19259), (257, 19301), (263, 19355), (278, 19466),

Gene: Dexers\_21 Start: 17767, Stop: 19797, Start Num: 16

Candidate Starts for Dexers\_21:

(12, 17728), (Start: 16 @17767 has 6 MA's), (17, 17779), (26, 17875), (28, 17917), (32, 17977), (39, 18031), (44, 18076), (84, 18358), (91, 18409), (122, 18622), (139, 18751), (143, 18772), (144, 18775), (156, 18835), (163, 18874), (164, 18880), (167, 18907), (170, 18916), (189, 19057), (212, 19210), (231, 19345), (240, 19459), (258, 19627), (263, 19669), (269, 19702),

Gene: Diane\_22 Start: 17826, Stop: 19859, Start Num: 11

Candidate Starts for Diane\_22:

(8, 17787), (Start: 11 @17826 has 2 MA's), (27, 17994), (42, 18153), (52, 18258), (68, 18348), (80, 18414), (93, 18507), (100, 18555), (134, 18783), (137, 18834), (147, 18897), (161, 18975), (162, 18978), (185, 19119), (188, 19140), (205, 19236), (212, 19278), (213, 19287), (220, 19332), (222, 19353), (229, 19386), (236, 19446), (247, 19602), (258, 19689), (270, 19764),

Gene: Dwayne\_22 Start: 17343, Stop: 19310, Start Num: 10

Candidate Starts for Dwayne\_22:

(Start: 10 @17343 has 38 MA's), (35, 17637), (44, 17715), (85, 17913), (114, 18078), (120, 18123), (127, 18183), (135, 18249), (149, 18330), (151, 18339), (154, 18369), (201, 18663), (215, 18741), (219, 18780), (224, 18810), (230, 18852), (233, 18879), (243, 19032), (255, 19110), (257, 19131), (259, 19146), (261, 19155), (264, 19185), (268, 19209),

Gene: ELB20\_21 Start: 17412, Stop: 19601, Start Num: 3

Candidate Starts for ELB20\_21:

(Start: 3 @17412 has 18 MA's), (9, 17535), (32, 17826), (35, 17847), (53, 18006), (66, 18093), (68, 18099), (94, 18273), (136, 18594), (168, 18765), (190, 18906), (194, 18927), (230, 19152), (236, 19197), (238, 19227), (240, 19275), (260, 19449), (262, 19470), (266, 19500),

Gene: Eddasa\_23 Start: 17521, Stop: 19164, Start Num: 10

Candidate Starts for Eddasa\_23:

(Start: 10 @17521 has 38 MA's), (25, 17692), (31, 17764), (34, 17815), (44, 17896), (60, 18007), (135, 18103), (140, 18136), (149, 18184), (151, 18193), (154, 18223), (170, 18304), (180, 18388), (182, 18394), (198, 18490), (200, 18511), (203, 18532), (216, 18601), (218, 18628), (229, 18691), (230, 18706), (231, 18715), (233, 18733), (240, 18829), (249, 18925), (252, 18943), (253, 18952), (257, 18985), (264, 19039), (265, 19045),

Gene: Ejemplo\_22 Start: 17343, Stop: 19334, Start Num: 10

Candidate Starts for Ejemplo\_22:

(Start: 10 @17343 has 38 MA's), (35, 17646), (44, 17724), (69, 17877), (72, 17898), (114, 18099), (135, 18273), (149, 18354), (154, 18393), (201, 18687), (215, 18765), (219, 18804), (224, 18834), (230, 18876), (233, 18903), (234, 18909), (241, 19017), (255, 19134), (257, 19155), (259, 19170), (261, 19179), (264, 19209), (268, 19233),

Gene: ElGato\_24 Start: 17789, Stop: 19504, Start Num: 16

Candidate Starts for ElGato\_24:

(12, 17750), (Start: 16 @17789 has 6 MA's), (28, 17939), (32, 17999), (48, 18125), (77, 18335), (139, 18452), (156, 18536), (164, 18581), (169, 18614), (189, 18758), (198, 18803), (206, 18869), (223, 18992), (231, 19046), (251, 19265), (258, 19328), (263, 19370), (269, 19409),

Gene: Emaanora\_24 Start: 17346, Stop: 19322, Start Num: 10

Candidate Starts for Emaanora\_24:

(Start: 10 @17346 has 38 MA's), (35, 17649), (44, 17727), (85, 17925), (114, 18090), (120, 18135), (127, 18195), (135, 18261), (149, 18342), (151, 18351), (154, 18381), (201, 18675), (215, 18753), (219, 18792), (224, 18822), (230, 18864), (233, 18891), (243, 19044), (255, 19122), (257, 19143), (259, 19158), (261, 19167), (264, 19197), (268, 19221),

Gene: EnochSoames\_24 Start: 17517, Stop: 19160, Start Num: 10

Candidate Starts for EnochSoames\_24:

(Start: 10 @17517 has 38 MA's), (25, 17688), (31, 17760), (34, 17811), (44, 17892), (60, 18003), (135, 18099), (140, 18132), (149, 18180), (151, 18189), (154, 18219), (170, 18300), (180, 18384), (182, 18390), (198, 18486), (200, 18507), (203, 18528), (216, 18597), (218, 18624), (229, 18687), (230, 18702), (231, 18711), (233, 18729), (240, 18825), (249, 18921), (252, 18939), (253, 18948), (257, 18981), (264, 19035), (265, 19041),

Gene: GirlDinner\_23 Start: 17079, Stop: 19265, Start Num: 3

Candidate Starts for GirlDinner\_23:

(Start: 3 @17079 has 18 MA's), (6, 17175), (Start: 10 @17211 has 38 MA's), (15, 17277), (20, 17334), (35, 17511), (53, 17670), (59, 17712), (80, 17826), (105, 18009), (112, 18060), (126, 18162), (140, 18267), (159, 18372), (164, 18399), (167, 18429), (194, 18582), (204, 18633), (218, 18729), (229, 18792), (230, 18807), (233, 18834), (236, 18852), (240, 18930), (252, 19044), (257, 19086), (263, 19140), (275, 19215),

Gene: Goby\_22 Start: 17357, Stop: 19342, Start Num: 10

Candidate Starts for Goby\_22:

(Start: 10 @17357 has 38 MA's), (24, 17513), (44, 17732), (69, 17885), (72, 17906), (114, 18107), (123, 18176), (124, 18179), (126, 18206), (127, 18212), (135, 18281), (149, 18362), (154, 18401), (215, 18773), (219, 18812), (224, 18842), (229, 18869), (230, 18884), (233, 18911), (234, 18917), (243, 19064), (255, 19142), (257, 19163), (259, 19178), (264, 19217), (268, 19241),

Gene: Godpower\_23 Start: 17368, Stop: 19353, Start Num: 10

Candidate Starts for Godpower\_23:

(Start: 10 @17368 has 38 MA's), (24, 17524), (44, 17743), (69, 17896), (72, 17917), (114, 18118), (123, 18187), (126, 18217), (127, 18223), (135, 18292), (142, 18340), (149, 18373), (151, 18382), (154, 18412), (169, 18490), (177, 18553), (224, 18853), (230, 18895), (233, 18922), (241, 19036), (255, 19153), (257, 19174), (259, 19189), (264, 19228), (268, 19252), (270, 19261),

Gene: Haizum\_22 Start: 17858, Stop: 19498, Start Num: 38

Candidate Starts for Haizum\_22:

(Start: 38 @17858 has 5 MA's), (Start: 41 @17870 has 1 MA's), (54, 17978), (59, 17999), (68, 18053), (78, 18104), (80, 18119), (130, 18467), (134, 18488), (147, 18536), (155, 18581), (161, 18614), (162, 18617), (185, 18758), (188, 18779), (205, 18875), (212, 18917), (213, 18926), (220, 18971), (222,

18992), (236, 19085), (247, 19241), (250, 19262), (258, 19328), (270, 19403),

Gene: Hank144\_23 Start: 17474, Stop: 19687, Start Num: 3

Candidate Starts for Hank144\_23:

(Start: 3 @17474 has 18 MA's), (Start: 10 @17609 has 38 MA's), (15, 17675), (20, 17732), (35, 17909), (53, 18068), (59, 18110), (62, 18125), (64, 18140), (66, 18152), (94, 18320), (99, 18359), (103, 18386), (126, 18557), (128, 18566), (152, 18743), (178, 18896), (185, 18950), (187, 18962), (192, 18995), (194, 19001), (222, 19181), (243, 19409), (246, 19421), (249, 19445), (258, 19517),

Gene: Hippo\_22 Start: 17346, Stop: 19322, Start Num: 10

Candidate Starts for Hippo\_22:

(Start: 10 @17346 has 38 MA's), (35, 17649), (44, 17727), (85, 17925), (114, 18090), (120, 18135), (127, 18195), (135, 18261), (149, 18342), (151, 18351), (154, 18381), (201, 18675), (215, 18753), (219, 18792), (224, 18822), (230, 18864), (233, 18891), (243, 19044), (255, 19122), (257, 19143), (259, 19158), (261, 19167), (264, 19197), (268, 19221),

Gene: Issmi\_23 Start: 18292, Stop: 20220, Start Num: 11

Candidate Starts for Issmi\_23:

(Start: 11 @18292 has 2 MA's), (40, 18607), (42, 18619), (49, 18685), (57, 18748), (67, 18808), (157, 19330), (166, 19390), (167, 19396), (171, 19405), (172, 19411), (173, 19414), (183, 19480), (213, 19648), (230, 19759), (233, 19786), (237, 19813), (241, 19900), (250, 19984), (253, 20005), (257, 20038), (264, 20092),

Gene: Izzy\_23 Start: 17568, Stop: 19211, Start Num: 10

Candidate Starts for Izzy\_23:

(Start: 10 @17568 has 38 MA's), (25, 17739), (31, 17811), (34, 17862), (44, 17943), (60, 18054), (135, 18150), (140, 18183), (149, 18231), (151, 18240), (154, 18270), (170, 18351), (180, 18435), (182, 18441), (198, 18537), (200, 18558), (203, 18579), (216, 18648), (218, 18675), (229, 18738), (230, 18753), (231, 18762), (233, 18780), (240, 18876), (249, 18972), (252, 18990), (253, 18999), (257, 19032), (264, 19086), (265, 19092),

Gene: Janus\_23 Start: 17417, Stop: 19603, Start Num: 3

Candidate Starts for Janus\_23:

(Start: 3 @17417 has 18 MA's), (6, 17513), (Start: 10 @17549 has 38 MA's), (15, 17615), (20, 17672), (35, 17849), (53, 18008), (59, 18050), (65, 18083), (80, 18164), (87, 18221), (105, 18347), (112, 18398), (126, 18500), (140, 18605), (159, 18710), (164, 18737), (167, 18767), (194, 18920), (204, 18971), (218, 19067), (229, 19130), (230, 19145), (233, 19172), (236, 19190), (240, 19268), (252, 19382), (257, 19424), (263, 19478), (275, 19553),

Gene: Jash\_23 Start: 17521, Stop: 19164, Start Num: 10

Candidate Starts for Jash\_23:

(Start: 10 @17521 has 38 MA's), (25, 17692), (31, 17764), (34, 17815), (44, 17896), (60, 18007), (135, 18103), (140, 18136), (149, 18184), (151, 18193), (154, 18223), (170, 18304), (180, 18388), (182, 18394), (198, 18490), (200, 18511), (203, 18532), (216, 18601), (218, 18628), (229, 18691), (230, 18706), (231, 18715), (233, 18733), (240, 18829), (249, 18925), (252, 18943), (253, 18952), (257, 18985), (264, 19039), (265, 19045),

Gene: Jevington\_25 Start: 17726, Stop: 19936, Start Num: 3

Candidate Starts for Jevington\_25:

(Start: 3 @17726 has 18 MA's), (6, 17825), (Start: 10 @17861 has 38 MA's), (20, 17984), (21, 17999), (37, 18179), (45, 18251), (53, 18320), (61, 18371), (80, 18476), (126, 18815), (128, 18824), (185, 19208), (187, 19220), (194, 19259), (223, 19442), (226, 19451), (228, 19460), (230, 19487), (231, 19496), (234, 19520), (240, 19610), (254, 19736), (255, 19745),

Gene: Katalie\_23 Start: 17609, Stop: 19588, Start Num: 10

Candidate Starts for Katalie\_23:

(Start: 10 @17609 has 38 MA's), (24, 17771), (44, 17987), (69, 18140), (73, 18164), (85, 18185), (108, 18299), (114, 18353), (126, 18452), (127, 18458), (135, 18527), (149, 18608), (154, 18647), (174, 18755), (180, 18812), (193, 18893), (224, 19088), (229, 19115), (230, 19130), (233, 19157), (234, 19163), (241, 19271), (250, 19355), (255, 19388), (257, 19409), (264, 19463), (268, 19487),

Gene: Lika\_22 Start: 17372, Stop: 19357, Start Num: 10

Candidate Starts for Lika\_22:

(Start: 10 @17372 has 38 MA's), (24, 17528), (44, 17747), (69, 17900), (72, 17921), (114, 18122), (123, 18191), (126, 18221), (127, 18227), (132, 18254), (135, 18296), (142, 18344), (149, 18377), (151, 18386), (154, 18416), (169, 18494), (177, 18557), (224, 18857), (230, 18899), (233, 18926), (241, 19040), (255, 19157), (257, 19178), (259, 19193), (264, 19232), (268, 19256), (270, 19265),

Gene: Loofah\_23 Start: 17341, Stop: 19530, Start Num: 3

Candidate Starts for Loofah\_23:

(Start: 3 @17341 has 18 MA's), (Start: 11 @17494 has 2 MA's), (14, 17536), (21, 17614), (35, 17776), (47, 17875), (51, 17914), (53, 17935), (66, 18022), (68, 18028), (94, 18202), (161, 18649), (190, 18835), (207, 18919), (217, 18976), (236, 19123), (244, 19264), (249, 19294), (253, 19321), (258, 19366), (266, 19426),

Gene: Lorelei\_22 Start: 17342, Stop: 19327, Start Num: 10

Candidate Starts for Lorelei\_22:

(4, 17234), (Start: 10 @17342 has 38 MA's), (24, 17498), (44, 17717), (72, 17891), (88, 17954), (135, 18266), (149, 18347), (151, 18356), (154, 18386), (224, 18827), (230, 18869), (233, 18896), (234, 18902), (240, 18992), (241, 19010), (255, 19127), (257, 19148), (259, 19163), (261, 19172), (264, 19202), (268, 19226), (270, 19235),

Gene: Maneekul\_22 Start: 17342, Stop: 19333, Start Num: 10

Candidate Starts for Maneekul\_22:

(Start: 10 @17342 has 38 MA's), (35, 17645), (44, 17723), (69, 17876), (72, 17897), (114, 18098), (135, 18272), (149, 18353), (154, 18392), (169, 18470), (177, 18533), (182, 18563), (201, 18686), (215, 18764), (219, 18803), (224, 18833), (230, 18875), (233, 18902), (234, 18908), (241, 19016), (255, 19133), (257, 19154), (259, 19169), (261, 19178), (264, 19208), (268, 19232),

Gene: Marav\_25 Start: 18076, Stop: 20283, Start Num: 3

Candidate Starts for Marav\_25:

(Start: 3 @18076 has 18 MA's), (5, 18112), (6, 18175), (Start: 10 @18211 has 38 MA's), (21, 18349), (45, 18601), (53, 18670), (67, 18754), (99, 18961), (103, 18988), (126, 19162), (128, 19171), (131, 19186), (178, 19501), (184, 19546), (185, 19555), (187, 19567), (223, 19789), (226, 19798), (227, 19804), (230, 19834), (231, 19843), (240, 19957), (249, 20053), (255, 20092),

Gene: Nabi\_22 Start: 17342, Stop: 19327, Start Num: 10

Candidate Starts for Nabi\_22:

(4, 17234), (Start: 10 @17342 has 38 MA's), (24, 17498), (44, 17717), (72, 17891), (88, 17954), (135, 18266), (149, 18347), (151, 18356), (154, 18386), (224, 18827), (230, 18869), (233, 18896), (234, 18902), (240, 18992), (241, 19010), (255, 19127), (257, 19148), (259, 19163), (261, 19172), (264, 19202), (268, 19226), (270, 19235),

Gene: Nishikigoi\_22 Start: 17858, Stop: 19498, Start Num: 38

Candidate Starts for Nishikigoi\_22:

(Start: 38 @17858 has 5 MA's), (Start: 41 @17870 has 1 MA's), (54, 17978), (59, 17999), (68, 18053), (78, 18104), (80, 18119), (130, 18467), (134, 18488), (147, 18536), (155, 18581), (161, 18614), (162, 18617), (185, 18758), (188, 18779), (205, 18875), (212, 18917), (213, 18926), (220, 18971), (222, 18992), (236, 19085), (258, 19328), (270, 19403),

Gene: Oliynyk\_23 Start: 17521, Stop: 19164, Start Num: 10

Candidate Starts for Oliynyk\_23:

(Start: 10 @17521 has 38 MA's), (25, 17692), (31, 17764), (34, 17815), (44, 17896), (60, 18007), (135, 18103), (140, 18136), (149, 18184), (151, 18193), (154, 18223), (170, 18304), (180, 18388), (182, 18394), (198, 18490), (200, 18511), (203, 18532), (216, 18601), (218, 18628), (229, 18691), (230, 18706), (231, 18715), (233, 18733), (240, 18829), (249, 18925), (252, 18943), (253, 18952), (257, 18985), (264, 19039), (265, 19045),

Gene: Omar\_23 Start: 18196, Stop: 19896, Start Num: 38

Candidate Starts for Omar\_23:

(Start: 38 @18196 has 5 MA's), (Start: 41 @18208 has 1 MA's), (61, 18337), (78, 18433), (111, 18676), (116, 18700), (121, 18739), (125, 18769), (126, 18778), (141, 18904), (147, 18934), (153, 18973), (162, 19015), (185, 19156), (212, 19315), (222, 19390), (225, 19399), (229, 19423), (232, 19450), (236, 19483), (239, 19537), (247, 19639), (252, 19672), (258, 19726), (267, 19789),

Gene: OzzyJ\_23 Start: 17337, Stop: 19313, Start Num: 10

Candidate Starts for OzzyJ\_23:

(Start: 10 @17337 has 38 MA's), (35, 17640), (44, 17718), (85, 17916), (114, 18081), (120, 18126), (127, 18186), (135, 18252), (149, 18333), (151, 18342), (154, 18372), (201, 18666), (215, 18744), (219, 18783), (224, 18813), (230, 18855), (233, 18882), (243, 19035), (255, 19113), (257, 19134), (259, 19149), (261, 19158), (264, 19188), (268, 19212),

Gene: Pablito\_22 Start: 17181, Stop: 19376, Start Num: 3

Candidate Starts for Pablito\_22:

(Start: 3 @17181 has 18 MA's), (6, 17280), (Start: 10 @17316 has 38 MA's), (20, 17439), (21, 17454), (23, 17469), (46, 17709), (53, 17775), (98, 18060), (117, 18195), (126, 18270), (159, 18480), (164, 18507), (167, 18537), (179, 18606), (185, 18639), (191, 18678), (195, 18699), (209, 18789), (218, 18846), (230, 18924), (233, 18951), (240, 19047), (252, 19161), (255, 19182), (260, 19221), (263, 19254), (265, 19263),

Gene: Paedore\_22 Start: 17341, Stop: 19530, Start Num: 3

Candidate Starts for Paedore\_22:

(Start: 3 @17341 has 18 MA's), (Start: 11 @17494 has 2 MA's), (14, 17536), (21, 17614), (35, 17776), (47, 17875), (51, 17914), (53, 17935), (66, 18022), (68, 18028), (94, 18202), (161, 18649), (190, 18835), (194, 18856), (207, 18919), (217, 18976), (236, 19123), (244, 19264), (249, 19294), (253, 19321), (258, 19366), (266, 19426),

Gene: Paolo\_26 Start: 17738, Stop: 19948, Start Num: 3

Candidate Starts for Paolo\_26:

(Start: 3 @17738 has 18 MA's), (5, 17774), (6, 17837), (30, 18107), (36, 18179), (53, 18332), (59, 18374), (65, 18407), (78, 18473), (104, 18659), (105, 18671), (126, 18827), (152, 19013), (154, 19019), (170, 19103), (178, 19166), (185, 19220), (187, 19232), (223, 19454), (226, 19463), (230, 19499), (231, 19508), (240, 19622), (241, 19640), (249, 19718), (255, 19757),

Gene: Provolone\_23 Start: 17789, Stop: 19504, Start Num: 16

Candidate Starts for Provolone\_23:

(12, 17750), (Start: 16 @17789 has 6 MA's), (28, 17939), (32, 17999), (48, 18125), (77, 18335), (139, 18452), (156, 18536), (164, 18581), (169, 18614), (189, 18758), (198, 18803), (206, 18869), (223,

18992), (231, 19046), (251, 19265), (258, 19328), (263, 19370), (269, 19409),

Gene: Puginator\_26 Start: 17783, Stop: 19963, Start Num: 3

Candidate Starts for Puginator\_26:

(Start: 3 @17783 has 18 MA's), (6, 17882), (Start: 10 @17918 has 38 MA's), (21, 18056), (45, 18308), (53, 18377), (71, 18500), (106, 18725), (140, 18974), (159, 19079), (164, 19106), (167, 19136), (175, 19181), (185, 19238), (186, 19244), (194, 19289), (223, 19469), (226, 19478), (230, 19514), (231, 19523), (240, 19637), (249, 19733), (254, 19763), (255, 19772),

Gene: R4\_22 Start: 17423, Stop: 19612, Start Num: 3

Candidate Starts for R4\_22:

(Start: 3 @17423 has 18 MA's), (9, 17546), (32, 17837), (35, 17858), (53, 18017), (66, 18104), (68, 18110), (94, 18284), (136, 18605), (168, 18776), (190, 18917), (194, 18938), (230, 19163), (236, 19208), (238, 19238), (240, 19286), (260, 19460), (262, 19481), (266, 19511),

Gene: Rana\_22 Start: 17342, Stop: 19327, Start Num: 10

Candidate Starts for Rana\_22:

(4, 17234), (Start: 10 @17342 has 38 MA's), (24, 17498), (44, 17717), (72, 17891), (88, 17954), (135, 18266), (149, 18347), (151, 18356), (154, 18386), (224, 18827), (230, 18869), (233, 18896), (234, 18902), (240, 18992), (241, 19010), (255, 19127), (257, 19148), (259, 19163), (261, 19172), (264, 19202), (268, 19226), (270, 19235),

Gene: RedBear\_24 Start: 17609, Stop: 19588, Start Num: 10

Candidate Starts for RedBear\_24:

(Start: 10 @17609 has 38 MA's), (24, 17771), (44, 17987), (69, 18140), (73, 18164), (85, 18185), (108, 18299), (114, 18353), (126, 18452), (127, 18458), (135, 18527), (149, 18608), (154, 18647), (174, 18755), (180, 18812), (193, 18893), (224, 19088), (229, 19115), (230, 19130), (233, 19157), (234, 19163), (241, 19271), (250, 19355), (255, 19388), (257, 19409), (264, 19463), (268, 19487),

Gene: Rusticus\_23 Start: 17521, Stop: 19164, Start Num: 10

Candidate Starts for Rusticus\_23:

(Start: 10 @17521 has 38 MA's), (25, 17692), (31, 17764), (34, 17815), (44, 17896), (60, 18007), (135, 18103), (140, 18136), (149, 18184), (151, 18193), (154, 18223), (170, 18304), (180, 18388), (182, 18394), (198, 18490), (200, 18511), (203, 18532), (216, 18601), (218, 18628), (229, 18691), (230, 18706), (231, 18715), (233, 18733), (240, 18829), (249, 18925), (252, 18943), (253, 18952), (257, 18985), (264, 19039), (265, 19045),

Gene: SarahRose\_22 Start: 17343, Stop: 19319, Start Num: 10

Candidate Starts for SarahRose\_22:

(Start: 10 @17343 has 38 MA's), (35, 17646), (44, 17724), (85, 17922), (114, 18087), (120, 18132), (127, 18192), (135, 18258), (149, 18339), (151, 18348), (154, 18378), (201, 18672), (215, 18750), (219, 18789), (224, 18819), (230, 18861), (233, 18888), (243, 19041), (255, 19119), (257, 19140), (259, 19155), (261, 19164), (264, 19194), (268, 19218),

Gene: Snorlax\_22 Start: 17346, Stop: 19322, Start Num: 10

Candidate Starts for Snorlax\_22:

(Start: 10 @17346 has 38 MA's), (35, 17649), (44, 17727), (85, 17925), (114, 18090), (120, 18135), (127, 18195), (135, 18261), (149, 18342), (151, 18351), (154, 18381), (201, 18675), (215, 18753), (219, 18792), (224, 18822), (230, 18864), (233, 18891), (243, 19044), (255, 19122), (257, 19143), (259, 19158), (261, 19167), (264, 19197), (268, 19221),

Gene: South40\_23 Start: 17609, Stop: 19588, Start Num: 10

Candidate Starts for South40\_23:

(Start: 10 @17609 has 38 MA's), (24, 17771), (44, 17987), (69, 18140), (73, 18164), (85, 18185), (108, 18299), (114, 18353), (126, 18452), (127, 18458), (135, 18527), (149, 18608), (154, 18647), (174, 18755), (180, 18812), (193, 18893), (224, 19088), (229, 19115), (230, 19130), (233, 19157), (234, 19163), (241, 19271), (250, 19355), (255, 19388), (257, 19409), (264, 19463), (268, 19487),

Gene: SqueakyClean\_23 Start: 17343, Stop: 19529, Start Num: 3

Candidate Starts for SqueakyClean\_23:

(Start: 3 @17343 has 18 MA's), (6, 17439), (Start: 10 @17475 has 38 MA's), (15, 17541), (20, 17598), (35, 17775), (53, 17934), (59, 17976), (65, 18009), (80, 18090), (105, 18273), (112, 18324), (126, 18426), (140, 18531), (159, 18636), (164, 18663), (167, 18693), (194, 18846), (204, 18897), (230, 19071), (233, 19098), (236, 19116), (240, 19194), (245, 19263), (250, 19296), (252, 19308), (263, 19404),

Gene: Sujidade\_23 Start: 17648, Stop: 19633, Start Num: 10

Candidate Starts for Sujidade\_23:

(Start: 10 @17648 has 38 MA's), (24, 17804), (44, 18023), (69, 18176), (72, 18197), (114, 18398), (123, 18467), (124, 18470), (126, 18497), (127, 18503), (135, 18572), (142, 18620), (149, 18653), (154, 18692), (215, 19064), (219, 19103), (224, 19133), (229, 19160), (230, 19175), (233, 19202), (234, 19208), (240, 19298), (243, 19355), (255, 19433), (257, 19454), (259, 19469), (264, 19508), (268, 19532),

Gene: Superstar\_25 Start: 19064, Stop: 20764, Start Num: 38

Candidate Starts for Superstar\_25:

(Start: 38 @19064 has 5 MA's), (54, 19184), (59, 19205), (67, 19253), (126, 19655), (129, 19673), (134, 19697), (142, 19775), (172, 19937), (174, 19955), (175, 19964), (179, 19988), (235, 20312), (242, 20465), (246, 20492), (250, 20522), (255, 20555), (256, 20567), (272, 20681), (273, 20696), (277, 20744), (278, 20750),

Gene: TagePhighter\_23 Start: 17346, Stop: 19322, Start Num: 10

Candidate Starts for TagePhighter\_23:

(Start: 10 @17346 has 38 MA's), (35, 17649), (44, 17727), (85, 17925), (114, 18090), (120, 18135), (127, 18195), (135, 18261), (149, 18342), (151, 18351), (154, 18381), (201, 18675), (215, 18753), (219, 18792), (224, 18822), (230, 18864), (233, 18891), (243, 19044), (255, 19122), (257, 19143), (259, 19158), (261, 19167), (264, 19197), (268, 19221),

Gene: Tefunt\_22 Start: 17870, Stop: 19501, Start Num: 41

Candidate Starts for Tefunt\_22:

(Start: 38 @17858 has 5 MA's), (Start: 41 @17870 has 1 MA's), (54, 17978), (59, 17999), (68, 18053), (78, 18104), (80, 18119), (130, 18470), (134, 18491), (147, 18539), (155, 18584), (161, 18617), (162, 18620), (185, 18761), (188, 18782), (205, 18878), (212, 18920), (213, 18929), (220, 18974), (222, 18995), (236, 19088), (258, 19331), (270, 19406),

Gene: Thestral\_23 Start: 17311, Stop: 19494, Start Num: 3

Candidate Starts for Thestral\_23:

(Start: 3 @17311 has 18 MA's), (6, 17410), (18, 17545), (19, 17557), (20, 17569), (35, 17746), (46, 17839), (53, 17905), (56, 17926), (65, 17980), (78, 18046), (93, 18157), (104, 18232), (105, 18244), (112, 18295), (113, 18298), (126, 18397), (165, 18652), (172, 18679), (181, 18739), (190, 18793), (194, 18814), (196, 18817), (209, 18904), (223, 18994), (226, 19003), (228, 19012), (230, 19039), (231, 19048), (240, 19162), (254, 19288), (255, 19297), (259, 19333), (266, 19387),

Gene: TinaBelcher\_22 Start: 17259, Stop: 19442, Start Num: 3

Candidate Starts for TinaBelcher\_22:

(Start: 3 @17259 has 18 MA's), (5, 17295), (6, 17358), (Start: 10 @17394 has 38 MA's), (Start: 11 @17412 has 2 MA's), (18, 17493), (19, 17505), (35, 17694), (46, 17787), (53, 17853), (59, 17895), (65, 17928), (78, 17994), (104, 18180), (105, 18192), (112, 18243), (172, 18627), (181, 18687), (188, 18732), (190, 18741), (194, 18762), (196, 18765), (223, 18942), (226, 18951), (228, 18960), (230, 18987), (231, 18996), (240, 19110), (255, 19245), (266, 19335),

Gene: Toma\_22 Start: 17357, Stop: 19342, Start Num: 10

Candidate Starts for Toma\_22:

(Start: 10 @17357 has 38 MA's), (24, 17513), (44, 17732), (69, 17885), (72, 17906), (114, 18107), (123, 18176), (124, 18179), (126, 18206), (127, 18212), (135, 18281), (149, 18362), (154, 18401), (215, 18773), (219, 18812), (224, 18842), (229, 18869), (230, 18884), (233, 18911), (234, 18917), (243, 19064), (255, 19142), (257, 19163), (259, 19178), (264, 19217), (268, 19241),

Gene: Triste\_22 Start: 17337, Stop: 19313, Start Num: 10

Candidate Starts for Triste\_22:

(Start: 10 @17337 has 38 MA's), (35, 17640), (44, 17718), (85, 17916), (114, 18081), (120, 18126), (127, 18186), (135, 18252), (149, 18333), (151, 18342), (154, 18372), (201, 18666), (215, 18744), (219, 18783), (224, 18813), (230, 18855), (233, 18882), (243, 19035), (255, 19113), (257, 19134), (259, 19149), (261, 19158), (264, 19188), (268, 19212),

Gene: Triumph\_24 Start: 17260, Stop: 19452, Start Num: 3

Candidate Starts for Triumph\_24:

(Start: 3 @17260 has 18 MA's), (6, 17359), (Start: 10 @17395 has 38 MA's), (Start: 11 @17413 has 2 MA's), (34, 17692), (35, 17695), (45, 17785), (56, 17875), (65, 17929), (105, 18193), (112, 18244), (126, 18346), (140, 18451), (159, 18556), (179, 18682), (185, 18715), (191, 18754), (195, 18775), (209, 18865), (218, 18922), (223, 18955), (225, 18961), (230, 19000), (233, 19027), (240, 19123), (241, 19141), (243, 19180), (245, 19192), (252, 19237), (255, 19258), (260, 19297), (263, 19330), (265, 19339), (278, 19438),

Gene: TrvxScott\_21 Start: 17261, Stop: 19474, Start Num: 3

Candidate Starts for TrvxScott\_21:

(Start: 3 @17261 has 18 MA's), (5, 17297), (Start: 11 @17414 has 2 MA's), (18, 17495), (19, 17507), (35, 17696), (46, 17789), (53, 17855), (59, 17897), (65, 17930), (78, 17996), (104, 18182), (105, 18194), (112, 18245), (113, 18248), (126, 18347), (152, 18533), (154, 18539), (158, 18548), (178, 18686), (187, 18752), (188, 18761), (209, 18884), (223, 18974), (226, 18983), (228, 18992), (230, 19019), (231, 19028), (240, 19142), (255, 19277), (266, 19367),

Gene: TuanPN\_22 Start: 17343, Stop: 19334, Start Num: 10

Candidate Starts for TuanPN\_22:

(Start: 10 @17343 has 38 MA's), (35, 17646), (44, 17724), (69, 17877), (72, 17898), (114, 18099), (135, 18273), (149, 18354), (154, 18393), (201, 18687), (215, 18765), (219, 18804), (224, 18834), (230, 18876), (233, 18903), (234, 18909), (241, 19017), (255, 19134), (257, 19155), (259, 19170), (261, 19179), (264, 19209), (268, 19233),

Gene: Vanseggelen\_27 Start: 17719, Stop: 19728, Start Num: 16

Candidate Starts for Vanseggelen\_27:

(Start: 16 @17719 has 6 MA's), (31, 17896), (48, 18058), (63, 18184), (86, 18316), (89, 18337), (90, 18343), (102, 18376), (114, 18469), (120, 18517), (124, 18544), (156, 18769), (163, 18808), (164, 18814), (167, 18841), (176, 18895), (189, 18991), (193, 19012), (198, 19036), (231, 19279), (247, 19471), (248, 19477), (258, 19558), (270, 19636),

Gene: Verse\_22 Start: 18351, Stop: 20525, Start Num: 16

Candidate Starts for Verse\_22:



(12, 18312), (Start: 16 @18351 has 6 MA's), (26, 18459), (28, 18501), (48, 18687), (58, 18777), (70, 18906), (81, 18984), (82, 19005), (83, 19008), (95, 19116), (97, 19131), (110, 19239), (115, 19263), (120, 19305), (124, 19332), (126, 19359), (142, 19482), (156, 19557), (163, 19596), (167, 19629), (176, 19683), (189, 19779), (231, 20067), (251, 20286), (258, 20349), (263, 20391), (269, 20430),

Gene: Werner\_22 Start: 17347, Stop: 19323, Start Num: 10

Candidate Starts for Werner\_22:

(Start: 10 @17347 has 38 MA's), (35, 17650), (44, 17728), (85, 17926), (114, 18091), (120, 18136), (127, 18196), (135, 18262), (149, 18343), (151, 18352), (154, 18382), (201, 18676), (202, 18679), (215, 18754), (219, 18793), (224, 18823), (230, 18865), (233, 18892), (243, 19045), (255, 19123), (257, 19144), (259, 19159), (261, 19168), (264, 19198), (268, 19222),

Gene: Whatever\_22 Start: 17347, Stop: 19323, Start Num: 10

Candidate Starts for Whatever\_22:

(Start: 10 @17347 has 38 MA's), (35, 17650), (44, 17728), (85, 17926), (114, 18091), (120, 18136), (127, 18196), (135, 18262), (149, 18343), (151, 18352), (154, 18382), (201, 18676), (215, 18754), (219, 18793), (224, 18823), (230, 18865), (233, 18892), (243, 19045), (255, 19123), (257, 19144), (259, 19159), (261, 19168), (264, 19198), (268, 19222),

Gene: Yasdnii\_22 Start: 17339, Stop: 19330, Start Num: 10

Candidate Starts for Yasdnii\_22:

(Start: 10 @17339 has 38 MA's), (35, 17642), (44, 17720), (69, 17873), (72, 17894), (86, 17942), (114, 18095), (135, 18269), (149, 18350), (154, 18389), (201, 18683), (215, 18761), (219, 18800), (224, 18830), (230, 18872), (233, 18899), (234, 18905), (241, 19013), (255, 19130), (257, 19151), (259, 19166), (261, 19175), (264, 19205), (268, 19229),

Gene: Yosif\_23 Start: 18289, Stop: 20154, Start Num: 16

Candidate Starts for Yosif\_23:

(Start: 16 @18289 has 6 MA's), (29, 18442), (43, 18550), (48, 18595), (49, 18607), (55, 18661), (87, 18826), (92, 18847), (110, 18949), (112, 18958), (114, 18967), (124, 19042), (145, 19126), (146, 19132), (156, 19180), (164, 19225), (167, 19252), (170, 19261), (176, 19306), (189, 19402), (197, 19444), (208, 19519), (214, 19567), (258, 19972), (265, 20023), (276, 20113),

Gene: Zainub\_28 Start: 17696, Stop: 19903, Start Num: 3

Candidate Starts for Zainub\_28:

(Start: 3 @17696 has 18 MA's), (5, 17732), (21, 17969), (45, 18221), (53, 18290), (64, 18362), (67, 18374), (94, 18542), (106, 18632), (126, 18782), (128, 18791), (152, 18968), (154, 18974), (178, 19121), (185, 19175), (187, 19187), (194, 19226), (223, 19409), (226, 19418), (230, 19454), (231, 19463), (240, 19577), (241, 19595), (249, 19673), (255, 19712),

Gene: Zemlya\_23 Start: 17368, Stop: 19353, Start Num: 10

Candidate Starts for Zemlya\_23:

(Start: 10 @17368 has 38 MA's), (24, 17524), (44, 17743), (69, 17896), (72, 17917), (114, 18118), (123, 18187), (126, 18217), (127, 18223), (135, 18292), (149, 18373), (154, 18412), (215, 18784), (218, 18817), (219, 18823), (224, 18853), (229, 18880), (230, 18895), (233, 18922), (234, 18928), (240, 19018), (243, 19075), (255, 19153), (259, 19189), (264, 19228), (268, 19252), (278, 19339),

Gene: phiCAM\_23 Start: 20017, Stop: 21960, Start Num: 16

Candidate Starts for phiCAM\_23:

(1, 19699), (2, 19702), (Start: 16 @20017 has 6 MA's), (28, 20167), (44, 20326), (73, 20536), (74, 20545), (76, 20560), (79, 20569), (101, 20659), (118, 20770), (133, 20860), (136, 20902), (151, 20968), (156, 20998), (163, 21037), (164, 21043), (167, 21070), (170, 21079), (176, 21124), (180, 21163), (189, 21220), (193, 21241), (208, 21337), (231, 21508), (239, 21598), (240, 21622), (247,

21700), (258, 21790), (275, 21910), (276, 21919),