



51: Jeon 19 36 43 51 58 66 76 82 88 99 106 115 122 129 136 144 153 160 167 179 186 194 202 210 217 224 232 239 247 255 263 271 279 287 295 303 311 319 327 335 343 351 359 367 375 383 391 399 407 415 423 431 439 447 455 463 471 479 487 495 503 511 519 527 535 543 551 559 567 575 583 591 599 607 615 623 631 639 647 655 663 671 679 687 695 703 711 719 727 735 743 751 759 767 775 783 791 799 807 815 823 831 839 847 855 863 871 879 887 895 903 911 919 927 935 943 951 959 967 975 983 991 999

52: GodFather 125

Blank lined writing area with horizontal lines and a dashed right margin.

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 193893 Report

This analysis was run 11/02/24 on database version 579.

Pham number 193893 has 100 members, 3 are drafts.

Phages represented in each track:

- Track 1 : Mao1\_26, Mask\_27, Sejanus\_27
- Track 2 : JustASigh\_21
- Track 3 : Lars\_32, Opia\_32, Rosebush\_32, Hedgerow\_32, Rhinoforte\_32, Phantasmagoria\_32, Coffee\_32, Brownie5\_32, West99\_32, Blocker23\_32, Ares\_32, Tinciduntolum\_33, Faze9\_32, FrenchFry\_32, Boyle\_32, Arbiter\_32, Kheth\_32
- Track 4 : ItsyBitsy1\_32
- Track 5 : Kaleb\_32, Lephleur\_32
- Track 6 : Vic9\_33
- Track 7 : Holeinone\_32
- Track 8 : Allegro\_32, Glass\_32, LizLemon\_32
- Track 9 : TA17A\_32
- Track 10 : Sabella\_32
- Track 11 : Qyrzula\_30
- Track 12 : Tres\_32
- Track 13 : MasterPo\_32
- Track 14 : Godines\_32
- Track 15 : Bananafish\_32
- Track 16 : Calamitous\_32
- Track 17 : Eaglehorse\_32
- Track 18 : Clifton\_18, LastJedi\_18, Crumble\_18, Koella\_18
- Track 19 : Cerasum\_19, Sarma624\_19, BigPhil\_19, Velveteen\_19
- Track 20 : Pippy\_18
- Track 21 : SamScheppers\_26
- Track 22 : Eponine\_28
- Track 23 : Taquito\_26
- Track 24 : Omnicron\_26
- Track 25 : Feyre\_25
- Track 26 : Larva\_26, Edugator\_25, Psycho\_26, Dadosky\_26, AlleyCat\_26
- Track 27 : Rando14\_26
- Track 28 : SoSeph\_25, Heftyboy\_25
- Track 29 : Paola\_25, Guillsminger\_25, Leston\_25
- Track 30 : Thyatira\_25
- Track 31 : Gengar\_25, Waterfoul\_25, Miryou\_25
- Track 32 : OkiRoe\_25
- Track 33 : Collard\_25, InvictusManeo\_25, Agent47\_25
- Track 34 : Kratio\_24
- Track 35 : AvadaKedavra\_20

- Track 36 : Calm\_20, Zaria\_20
- Track 37 : Tyson\_20, Wamburggrxpress\_20
- Track 38 : CicholasNage\_20, Halena\_20
- Track 39 : Wyatt2\_20, MAckerman\_20, Acquire49\_20, Rose5\_20
- Track 40 : Silverleaf\_20
- Track 41 : Enceladus\_20, Appletree2\_20, DirkDirk\_20, JoeDirt\_20
- Track 42 : UPIE\_20
- Track 43 : OhShagHennessy\_20
- Track 44 : LeBron\_20
- Track 45 : Bromden\_21
- Track 46 : Raymond7\_20
- Track 47 : Phrann\_20
- Track 48 : Atcoo\_21
- Track 49 : Xavia\_21
- Track 50 : D12\_24, PR\_24
- Track 51 : Jeon\_24
- Track 52 : GodPhather\_25

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

The start number called the most often in the published annotations is 18, it was called in 31 of the 97 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Allegro\_32, Arbiter\_32, Ares\_32, Bananafish\_32, Blocker23\_32, Boyle\_32, Brownie5\_32, Calamitous\_32, Coffee\_32, Eaglehorse\_32, Faze9\_32, FrenchFry\_32, Glass\_32, Godines\_32, Hedgerow\_32, Holeinone\_32, ItsyBitsy1\_32, Kaleb\_32, Kheth\_32, Lars\_32, Lephleur\_32, LizLemon\_32, MasterPo\_32, Opia\_32, Phantasmagoria\_32, Qyrzula\_30, Rhinoforte\_32, Rosebush\_32, Sabella\_32, TA17A\_32, Tinciduntolum\_33, Tres\_32, Vic9\_33, West99\_32,

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

- 

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

- Acquire49\_20, Agent47\_25, AlleyCat\_26, Appletree2\_20, Atcoo\_21, AvadaKedavra\_20, BigPhil\_19, Bromden\_21, Calm\_20, Cerasum\_19, CicholasNage\_20, Clifton\_18, Collard\_25, Crumble\_18, D12\_24, Dadosky\_26, DirkDirk\_20, Edugator\_25, Enceladus\_20, Eponine\_28, Feyre\_25, Gengar\_25, GodPhather\_25, Guillsminger\_25, Halena\_20, Heftyboy\_25, InvictusManeo\_25, Jeon\_24, JoeDirt\_20, JustASigh\_21, Koella\_18, Kratio\_24, Larva\_26, LastJedi\_18, LeBron\_20, Leston\_25, MAckerman\_20, Mao1\_26, Mask\_27, Miryou\_25, OhShagHennessy\_20, OkiRoe\_25, Omnicron\_26, PR\_24, Paola\_25, Phrann\_20, Pippy\_18, Psycho\_26, Rando14\_26, Raymond7\_20, Rose5\_20, SamScheppers\_26, Sarma624\_19, Sejanus\_27, Silverleaf\_20, SoSeph\_25, Taquito\_26, Thyatira\_25, Tyson\_20, UPIE\_20, Velveteen\_19, Wamburggrxpress\_20, Waterfoul\_25, Wyatt2\_20, Xavia\_21, Zaria\_20,

**Summary by start number:**

Start 1:

- Found in 1 of 100 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JustASigh\_21 (AH),

Start 4:

- Found in 4 of 100 ( 4.0% ) of genes in pham
- Manual Annotations of this start: 2 of 97
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Atcoo\_21 (P1), Xavia\_21 (P3),

Start 5:

- Found in 9 of 100 ( 9.0% ) of genes in pham
- Manual Annotations of this start: 9 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BigPhil\_19 (F1), Cerasum\_19 (F1), Clifton\_18 (F1), Crumble\_18 (F1), Koella\_18 (F1), LastJedi\_18 (F1), Pippy\_18 (F1), Sarma624\_19 (F1), Velveteen\_19 (F1),

Start 6:

- Found in 2 of 100 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Phrann\_20 (N), Raymond7\_20 (N),

Start 7:

- Found in 4 of 100 ( 4.0% ) of genes in pham
- Manual Annotations of this start: 1 of 97
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Bromden\_21 (L4),

Start 16:

- Found in 3 of 100 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 3 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Eponine\_28 (K4), SamScheppers\_26 (K4), Taquito\_26 (K4),

Start 17:

- Found in 3 of 100 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 3 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Mao1\_26 (AD), Mask\_27 (AD), Sejanus\_27 (AD),

Start 18:

- Found in 34 of 100 ( 34.0% ) of genes in pham
- Manual Annotations of this start: 31 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Allegro\_32 (B2), Arbiter\_32 (B2), Ares\_32 (B2), Bananafish\_32 (B2), Blocker23\_32 (B2), Boyle\_32 (B2), Brownie5\_32 (B2), Calamitous\_32 (B2), Coffee\_32 (B2), Eaglehorse\_32 (B2), Faze9\_32 (B2),

FrenchFry\_32 (B2), Glass\_32 (B2), Godines\_32 (B2), Hedgerow\_32 (B2), Holeinone\_32 (B2), ItsyBitsy1\_32 (B2), Kaleb\_32 (B2), Kheth\_32 (B2), Lars\_32 (B2), Lephleur\_32 (B2), LizLemon\_32 (B2), MasterPo\_32 (B2), Opia\_32 (B2), Phantasmagoria\_32 (B2), Qyrzula\_30 (B2), Rhinoforte\_32 (B2), Rosebush\_32 (B2), Sabella\_32 (B2), TA17A\_32 (B2), Tinciduntolum\_33 (B2), Tres\_32 (B2), Vic9\_33 (B2), West99\_32 (B2),

Start 19:

- Found in 4 of 100 ( 4.0% ) of genes in pham
- Manual Annotations of this start: 4 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: D12\_24 (W), GodPhather\_25 (W), Jeon\_24 (W), PR\_24 (W),

Start 21:

- Found in 19 of 100 ( 19.0% ) of genes in pham
- Manual Annotations of this start: 19 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acquire49\_20 (L1), Appletree2\_20 (L1), AvadaKedavra\_20 (L1), Calm\_20 (L1), CicholasNage\_20 (L1), DirkDirk\_20 (L1), Enceladus\_20 (L1), Halena\_20 (L1), JoeDirt\_20 (L1), LeBron\_20 (L1), MAckerman\_20 (L1), OhShagHennessy\_20 (L1), Rose5\_20 (L1), Silverleaf\_20 (L1), Tyson\_20 (L1), UPIE\_20 (L1), Wamburgxpress\_20 (L1), Wyatt2\_20 (L1), Zaria\_20 (L1),

Start 24:

- Found in 22 of 100 ( 22.0% ) of genes in pham
- Manual Annotations of this start: 22 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Agent47\_25 (K5), AlleyCat\_26 (K5), Collard\_25 (K5), Dadosky\_26 (K5), Edugator\_25 (K5), Feyre\_25 (K5), Gengar\_25 (K5), Guillsminger\_25 (K5), Heftyboy\_25 (K5), InvictusManeo\_25 (K5), Kratio\_24 (K5), Larva\_26 (K5), Leston\_25 (K5), Miryou\_25 (K5), OkiRoe\_25 (K5), Omnicron\_26 (K5), Paola\_25 (K5), Psycho\_26 (K5), Rando14\_26 (K5), SoSeph\_25 (K5), Thyatira\_25 (K5), Waterfoul\_25 (K5),

### **Summary by clusters:**

There are 12 clusters represented in this pham: P3, P1, B2, F1, AH, K4, N, W, L4, K5, L1, AD,

Info for manual annotations of cluster AD:

- Start number 17 was manually annotated 3 times for cluster AD.

Info for manual annotations of cluster AH:

- Start number 1 was manually annotated 1 time for cluster AH.

Info for manual annotations of cluster B2:

- Start number 18 was manually annotated 31 times for cluster B2.

Info for manual annotations of cluster F1:

- Start number 5 was manually annotated 9 times for cluster F1.

Info for manual annotations of cluster K4:

- Start number 16 was manually annotated 3 times for cluster K4.

Info for manual annotations of cluster K5:

- Start number 24 was manually annotated 22 times for cluster K5.

Info for manual annotations of cluster L1:

- Start number 21 was manually annotated 19 times for cluster L1.

Info for manual annotations of cluster L4:

- Start number 7 was manually annotated 1 time for cluster L4.

Info for manual annotations of cluster N:

- Start number 6 was manually annotated 2 times for cluster N.

Info for manual annotations of cluster P1:

- Start number 4 was manually annotated 1 time for cluster P1.

Info for manual annotations of cluster P3:

- Start number 4 was manually annotated 1 time for cluster P3.

Info for manual annotations of cluster W:

- Start number 19 was manually annotated 4 times for cluster W.

### ***Gene Information:***

Gene: Acquire49\_20 Start: 18997, Stop: 21678, Start Num: 21

Candidate Starts for Acquire49\_20:

(Start: 21 @18997 has 19 MA's), (22, 19003), (52, 19180), (56, 19210), (62, 19273), (73, 19348), (78, 19402), (84, 19462), (85, 19468), (96, 19534), (107, 19597), (111, 19630), (112, 19633), (117, 19657), (124, 19687), (126, 19693), (133, 19741), (138, 19762), (143, 19777), (146, 19798), (152, 19837), (155, 19849), (161, 19867), (167, 19924), (171, 19942), (173, 19972), (175, 19996), (176, 19999), (182, 20044), (187, 20095), (190, 20113), (195, 20167), (199, 20239), (201, 20251), (203, 20260), (208, 20302), (210, 20332), (213, 20368), (216, 20386), (220, 20401), (222, 20407), (227, 20440), (243, 20569), (244, 20578), (254, 20659), (258, 20695), (259, 20701), (274, 20806), (275, 20815), (279, 20830), (281, 20848), (284, 20890), (291, 20986), (293, 20992), (302, 21046), (303, 21052), (305, 21064), (319, 21175), (323, 21205), (324, 21211), (334, 21307), (335, 21313), (337, 21337), (338, 21343), (339, 21349), (344, 21394), (345, 21403), (346, 21412), (350, 21451), (352, 21487), (353, 21496), (354, 21511), (359, 21607), (361, 21658), (362, 21664),

Gene: Agent47\_25 Start: 21256, Stop: 23766, Start Num: 24

Candidate Starts for Agent47\_25:

(Start: 24 @21256 has 22 MA's), (32, 21304), (34, 21316), (38, 21325), (64, 21535), (77, 21619), (98, 21772), (101, 21796), (106, 21826), (121, 21907), (122, 21916), (125, 21925), (129, 21952), (132, 21973), (139, 22006), (142, 22018), (147, 22045), (148, 22051), (156, 22096), (166, 22174), (174, 22252), (177, 22273), (181, 22318), (184, 22354), (189, 22390), (191, 22411), (194, 22441), (195, 22453), (206, 22573), (212, 22636), (213, 22660), (226, 22717), (231, 22774), (232, 22789), (239, 22810), (243, 22849), (261, 22990), (274, 23077), (283, 23143), (286, 23179), (288, 23212), (292, 23233), (299, 23269), (310, 23344), (311, 23347), (312, 23371), (316, 23404), (322, 23431), (325, 23452), (327, 23470), (332, 23524), (355, 23752),

Gene: Allegro\_32 Start: 29960, Stop: 32680, Start Num: 18

Candidate Starts for Allegro\_32:

(Start: 18 @29960 has 31 MA's), (30, 30014), (39, 30053), (46, 30098), (48, 30122), (49, 30125), (53, 30158), (63, 30266), (69, 30287), (70, 30290), (76, 30344), (80, 30404), (82, 30428), (86, 30464), (95, 30512), (99, 30533), (105, 30572), (111, 30611), (115, 30626), (127, 30680), (128, 30692), (132, 30716), (137, 30740), (141, 30752), (144, 30767), (147, 30782), (153, 30824), (158, 30842), (162, 30881), (165, 30905), (185, 31076), (194, 31154), (198, 31214), (201, 31250), (202, 31253), (210, 31331), (213, 31367), (218, 31391), (230, 31490), (238, 31529), (244, 31583), (258, 31700), (263, 31727), (271, 31790), (273, 31796), (274, 31811), (281, 31853), (287, 31940), (293, 31997), (295, 32015), (300, 32036), (301, 32045), (302, 32051), (303, 32057), (305, 32069), (317, 32174), (321, 32192), (326, 32225), (334, 32312), (337, 32342), (338, 32348), (345, 32408), (353, 32501), (354, 32516), (358, 32558), (363, 32672),

Gene: AlleyCat\_26 Start: 21193, Stop: 23697, Start Num: 24

Candidate Starts for AlleyCat\_26:

(Start: 24 @21193 has 22 MA's), (32, 21241), (34, 21253), (56, 21400), (64, 21469), (77, 21553), (98, 21706), (101, 21730), (105, 21757), (121, 21841), (122, 21850), (125, 21859), (129, 21886), (132, 21907), (139, 21940), (142, 21952), (147, 21979), (166, 22108), (174, 22186), (177, 22207), (181, 22252), (184, 22288), (186, 22300), (189, 22324), (194, 22375), (195, 22387), (199, 22465), (206, 22507), (212, 22570), (213, 22594), (231, 22708), (232, 22723), (239, 22744), (243, 22783), (261, 22924), (274, 23011), (275, 23020), (283, 23077), (286, 23113), (288, 23146), (292, 23167), (310, 23278), (311, 23281), (312, 23305), (313, 23329), (315, 23335), (316, 23338), (322, 23365), (325, 23386), (327, 23404), (332, 23455), (341, 23536), (355, 23683),

Gene: Appletree2\_20 Start: 18940, Stop: 21621, Start Num: 21

Candidate Starts for Appletree2\_20:

(Start: 21 @18940 has 19 MA's), (22, 18946), (52, 19123), (56, 19153), (62, 19216), (73, 19291), (84, 19405), (85, 19411), (96, 19477), (107, 19540), (111, 19573), (112, 19576), (117, 19600), (122, 19624), (124, 19630), (126, 19636), (133, 19684), (138, 19705), (143, 19720), (146, 19741), (152, 19780), (155, 19792), (161, 19810), (171, 19885), (173, 19915), (175, 19939), (176, 19942), (182, 19987), (187, 20038), (190, 20056), (195, 20110), (199, 20182), (201, 20194), (203, 20203), (205, 20221), (208, 20245), (210, 20275), (213, 20311), (220, 20344), (222, 20350), (228, 20416), (240, 20482), (244, 20521), (254, 20602), (258, 20638), (259, 20644), (274, 20749), (275, 20758), (279, 20773), (281, 20791), (284, 20833), (291, 20929), (293, 20935), (302, 20989), (303, 20995), (305, 21007), (319, 21118), (323, 21148), (324, 21154), (334, 21250), (335, 21256), (337, 21280), (338, 21286), (339, 21292), (344, 21337), (345, 21346), (346, 21355), (350, 21394), (352, 21430), (353, 21439), (354, 21454), (359, 21550), (361, 21601), (362, 21607),

Gene: Arbiter\_32 Start: 30049, Stop: 32769, Start Num: 18

Candidate Starts for Arbiter\_32:

(Start: 18 @30049 has 31 MA's), (30, 30103), (39, 30142), (46, 30187), (48, 30211), (49, 30214), (53, 30247), (63, 30355), (69, 30376), (70, 30379), (76, 30433), (80, 30493), (82, 30517), (86, 30553), (95, 30601), (99, 30622), (105, 30661), (111, 30700), (115, 30715), (127, 30769), (128, 30781), (132, 30805), (137, 30829), (141, 30841), (144, 30856), (147, 30871), (153, 30913), (158, 30931), (162, 30970), (165, 30994), (185, 31165), (194, 31243), (198, 31303), (201, 31339), (202, 31342), (210, 31420), (213, 31456), (218, 31480), (223, 31501), (244, 31672), (245, 31678), (258, 31789), (263, 31816), (271, 31879), (273, 31885), (274, 31900), (281, 31942), (287, 32029), (289, 32056), (293, 32086), (295, 32104), (300, 32125), (301, 32134), (302, 32140), (303, 32146), (305, 32158), (317, 32263), (321, 32281), (326, 32314), (334, 32401), (337, 32431), (338, 32437), (345, 32497), (353, 32590), (354, 32605), (358, 32647), (363, 32761),

Gene: Ares\_32 Start: 29971, Stop: 32691, Start Num: 18

Candidate Starts for Ares\_32:



(Start: 18 @29971 has 31 MA's), (30, 30025), (39, 30064), (46, 30109), (48, 30133), (49, 30136), (53, 30169), (63, 30277), (69, 30298), (70, 30301), (76, 30355), (80, 30415), (82, 30439), (86, 30475), (95, 30523), (99, 30544), (105, 30583), (111, 30622), (115, 30637), (127, 30691), (128, 30703), (132, 30727), (137, 30751), (141, 30763), (144, 30778), (147, 30793), (153, 30835), (158, 30853), (162, 30892), (165, 30916), (185, 31087), (194, 31165), (198, 31225), (201, 31261), (202, 31264), (210, 31342), (213, 31378), (218, 31402), (223, 31423), (244, 31594), (245, 31600), (258, 31711), (263, 31738), (271, 31801), (273, 31807), (274, 31822), (281, 31864), (287, 31951), (289, 31978), (293, 32008), (295, 32026), (300, 32047), (301, 32056), (302, 32062), (303, 32068), (305, 32080), (317, 32185), (321, 32203), (326, 32236), (334, 32323), (337, 32353), (338, 32359), (345, 32419), (353, 32512), (354, 32527), (358, 32569), (363, 32683),

Gene: Atcoo\_21 Start: 18913, Stop: 21759, Start Num: 4

Candidate Starts for Atcoo\_21:

(Start: 4 @18913 has 2 MA's), (28, 19066), (65, 19339), (69, 19351), (71, 19372), (74, 19396), (79, 19471), (87, 19543), (93, 19573), (100, 19609), (108, 19672), (112, 19687), (117, 19714), (118, 19720), (132, 19795), (136, 19819), (139, 19825), (142, 19837), (149, 19879), (150, 19885), (163, 19972), (168, 19993), (171, 20017), (178, 20083), (179, 20104), (183, 20122), (185, 20155), (188, 20179), (189, 20182), (194, 20233), (198, 20293), (201, 20329), (202, 20332), (203, 20338), (210, 20410), (213, 20446), (218, 20470), (230, 20569), (238, 20608), (244, 20662), (253, 20737), (258, 20779), (263, 20806), (271, 20869), (273, 20875), (274, 20890), (281, 20932), (283, 20971), (287, 21019), (289, 21046), (290, 21049), (293, 21076), (295, 21094), (301, 21124), (303, 21136), (305, 21148), (317, 21253), (321, 21271), (326, 21304), (328, 21319), (337, 21421), (338, 21427), (345, 21487), (347, 21505), (353, 21580), (354, 21595), (355, 21601), (358, 21637), (363, 21751),

Gene: AvadaKedavra\_20 Start: 19007, Stop: 21688, Start Num: 21

Candidate Starts for AvadaKedavra\_20:

(Start: 21 @19007 has 19 MA's), (22, 19013), (52, 19190), (56, 19220), (62, 19283), (73, 19358), (84, 19472), (85, 19478), (96, 19544), (107, 19607), (111, 19640), (112, 19643), (117, 19667), (122, 19691), (124, 19697), (126, 19703), (133, 19751), (138, 19772), (143, 19787), (146, 19808), (152, 19847), (155, 19859), (161, 19877), (167, 19934), (171, 19952), (173, 19982), (175, 20006), (176, 20009), (182, 20054), (187, 20105), (190, 20123), (195, 20177), (199, 20249), (201, 20261), (203, 20270), (208, 20312), (210, 20342), (213, 20378), (216, 20396), (220, 20411), (222, 20417), (227, 20450), (243, 20579), (244, 20588), (254, 20669), (258, 20705), (259, 20711), (274, 20816), (275, 20825), (279, 20840), (281, 20858), (284, 20900), (291, 20996), (293, 21002), (302, 21056), (303, 21062), (305, 21074), (319, 21185), (323, 21215), (324, 21221), (334, 21317), (335, 21323), (337, 21347), (338, 21353), (339, 21359), (344, 21404), (345, 21413), (346, 21422), (350, 21461), (352, 21497), (353, 21506), (354, 21521), (359, 21617), (361, 21668), (362, 21674),

Gene: Bananafish\_32 Start: 29969, Stop: 32689, Start Num: 18

Candidate Starts for Bananafish\_32:

(Start: 18 @29969 has 31 MA's), (30, 30023), (39, 30062), (46, 30107), (48, 30131), (49, 30134), (53, 30167), (63, 30275), (69, 30296), (70, 30299), (76, 30353), (80, 30413), (82, 30437), (86, 30473), (95, 30521), (99, 30542), (105, 30581), (111, 30620), (115, 30635), (127, 30689), (128, 30701), (132, 30725), (137, 30749), (141, 30761), (144, 30776), (147, 30791), (153, 30833), (158, 30851), (162, 30890), (165, 30914), (185, 31085), (194, 31163), (198, 31223), (201, 31259), (202, 31262), (210, 31340), (213, 31376), (218, 31400), (230, 31499), (238, 31538), (244, 31592), (258, 31709), (263, 31736), (271, 31799), (273, 31805), (274, 31820), (281, 31862), (287, 31949), (289, 31976), (293, 32006), (295, 32024), (300, 32045), (301, 32054), (302, 32060), (303, 32066), (305, 32078), (317, 32183), (321, 32201), (326, 32234), (334, 32321), (337, 32351), (338, 32357), (345, 32417), (353, 32510), (354, 32525), (358, 32567), (363, 32681),

Gene: BigPhil\_19 Start: 17226, Stop: 20090, Start Num: 5

Candidate Starts for BigPhil\_19:

(Start: 5 @17226 has 9 MA's), (8, 17247), (10, 17268), (12, 17307), (26, 17376), (27, 17385), (28, 17388), (41, 17439), (50, 17529), (57, 17580), (65, 17664), (69, 17676), (71, 17697), (75, 17730), (88, 17877), (100, 17940), (106, 17979), (108, 18003), (112, 18018), (114, 18027), (118, 18054), (120, 18060), (132, 18129), (136, 18150), (139, 18156), (145, 18192), (149, 18210), (163, 18303), (168, 18324), (171, 18348), (178, 18414), (179, 18435), (183, 18453), (185, 18486), (189, 18513), (194, 18564), (197, 18600), (198, 18624), (201, 18660), (203, 18669), (204, 18684), (208, 18711), (210, 18741), (213, 18777), (218, 18801), (230, 18900), (238, 18939), (242, 18978), (245, 18999), (258, 19110), (263, 19137), (267, 19167), (270, 19188), (271, 19200), (273, 19206), (281, 19263), (293, 19407), (295, 19425), (303, 19467), (305, 19479), (326, 19635), (334, 19722), (337, 19752), (338, 19758), (345, 19818), (347, 19836), (353, 19911), (355, 19932), (358, 19968), (363, 20082),

Gene: Blocker23\_32 Start: 30090, Stop: 32807, Start Num: 18

Candidate Starts for Blocker23\_32:

(Start: 18 @30090 has 31 MA's), (30, 30144), (39, 30183), (46, 30228), (48, 30252), (49, 30255), (53, 30288), (63, 30396), (69, 30417), (70, 30420), (76, 30474), (80, 30534), (82, 30558), (86, 30594), (95, 30642), (99, 30663), (105, 30702), (111, 30741), (115, 30756), (127, 30810), (128, 30822), (132, 30846), (137, 30870), (141, 30882), (144, 30897), (147, 30912), (153, 30954), (158, 30972), (162, 31011), (165, 31035), (185, 31206), (194, 31284), (198, 31344), (201, 31380), (202, 31383), (210, 31461), (213, 31497), (218, 31521), (223, 31542), (244, 31710), (245, 31716), (258, 31827), (263, 31854), (271, 31917), (273, 31923), (274, 31938), (281, 31980), (287, 32067), (289, 32094), (293, 32124), (295, 32142), (300, 32163), (301, 32172), (302, 32178), (303, 32184), (305, 32196), (317, 32301), (321, 32319), (326, 32352), (334, 32439), (337, 32469), (338, 32475), (345, 32535), (353, 32628), (354, 32643), (358, 32685), (363, 32799),

Gene: Boyle\_32 Start: 30088, Stop: 32808, Start Num: 18

Candidate Starts for Boyle\_32:

(Start: 18 @30088 has 31 MA's), (30, 30142), (39, 30181), (46, 30226), (48, 30250), (49, 30253), (53, 30286), (63, 30394), (69, 30415), (70, 30418), (76, 30472), (80, 30532), (82, 30556), (86, 30592), (95, 30640), (99, 30661), (105, 30700), (111, 30739), (115, 30754), (127, 30808), (128, 30820), (132, 30844), (137, 30868), (141, 30880), (144, 30895), (147, 30910), (153, 30952), (158, 30970), (162, 31009), (165, 31033), (185, 31204), (194, 31282), (198, 31342), (201, 31378), (202, 31381), (210, 31459), (213, 31495), (218, 31519), (223, 31540), (244, 31711), (245, 31717), (258, 31828), (263, 31855), (271, 31918), (273, 31924), (274, 31939), (281, 31981), (287, 32068), (289, 32095), (293, 32125), (295, 32143), (300, 32164), (301, 32173), (302, 32179), (303, 32185), (305, 32197), (317, 32302), (321, 32320), (326, 32353), (334, 32440), (337, 32470), (338, 32476), (345, 32536), (353, 32629), (354, 32644), (358, 32686), (363, 32800),

Gene: Bromden\_21 Start: 19281, Stop: 21821, Start Num: 7

Candidate Starts for Bromden\_21:

(Start: 7 @19281 has 1 MA's), (9, 19287), (11, 19308), (15, 19362), (25, 19410), (33, 19458), (40, 19494), (47, 19545), (60, 19665), (70, 19719), (81, 19854), (90, 19914), (109, 20025), (116, 20061), (131, 20139), (132, 20142), (142, 20181), (153, 20247), (154, 20256), (156, 20259), (157, 20262), (164, 20328), (179, 20442), (199, 20613), (214, 20754), (215, 20757), (216, 20760), (224, 20787), (225, 20796), (226, 20799), (231, 20856), (232, 20871), (233, 20880), (243, 20925), (246, 20943), (250, 20970), (251, 20985), (252, 20997), (253, 21003), (255, 21033), (257, 21042), (262, 21057), (264, 21063), (268, 21093), (269, 21096), (272, 21126), (276, 21156), (277, 21159), (298, 21348), (304, 21375), (309, 21420), (316, 21486), (323, 21519), (324, 21525), (331, 21564), (333, 21603), (336, 21630), (351, 21762),

Gene: Brownie5\_32 Start: 30094, Stop: 32814, Start Num: 18

Candidate Starts for Brownie5\_32:

(Start: 18 @30094 has 31 MA's), (30, 30148), (39, 30187), (46, 30232), (48, 30256), (49, 30259), (53, 30292), (63, 30400), (69, 30421), (70, 30424), (76, 30478), (80, 30538), (82, 30562), (86, 30598), (95,

30646), (99, 30667), (105, 30706), (111, 30745), (115, 30760), (127, 30814), (128, 30826), (132, 30850), (137, 30874), (141, 30886), (144, 30901), (147, 30916), (153, 30958), (158, 30976), (162, 31015), (165, 31039), (185, 31210), (194, 31288), (198, 31348), (201, 31384), (202, 31387), (210, 31465), (213, 31501), (218, 31525), (223, 31546), (244, 31717), (245, 31723), (258, 31834), (263, 31861), (271, 31924), (273, 31930), (274, 31945), (281, 31987), (287, 32074), (289, 32101), (293, 32131), (295, 32149), (300, 32170), (301, 32179), (302, 32185), (303, 32191), (305, 32203), (317, 32308), (321, 32326), (326, 32359), (334, 32446), (337, 32476), (338, 32482), (345, 32542), (353, 32635), (354, 32650), (358, 32692), (363, 32806),

Gene: Calamitous\_32 Start: 29974, Stop: 32694, Start Num: 18

Candidate Starts for Calamitous\_32:

(Start: 18 @29974 has 31 MA's), (30, 30028), (39, 30067), (46, 30112), (48, 30136), (49, 30139), (53, 30172), (63, 30280), (69, 30301), (70, 30304), (76, 30358), (80, 30418), (82, 30442), (86, 30478), (95, 30526), (99, 30547), (105, 30586), (111, 30625), (115, 30640), (127, 30694), (128, 30706), (132, 30730), (137, 30754), (141, 30766), (144, 30781), (147, 30796), (153, 30838), (158, 30856), (162, 30895), (165, 30919), (185, 31090), (194, 31168), (198, 31228), (201, 31264), (202, 31267), (210, 31345), (213, 31381), (218, 31405), (223, 31426), (244, 31597), (258, 31714), (263, 31741), (271, 31804), (273, 31810), (274, 31825), (281, 31867), (287, 31954), (293, 32011), (295, 32029), (300, 32050), (301, 32059), (302, 32065), (303, 32071), (305, 32083), (317, 32188), (321, 32206), (326, 32239), (334, 32326), (337, 32356), (338, 32362), (345, 32422), (353, 32515), (354, 32530), (358, 32572), (363, 32686),

Gene: Calm\_20 Start: 19011, Stop: 21692, Start Num: 21

Candidate Starts for Calm\_20:

(Start: 21 @19011 has 19 MA's), (22, 19017), (52, 19194), (56, 19224), (62, 19287), (73, 19362), (78, 19416), (84, 19476), (85, 19482), (96, 19548), (107, 19611), (111, 19644), (112, 19647), (117, 19671), (122, 19695), (124, 19701), (126, 19707), (133, 19755), (138, 19776), (143, 19791), (146, 19812), (152, 19851), (155, 19863), (161, 19881), (171, 19956), (173, 19986), (175, 20010), (176, 20013), (182, 20058), (187, 20109), (190, 20127), (195, 20181), (199, 20253), (201, 20265), (203, 20274), (208, 20316), (210, 20346), (213, 20382), (216, 20400), (220, 20415), (222, 20421), (227, 20454), (243, 20583), (244, 20592), (254, 20673), (258, 20709), (259, 20715), (274, 20820), (275, 20829), (279, 20844), (281, 20862), (284, 20904), (291, 21000), (293, 21006), (302, 21060), (303, 21066), (305, 21078), (319, 21189), (323, 21219), (324, 21225), (334, 21321), (335, 21327), (337, 21351), (338, 21357), (339, 21363), (344, 21408), (345, 21417), (346, 21426), (350, 21465), (352, 21501), (353, 21510), (354, 21525), (359, 21621), (361, 21672), (362, 21678),

Gene: Cerasum\_19 Start: 17226, Stop: 20090, Start Num: 5

Candidate Starts for Cerasum\_19:

(Start: 5 @17226 has 9 MA's), (8, 17247), (10, 17268), (12, 17307), (26, 17376), (27, 17385), (28, 17388), (41, 17439), (50, 17529), (57, 17580), (65, 17664), (69, 17676), (71, 17697), (75, 17730), (88, 17877), (100, 17940), (106, 17979), (108, 18003), (112, 18018), (114, 18027), (118, 18054), (120, 18060), (132, 18129), (136, 18150), (139, 18156), (145, 18192), (149, 18210), (163, 18303), (168, 18324), (171, 18348), (178, 18414), (179, 18435), (183, 18453), (185, 18486), (189, 18513), (194, 18564), (197, 18600), (198, 18624), (201, 18660), (203, 18669), (204, 18684), (208, 18711), (210, 18741), (213, 18777), (218, 18801), (230, 18900), (238, 18939), (242, 18978), (245, 18999), (258, 19110), (263, 19137), (267, 19167), (270, 19188), (271, 19200), (273, 19206), (281, 19263), (293, 19407), (295, 19425), (303, 19467), (305, 19479), (326, 19635), (334, 19722), (337, 19752), (338, 19758), (345, 19818), (347, 19836), (353, 19911), (355, 19932), (358, 19968), (363, 20082),

Gene: CicholasNage\_20 Start: 18999, Stop: 21680, Start Num: 21

Candidate Starts for CicholasNage\_20:

(Start: 21 @18999 has 19 MA's), (22, 19005), (52, 19182), (56, 19212), (62, 19275), (73, 19350), (78, 19404), (84, 19464), (85, 19470), (96, 19536), (107, 19599), (111, 19632), (112, 19635), (117, 19659),

(122, 19683), (124, 19689), (126, 19695), (133, 19743), (138, 19764), (143, 19779), (146, 19800), (152, 19839), (155, 19851), (161, 19869), (171, 19944), (173, 19974), (175, 19998), (176, 20001), (182, 20046), (187, 20097), (190, 20115), (195, 20169), (199, 20241), (201, 20253), (203, 20262), (208, 20304), (210, 20334), (213, 20370), (216, 20388), (220, 20403), (222, 20409), (227, 20442), (243, 20571), (244, 20580), (254, 20661), (258, 20697), (259, 20703), (274, 20808), (275, 20817), (279, 20832), (281, 20850), (284, 20892), (291, 20988), (293, 20994), (302, 21048), (303, 21054), (305, 21066), (319, 21177), (323, 21207), (324, 21213), (330, 21243), (334, 21309), (335, 21315), (337, 21339), (338, 21345), (339, 21351), (344, 21396), (345, 21405), (346, 21414), (350, 21453), (352, 21489), (353, 21498), (354, 21513), (359, 21609), (361, 21660), (362, 21666),

Gene: Clifton\_18 Start: 17353, Stop: 20217, Start Num: 5

Candidate Starts for Clifton\_18:

(3, 17341), (Start: 5 @17353 has 9 MA's), (8, 17374), (10, 17395), (12, 17434), (26, 17503), (27, 17512), (28, 17515), (41, 17566), (50, 17656), (56, 17701), (65, 17791), (68, 17800), (69, 17803), (71, 17824), (72, 17836), (77, 17869), (88, 18004), (98, 18052), (100, 18067), (103, 18088), (108, 18130), (112, 18145), (114, 18154), (118, 18181), (120, 18187), (129, 18232), (130, 18241), (132, 18256), (135, 18268), (136, 18277), (139, 18283), (141, 18292), (145, 18319), (149, 18337), (163, 18430), (168, 18451), (171, 18475), (178, 18541), (179, 18562), (183, 18580), (185, 18613), (188, 18637), (189, 18640), (194, 18691), (197, 18727), (198, 18751), (201, 18787), (203, 18796), (204, 18811), (208, 18838), (210, 18868), (213, 18904), (218, 18928), (230, 19027), (238, 19066), (244, 19120), (258, 19237), (263, 19264), (271, 19327), (273, 19333), (274, 19348), (281, 19390), (287, 19477), (289, 19504), (293, 19534), (295, 19552), (301, 19582), (303, 19594), (305, 19606), (317, 19711), (321, 19729), (326, 19762), (334, 19849), (337, 19879), (338, 19885), (345, 19945), (346, 19954), (347, 19963), (353, 20038), (355, 20059), (358, 20095), (363, 20209),

Gene: Coffee\_32 Start: 30077, Stop: 32797, Start Num: 18

Candidate Starts for Coffee\_32:

(Start: 18 @30077 has 31 MA's), (30, 30131), (39, 30170), (46, 30215), (48, 30239), (49, 30242), (53, 30275), (63, 30383), (69, 30404), (70, 30407), (76, 30461), (80, 30521), (82, 30545), (86, 30581), (95, 30629), (99, 30650), (105, 30689), (111, 30728), (115, 30743), (127, 30797), (128, 30809), (132, 30833), (137, 30857), (141, 30869), (144, 30884), (147, 30899), (153, 30941), (158, 30959), (162, 30998), (165, 31022), (185, 31193), (194, 31271), (198, 31331), (201, 31367), (202, 31370), (210, 31448), (213, 31484), (218, 31508), (223, 31529), (244, 31700), (245, 31706), (258, 31817), (263, 31844), (271, 31907), (273, 31913), (274, 31928), (281, 31970), (287, 32057), (289, 32084), (293, 32114), (295, 32132), (300, 32153), (301, 32162), (302, 32168), (303, 32174), (305, 32186), (317, 32291), (321, 32309), (326, 32342), (334, 32429), (337, 32459), (338, 32465), (345, 32525), (353, 32618), (354, 32633), (358, 32675), (363, 32789),

Gene: Collard\_25 Start: 21217, Stop: 23727, Start Num: 24

Candidate Starts for Collard\_25:

(Start: 24 @21217 has 22 MA's), (32, 21265), (34, 21277), (38, 21286), (64, 21496), (77, 21580), (98, 21733), (101, 21757), (106, 21787), (121, 21868), (122, 21877), (125, 21886), (129, 21913), (132, 21934), (139, 21967), (142, 21979), (147, 22006), (148, 22012), (156, 22057), (166, 22135), (174, 22213), (177, 22234), (181, 22279), (184, 22315), (189, 22351), (191, 22372), (194, 22402), (195, 22414), (206, 22534), (212, 22597), (213, 22621), (226, 22678), (231, 22735), (232, 22750), (239, 22771), (243, 22810), (261, 22951), (274, 23038), (283, 23104), (286, 23140), (288, 23173), (292, 23194), (299, 23230), (310, 23305), (311, 23308), (312, 23332), (316, 23365), (322, 23392), (325, 23413), (327, 23431), (332, 23485), (355, 23713),

Gene: Crumble\_18 Start: 17400, Stop: 20264, Start Num: 5

Candidate Starts for Crumble\_18:

(3, 17388), (Start: 5 @17400 has 9 MA's), (8, 17421), (10, 17442), (12, 17481), (26, 17550), (27, 17559), (28, 17562), (41, 17613), (50, 17703), (56, 17748), (65, 17838), (68, 17847), (69, 17850), (71,

17871), (72, 17883), (77, 17916), (88, 18051), (98, 18099), (100, 18114), (103, 18135), (108, 18177), (112, 18192), (114, 18201), (118, 18228), (120, 18234), (129, 18279), (130, 18288), (132, 18303), (135, 18315), (136, 18324), (139, 18330), (141, 18339), (145, 18366), (149, 18384), (163, 18477), (168, 18498), (171, 18522), (178, 18588), (179, 18609), (183, 18627), (185, 18660), (188, 18684), (189, 18687), (194, 18738), (197, 18774), (198, 18798), (201, 18834), (203, 18843), (204, 18858), (208, 18885), (210, 18915), (213, 18951), (218, 18975), (230, 19074), (238, 19113), (244, 19167), (258, 19284), (263, 19311), (271, 19374), (273, 19380), (274, 19395), (281, 19437), (287, 19524), (289, 19551), (293, 19581), (295, 19599), (301, 19629), (303, 19641), (305, 19653), (317, 19758), (321, 19776), (326, 19809), (334, 19896), (337, 19926), (338, 19932), (345, 19992), (346, 20001), (347, 20010), (353, 20085), (355, 20106), (358, 20142), (363, 20256),

Gene: D12\_24 Start: 27231, Stop: 29945, Start Num: 19

Candidate Starts for D12\_24:

(Start: 19 @27231 has 4 MA's), (35, 27300), (43, 27333), (45, 27354), (51, 27411), (54, 27441), (58, 27459), (69, 27552), (70, 27555), (76, 27609), (77, 27615), (82, 27693), (86, 27729), (89, 27750), (99, 27798), (105, 27837), (115, 27891), (127, 27945), (128, 27957), (132, 27981), (137, 28005), (139, 28008), (147, 28047), (153, 28089), (165, 28170), (169, 28185), (172, 28215), (183, 28308), (185, 28341), (192, 28398), (193, 28410), (194, 28419), (198, 28479), (201, 28515), (202, 28518), (210, 28596), (213, 28632), (219, 28662), (223, 28677), (234, 28785), (242, 28833), (243, 28839), (244, 28848), (245, 28854), (258, 28965), (263, 28992), (271, 29055), (273, 29061), (274, 29076), (281, 29118), (293, 29262), (295, 29280), (303, 29322), (305, 29334), (317, 29439), (321, 29457), (326, 29490), (334, 29577), (337, 29607), (338, 29613), (340, 29634), (345, 29673), (347, 29691), (353, 29766), (355, 29787), (358, 29823), (363, 29937),

Gene: Dadosky\_26 Start: 21194, Stop: 23698, Start Num: 24

Candidate Starts for Dadosky\_26:

(Start: 24 @21194 has 22 MA's), (32, 21242), (34, 21254), (56, 21401), (64, 21470), (77, 21554), (98, 21707), (101, 21731), (105, 21758), (121, 21842), (122, 21851), (125, 21860), (129, 21887), (132, 21908), (139, 21941), (142, 21953), (147, 21980), (166, 22109), (174, 22187), (177, 22208), (181, 22253), (184, 22289), (186, 22301), (189, 22325), (194, 22376), (195, 22388), (199, 22466), (206, 22508), (212, 22571), (213, 22595), (231, 22709), (232, 22724), (239, 22745), (243, 22784), (261, 22925), (274, 23012), (275, 23021), (283, 23078), (286, 23114), (288, 23147), (292, 23168), (310, 23279), (311, 23282), (312, 23306), (313, 23330), (315, 23336), (316, 23339), (322, 23366), (325, 23387), (327, 23405), (332, 23456), (341, 23537), (355, 23684),

Gene: DirkDirk\_20 Start: 18980, Stop: 21661, Start Num: 21

Candidate Starts for DirkDirk\_20:

(Start: 21 @18980 has 19 MA's), (22, 18986), (52, 19163), (56, 19193), (62, 19256), (73, 19331), (84, 19445), (85, 19451), (96, 19517), (107, 19580), (111, 19613), (112, 19616), (117, 19640), (122, 19664), (124, 19670), (126, 19676), (133, 19724), (138, 19745), (143, 19760), (146, 19781), (152, 19820), (155, 19832), (161, 19850), (171, 19925), (173, 19955), (175, 19979), (176, 19982), (182, 20027), (187, 20078), (190, 20096), (195, 20150), (199, 20222), (201, 20234), (203, 20243), (205, 20261), (208, 20285), (210, 20315), (213, 20351), (220, 20384), (222, 20390), (228, 20456), (240, 20522), (244, 20561), (254, 20642), (258, 20678), (259, 20684), (274, 20789), (275, 20798), (279, 20813), (281, 20831), (284, 20873), (291, 20969), (293, 20975), (302, 21029), (303, 21035), (305, 21047), (319, 21158), (323, 21188), (324, 21194), (334, 21290), (335, 21296), (337, 21320), (338, 21326), (339, 21332), (344, 21377), (345, 21386), (346, 21395), (350, 21434), (352, 21470), (353, 21479), (354, 21494), (359, 21590), (361, 21641), (362, 21647),

Gene: Eaglehorse\_32 Start: 30001, Stop: 32721, Start Num: 18

Candidate Starts for Eaglehorse\_32:

(Start: 18 @30001 has 31 MA's), (30, 30055), (39, 30094), (46, 30139), (48, 30163), (49, 30166), (53, 30199), (63, 30307), (69, 30328), (70, 30331), (76, 30385), (80, 30445), (82, 30469), (86, 30505), (95,

30553), (99, 30574), (105, 30613), (111, 30652), (115, 30667), (127, 30721), (128, 30733), (132, 30757), (137, 30781), (141, 30793), (144, 30808), (147, 30823), (153, 30865), (158, 30883), (162, 30922), (165, 30946), (185, 31117), (194, 31195), (198, 31255), (201, 31291), (202, 31294), (210, 31372), (213, 31408), (218, 31432), (223, 31453), (244, 31624), (258, 31741), (263, 31768), (271, 31831), (273, 31837), (274, 31852), (281, 31894), (287, 31981), (289, 32008), (293, 32038), (295, 32056), (300, 32077), (301, 32086), (302, 32092), (303, 32098), (305, 32110), (317, 32215), (321, 32233), (326, 32266), (334, 32353), (337, 32383), (338, 32389), (345, 32449), (353, 32542), (354, 32557), (358, 32599), (363, 32713),

Gene: Edugator\_25 Start: 21193, Stop: 23697, Start Num: 24

Candidate Starts for Edugator\_25:

(Start: 24 @21193 has 22 MA's), (32, 21241), (34, 21253), (56, 21400), (64, 21469), (77, 21553), (98, 21706), (101, 21730), (105, 21757), (121, 21841), (122, 21850), (125, 21859), (129, 21886), (132, 21907), (139, 21940), (142, 21952), (147, 21979), (166, 22108), (174, 22186), (177, 22207), (181, 22252), (184, 22288), (186, 22300), (189, 22324), (194, 22375), (195, 22387), (199, 22465), (206, 22507), (212, 22570), (213, 22594), (231, 22708), (232, 22723), (239, 22744), (243, 22783), (261, 22924), (274, 23011), (275, 23020), (283, 23077), (286, 23113), (288, 23146), (292, 23167), (310, 23278), (311, 23281), (312, 23305), (313, 23329), (315, 23335), (316, 23338), (322, 23365), (325, 23386), (327, 23404), (332, 23455), (341, 23536), (355, 23683),

Gene: Enceladus\_20 Start: 18981, Stop: 21662, Start Num: 21

Candidate Starts for Enceladus\_20:

(Start: 21 @18981 has 19 MA's), (22, 18987), (52, 19164), (56, 19194), (62, 19257), (73, 19332), (84, 19446), (85, 19452), (96, 19518), (107, 19581), (111, 19614), (112, 19617), (117, 19641), (122, 19665), (124, 19671), (126, 19677), (133, 19725), (138, 19746), (143, 19761), (146, 19782), (152, 19821), (155, 19833), (161, 19851), (171, 19926), (173, 19956), (175, 19980), (176, 19983), (182, 20028), (187, 20079), (190, 20097), (195, 20151), (199, 20223), (201, 20235), (203, 20244), (205, 20262), (208, 20286), (210, 20316), (213, 20352), (220, 20385), (222, 20391), (228, 20457), (240, 20523), (244, 20562), (254, 20643), (258, 20679), (259, 20685), (274, 20790), (275, 20799), (279, 20814), (281, 20832), (284, 20874), (291, 20970), (293, 20976), (302, 21030), (303, 21036), (305, 21048), (319, 21159), (323, 21189), (324, 21195), (334, 21291), (335, 21297), (337, 21321), (338, 21327), (339, 21333), (344, 21378), (345, 21387), (346, 21396), (350, 21435), (352, 21471), (353, 21480), (354, 21495), (359, 21591), (361, 21642), (362, 21648),

Gene: Eponine\_28 Start: 22173, Stop: 24917, Start Num: 16

Candidate Starts for Eponine\_28:

(14, 22164), (Start: 16 @22173 has 3 MA's), (37, 22263), (46, 22308), (48, 22332), (65, 22488), (69, 22500), (71, 22521), (77, 22566), (88, 22701), (98, 22749), (100, 22764), (103, 22785), (106, 22803), (108, 22827), (112, 22842), (114, 22851), (118, 22878), (120, 22884), (129, 22929), (132, 22953), (135, 22965), (136, 22974), (139, 22980), (141, 22989), (145, 23016), (149, 23034), (163, 23127), (165, 23139), (168, 23148), (178, 23238), (179, 23259), (183, 23277), (185, 23310), (189, 23337), (194, 23388), (197, 23424), (198, 23448), (201, 23484), (203, 23493), (204, 23508), (208, 23535), (210, 23565), (213, 23601), (216, 23619), (217, 23622), (219, 23631), (240, 23781), (244, 23820), (258, 23937), (263, 23964), (271, 24027), (273, 24033), (274, 24048), (281, 24090), (287, 24177), (289, 24204), (293, 24234), (295, 24252), (301, 24282), (303, 24294), (305, 24306), (318, 24414), (321, 24429), (326, 24462), (330, 24483), (334, 24549), (337, 24579), (338, 24585), (345, 24645), (347, 24663), (353, 24738), (355, 24759), (358, 24795), (363, 24909),

Gene: Faze9\_32 Start: 30097, Stop: 32817, Start Num: 18

Candidate Starts for Faze9\_32:

(Start: 18 @30097 has 31 MA's), (30, 30151), (39, 30190), (46, 30235), (48, 30259), (49, 30262), (53, 30295), (63, 30403), (69, 30424), (70, 30427), (76, 30481), (80, 30541), (82, 30565), (86, 30601), (95, 30649), (99, 30670), (105, 30709), (111, 30748), (115, 30763), (127, 30817), (128, 30829), (132,

30853), (137, 30877), (141, 30889), (144, 30904), (147, 30919), (153, 30961), (158, 30979), (162, 31018), (165, 31042), (185, 31213), (194, 31291), (198, 31351), (201, 31387), (202, 31390), (210, 31468), (213, 31504), (218, 31528), (223, 31549), (244, 31720), (245, 31726), (258, 31837), (263, 31864), (271, 31927), (273, 31933), (274, 31948), (281, 31990), (287, 32077), (289, 32104), (293, 32134), (295, 32152), (300, 32173), (301, 32182), (302, 32188), (303, 32194), (305, 32206), (317, 32311), (321, 32329), (326, 32362), (334, 32449), (337, 32479), (338, 32485), (345, 32545), (353, 32638), (354, 32653), (358, 32695), (363, 32809),

Gene: Feyre\_25 Start: 21078, Stop: 23576, Start Num: 24

Candidate Starts for Feyre\_25:

(Start: 24 @21078 has 22 MA's), (34, 21138), (38, 21147), (56, 21288), (64, 21357), (77, 21441), (98, 21594), (101, 21618), (105, 21645), (112, 21687), (116, 21714), (119, 21726), (121, 21729), (122, 21738), (125, 21747), (129, 21774), (134, 21807), (139, 21828), (147, 21867), (156, 21918), (166, 21996), (174, 22074), (177, 22095), (184, 22176), (189, 22212), (191, 22233), (194, 22263), (195, 22275), (209, 22434), (214, 22494), (217, 22503), (221, 22518), (226, 22539), (232, 22611), (236, 22626), (241, 22656), (242, 22659), (246, 22683), (248, 22698), (251, 22725), (255, 22773), (260, 22803), (262, 22806), (265, 22818), (266, 22830), (274, 22887), (278, 22908), (280, 22920), (285, 22968), (286, 22995), (296, 23073), (297, 23076), (308, 23151), (311, 23163), (314, 23205), (315, 23208), (320, 23220), (343, 23421), (345, 23445), (346, 23454), (348, 23469), (355, 23562), (356, 23565),

Gene: FrenchFry\_32 Start: 30091, Stop: 32811, Start Num: 18

Candidate Starts for FrenchFry\_32:

(Start: 18 @30091 has 31 MA's), (30, 30145), (39, 30184), (46, 30229), (48, 30253), (49, 30256), (53, 30289), (63, 30397), (69, 30418), (70, 30421), (76, 30475), (80, 30535), (82, 30559), (86, 30595), (95, 30643), (99, 30664), (105, 30703), (111, 30742), (115, 30757), (127, 30811), (128, 30823), (132, 30847), (137, 30871), (141, 30883), (144, 30898), (147, 30913), (153, 30955), (158, 30973), (162, 31012), (165, 31036), (185, 31207), (194, 31285), (198, 31345), (201, 31381), (202, 31384), (210, 31462), (213, 31498), (218, 31522), (223, 31543), (244, 31714), (245, 31720), (258, 31831), (263, 31858), (271, 31921), (273, 31927), (274, 31942), (281, 31984), (287, 32071), (289, 32098), (293, 32128), (295, 32146), (300, 32167), (301, 32176), (302, 32182), (303, 32188), (305, 32200), (317, 32305), (321, 32323), (326, 32356), (334, 32443), (337, 32473), (338, 32479), (345, 32539), (353, 32632), (354, 32647), (358, 32689), (363, 32803),

Gene: Gengar\_25 Start: 21185, Stop: 23683, Start Num: 24

Candidate Starts for Gengar\_25:

(Start: 24 @21185 has 22 MA's), (34, 21245), (38, 21254), (56, 21395), (64, 21464), (77, 21548), (98, 21701), (101, 21725), (105, 21752), (112, 21794), (116, 21821), (119, 21833), (121, 21836), (122, 21845), (125, 21854), (129, 21881), (134, 21914), (139, 21935), (147, 21974), (156, 22025), (166, 22103), (174, 22181), (177, 22202), (181, 22247), (184, 22283), (189, 22319), (191, 22340), (194, 22370), (195, 22382), (209, 22541), (214, 22601), (217, 22610), (221, 22625), (226, 22646), (232, 22718), (236, 22733), (241, 22763), (242, 22766), (246, 22790), (248, 22805), (251, 22832), (255, 22880), (260, 22910), (262, 22913), (265, 22925), (266, 22937), (274, 22994), (278, 23015), (280, 23027), (285, 23075), (286, 23102), (296, 23180), (297, 23183), (308, 23258), (311, 23270), (314, 23312), (315, 23315), (320, 23327), (343, 23528), (345, 23552), (346, 23561), (348, 23576), (355, 23669), (356, 23672),

Gene: Glass\_32 Start: 30091, Stop: 32811, Start Num: 18

Candidate Starts for Glass\_32:

(Start: 18 @30091 has 31 MA's), (30, 30145), (39, 30184), (46, 30229), (48, 30253), (49, 30256), (53, 30289), (63, 30397), (69, 30418), (70, 30421), (76, 30475), (80, 30535), (82, 30559), (86, 30595), (95, 30643), (99, 30664), (105, 30703), (111, 30742), (115, 30757), (127, 30811), (128, 30823), (132, 30847), (137, 30871), (141, 30883), (144, 30898), (147, 30913), (153, 30955), (158, 30973), (162,

31012), (165, 31036), (185, 31207), (194, 31285), (198, 31345), (201, 31381), (202, 31384), (210, 31462), (213, 31498), (218, 31522), (230, 31621), (238, 31660), (244, 31714), (258, 31831), (263, 31858), (271, 31921), (273, 31927), (274, 31942), (281, 31984), (287, 32071), (293, 32128), (295, 32146), (300, 32167), (301, 32176), (302, 32182), (303, 32188), (305, 32200), (317, 32305), (321, 32323), (326, 32356), (334, 32443), (337, 32473), (338, 32479), (345, 32539), (353, 32632), (354, 32647), (358, 32689), (363, 32803),

Gene: GodPhather\_25 Start: 27493, Stop: 30207, Start Num: 19

Candidate Starts for GodPhather\_25:

(Start: 19 @27493 has 4 MA's), (35, 27562), (43, 27595), (45, 27616), (51, 27673), (54, 27703), (58, 27721), (69, 27814), (70, 27817), (76, 27871), (82, 27955), (86, 27991), (88, 28009), (89, 28012), (99, 28060), (105, 28099), (115, 28153), (127, 28207), (128, 28219), (132, 28243), (137, 28267), (141, 28279), (144, 28294), (153, 28351), (159, 28375), (165, 28432), (172, 28477), (179, 28552), (185, 28603), (192, 28660), (194, 28681), (198, 28741), (201, 28777), (202, 28780), (210, 28858), (213, 28894), (219, 28924), (223, 28939), (234, 29047), (242, 29095), (243, 29101), (244, 29110), (245, 29116), (253, 29185), (258, 29227), (263, 29254), (271, 29317), (273, 29323), (274, 29338), (275, 29347), (281, 29380), (289, 29494), (293, 29524), (295, 29542), (300, 29563), (301, 29572), (302, 29578), (303, 29584), (305, 29596), (317, 29701), (321, 29719), (326, 29752), (330, 29773), (334, 29839), (337, 29869), (338, 29875), (345, 29935), (347, 29953), (353, 30028), (355, 30049), (358, 30085), (363, 30199),

Gene: Godines\_32 Start: 29971, Stop: 32691, Start Num: 18

Candidate Starts for Godines\_32:

(Start: 18 @29971 has 31 MA's), (30, 30025), (39, 30064), (43, 30082), (46, 30109), (48, 30133), (49, 30136), (53, 30169), (63, 30277), (69, 30298), (70, 30301), (76, 30355), (80, 30415), (82, 30439), (86, 30475), (95, 30523), (99, 30544), (105, 30583), (111, 30622), (115, 30637), (127, 30691), (128, 30703), (132, 30727), (137, 30751), (141, 30763), (144, 30778), (147, 30793), (153, 30835), (158, 30853), (162, 30892), (165, 30916), (185, 31087), (194, 31165), (198, 31225), (201, 31261), (202, 31264), (210, 31342), (213, 31378), (218, 31402), (223, 31423), (244, 31594), (245, 31600), (258, 31711), (263, 31738), (271, 31801), (273, 31807), (274, 31822), (281, 31864), (287, 31951), (289, 31978), (293, 32008), (295, 32026), (300, 32047), (301, 32056), (302, 32062), (303, 32068), (305, 32080), (317, 32185), (321, 32203), (326, 32236), (334, 32323), (337, 32353), (338, 32359), (345, 32419), (353, 32512), (354, 32527), (358, 32569), (363, 32683),

Gene: Guillsminger\_25 Start: 21160, Stop: 23658, Start Num: 24

Candidate Starts for Guillsminger\_25:

(Start: 24 @21160 has 22 MA's), (34, 21220), (38, 21229), (56, 21370), (64, 21439), (77, 21523), (98, 21676), (101, 21700), (105, 21727), (112, 21769), (116, 21796), (119, 21808), (121, 21811), (122, 21820), (125, 21829), (129, 21856), (134, 21889), (139, 21910), (147, 21949), (156, 22000), (166, 22078), (174, 22156), (180, 22213), (181, 22222), (184, 22258), (188, 22291), (189, 22294), (191, 22315), (194, 22345), (195, 22357), (209, 22516), (214, 22576), (217, 22585), (221, 22600), (226, 22621), (232, 22693), (236, 22708), (241, 22738), (242, 22741), (246, 22765), (248, 22780), (251, 22807), (255, 22855), (260, 22885), (262, 22888), (265, 22900), (266, 22912), (274, 22969), (278, 22990), (280, 23002), (285, 23050), (286, 23077), (296, 23155), (297, 23158), (308, 23233), (311, 23245), (314, 23287), (315, 23290), (320, 23302), (343, 23503), (345, 23527), (346, 23536), (348, 23551), (355, 23644), (356, 23647),

Gene: Halena\_20 Start: 19008, Stop: 21689, Start Num: 21

Candidate Starts for Halena\_20:

(Start: 21 @19008 has 19 MA's), (22, 19014), (52, 19191), (56, 19221), (62, 19284), (73, 19359), (78, 19413), (84, 19473), (85, 19479), (96, 19545), (107, 19608), (111, 19641), (112, 19644), (117, 19668), (122, 19692), (124, 19698), (126, 19704), (133, 19752), (138, 19773), (143, 19788), (146, 19809), (152, 19848), (155, 19860), (161, 19878), (171, 19953), (173, 19983), (175, 20007), (176, 20010),



(182, 20055), (187, 20106), (190, 20124), (195, 20178), (199, 20250), (201, 20262), (203, 20271), (208, 20313), (210, 20343), (213, 20379), (216, 20397), (220, 20412), (222, 20418), (227, 20451), (243, 20580), (244, 20589), (254, 20670), (258, 20706), (259, 20712), (274, 20817), (275, 20826), (279, 20841), (281, 20859), (284, 20901), (291, 20997), (293, 21003), (302, 21057), (303, 21063), (305, 21075), (319, 21186), (323, 21216), (324, 21222), (330, 21252), (334, 21318), (335, 21324), (337, 21348), (338, 21354), (339, 21360), (344, 21405), (345, 21414), (346, 21423), (350, 21462), (352, 21498), (353, 21507), (354, 21522), (359, 21618), (361, 21669), (362, 21675),

Gene: Hedgerow\_32 Start: 30073, Stop: 32793, Start Num: 18

Candidate Starts for Hedgerow\_32:

(Start: 18 @30073 has 31 MA's), (30, 30127), (39, 30166), (46, 30211), (48, 30235), (49, 30238), (53, 30271), (63, 30379), (69, 30400), (70, 30403), (76, 30457), (80, 30517), (82, 30541), (86, 30577), (95, 30625), (99, 30646), (105, 30685), (111, 30724), (115, 30739), (127, 30793), (128, 30805), (132, 30829), (137, 30853), (141, 30865), (144, 30880), (147, 30895), (153, 30937), (158, 30955), (162, 30994), (165, 31018), (185, 31189), (194, 31267), (198, 31327), (201, 31363), (202, 31366), (210, 31444), (213, 31480), (218, 31504), (223, 31525), (244, 31696), (245, 31702), (258, 31813), (263, 31840), (271, 31903), (273, 31909), (274, 31924), (281, 31966), (287, 32053), (289, 32080), (293, 32110), (295, 32128), (300, 32149), (301, 32158), (302, 32164), (303, 32170), (305, 32182), (317, 32287), (321, 32305), (326, 32338), (334, 32425), (337, 32455), (338, 32461), (345, 32521), (353, 32614), (354, 32629), (358, 32671), (363, 32785),

Gene: Heftyboy\_25 Start: 21308, Stop: 23806, Start Num: 24

Candidate Starts for Heftyboy\_25:

(Start: 24 @21308 has 22 MA's), (34, 21368), (38, 21377), (56, 21518), (64, 21587), (77, 21671), (98, 21824), (101, 21848), (105, 21875), (112, 21917), (116, 21944), (119, 21956), (121, 21959), (122, 21968), (125, 21977), (129, 22004), (134, 22037), (147, 22097), (156, 22148), (166, 22226), (174, 22304), (177, 22325), (181, 22370), (184, 22406), (189, 22442), (191, 22463), (194, 22493), (195, 22505), (209, 22664), (214, 22724), (217, 22733), (221, 22748), (226, 22769), (232, 22841), (236, 22856), (241, 22886), (242, 22889), (246, 22913), (248, 22928), (251, 22955), (255, 23003), (260, 23033), (262, 23036), (265, 23048), (266, 23060), (274, 23117), (278, 23138), (280, 23150), (285, 23198), (286, 23225), (296, 23303), (297, 23306), (308, 23381), (311, 23393), (314, 23435), (315, 23438), (320, 23450), (343, 23651), (345, 23675), (346, 23684), (348, 23699), (355, 23792), (356, 23795),

Gene: Holeinone\_32 Start: 29953, Stop: 32673, Start Num: 18

Candidate Starts for Holeinone\_32:

(Start: 18 @29953 has 31 MA's), (30, 30007), (39, 30046), (46, 30091), (48, 30115), (49, 30118), (53, 30151), (63, 30259), (69, 30280), (70, 30283), (76, 30337), (80, 30397), (82, 30421), (86, 30457), (95, 30505), (99, 30526), (105, 30565), (111, 30604), (115, 30619), (127, 30673), (128, 30685), (132, 30709), (137, 30733), (141, 30745), (144, 30760), (147, 30775), (153, 30817), (158, 30835), (162, 30874), (165, 30898), (185, 31069), (194, 31147), (198, 31207), (201, 31243), (202, 31246), (210, 31324), (213, 31360), (218, 31384), (223, 31405), (244, 31576), (245, 31582), (258, 31693), (263, 31720), (271, 31783), (273, 31789), (274, 31804), (281, 31846), (293, 31990), (295, 32008), (300, 32029), (301, 32038), (302, 32044), (303, 32050), (305, 32062), (317, 32167), (321, 32185), (326, 32218), (328, 32233), (334, 32305), (337, 32335), (338, 32341), (345, 32401), (353, 32494), (354, 32509), (358, 32551), (360, 32653), (363, 32665),

Gene: InvictusManeo\_25 Start: 21260, Stop: 23770, Start Num: 24

Candidate Starts for InvictusManeo\_25:

(Start: 24 @21260 has 22 MA's), (32, 21308), (34, 21320), (38, 21329), (64, 21539), (77, 21623), (98, 21776), (101, 21800), (106, 21830), (121, 21911), (122, 21920), (125, 21929), (129, 21956), (132, 21977), (139, 22010), (142, 22022), (147, 22049), (148, 22055), (156, 22100), (166, 22178), (174, 22256), (177, 22277), (181, 22322), (184, 22358), (189, 22394), (191, 22415), (194, 22445), (195,

22457), (206, 22577), (212, 22640), (213, 22664), (226, 22721), (231, 22778), (232, 22793), (239, 22814), (243, 22853), (261, 22994), (274, 23081), (283, 23147), (286, 23183), (288, 23216), (292, 23237), (299, 23273), (310, 23348), (311, 23351), (312, 23375), (316, 23408), (322, 23435), (325, 23456), (327, 23474), (332, 23528), (355, 23756),

Gene: ItsyBitsy1\_32 Start: 29955, Stop: 32675, Start Num: 18

Candidate Starts for ItsyBitsy1\_32:

(Start: 18 @29955 has 31 MA's), (30, 30009), (39, 30048), (46, 30093), (48, 30117), (49, 30120), (53, 30153), (63, 30261), (69, 30282), (70, 30285), (76, 30339), (80, 30399), (82, 30423), (86, 30459), (95, 30507), (99, 30528), (105, 30567), (115, 30621), (127, 30675), (128, 30687), (132, 30711), (137, 30735), (141, 30747), (144, 30762), (147, 30777), (153, 30819), (158, 30837), (162, 30876), (165, 30900), (185, 31071), (194, 31149), (198, 31209), (201, 31245), (202, 31248), (210, 31326), (213, 31362), (218, 31386), (223, 31407), (244, 31578), (258, 31695), (263, 31722), (271, 31785), (273, 31791), (274, 31806), (281, 31848), (287, 31935), (289, 31962), (293, 31992), (295, 32010), (300, 32031), (301, 32040), (302, 32046), (303, 32052), (305, 32064), (317, 32169), (321, 32187), (326, 32220), (334, 32307), (337, 32337), (338, 32343), (345, 32403), (353, 32496), (354, 32511), (358, 32553), (363, 32667),

Gene: Jeon\_24 Start: 27235, Stop: 29949, Start Num: 19

Candidate Starts for Jeon\_24:

(Start: 19 @27235 has 4 MA's), (35, 27304), (43, 27337), (45, 27358), (51, 27415), (54, 27445), (58, 27463), (69, 27556), (70, 27559), (76, 27613), (82, 27697), (86, 27733), (88, 27751), (89, 27754), (99, 27802), (105, 27841), (115, 27895), (127, 27949), (128, 27961), (132, 27985), (137, 28009), (141, 28021), (144, 28036), (153, 28093), (159, 28117), (165, 28174), (169, 28189), (172, 28219), (179, 28294), (185, 28345), (192, 28402), (194, 28423), (198, 28483), (201, 28519), (202, 28522), (210, 28600), (213, 28636), (219, 28666), (223, 28681), (234, 28789), (242, 28837), (243, 28843), (244, 28852), (245, 28858), (253, 28927), (258, 28969), (263, 28996), (271, 29059), (273, 29065), (274, 29080), (275, 29089), (281, 29122), (289, 29236), (293, 29266), (295, 29284), (301, 29314), (302, 29320), (303, 29326), (305, 29338), (317, 29443), (321, 29461), (326, 29494), (330, 29515), (334, 29581), (337, 29611), (338, 29617), (345, 29677), (347, 29695), (353, 29770), (358, 29827), (363, 29941),

Gene: JoeDirt\_20 Start: 18979, Stop: 21660, Start Num: 21

Candidate Starts for JoeDirt\_20:

(Start: 21 @18979 has 19 MA's), (22, 18985), (52, 19162), (56, 19192), (62, 19255), (73, 19330), (84, 19444), (85, 19450), (96, 19516), (107, 19579), (111, 19612), (112, 19615), (117, 19639), (122, 19663), (124, 19669), (126, 19675), (133, 19723), (138, 19744), (143, 19759), (146, 19780), (152, 19819), (155, 19831), (161, 19849), (171, 19924), (173, 19954), (175, 19978), (176, 19981), (182, 20026), (187, 20077), (190, 20095), (195, 20149), (199, 20221), (201, 20233), (203, 20242), (205, 20260), (208, 20284), (210, 20314), (213, 20350), (220, 20383), (222, 20389), (228, 20455), (240, 20521), (244, 20560), (254, 20641), (258, 20677), (259, 20683), (274, 20788), (275, 20797), (279, 20812), (281, 20830), (284, 20872), (291, 20968), (293, 20974), (302, 21028), (303, 21034), (305, 21046), (319, 21157), (323, 21187), (324, 21193), (334, 21289), (335, 21295), (337, 21319), (338, 21325), (339, 21331), (344, 21376), (345, 21385), (346, 21394), (350, 21433), (352, 21469), (353, 21478), (354, 21493), (359, 21589), (361, 21640), (362, 21646),

Gene: JustASigh\_21 Start: 19828, Stop: 22794, Start Num: 1

Candidate Starts for JustASigh\_21:

(Start: 1 @19828 has 1 MA's), (2, 19837), (20, 19999), (31, 20059), (44, 20134), (59, 20269), (67, 20326), (83, 20494), (89, 20542), (91, 20548), (92, 20551), (105, 20638), (113, 20686), (126, 20746), (132, 20794), (140, 20827), (147, 20860), (180, 21124), (184, 21172), (194, 21259), (195, 21271), (196, 21292), (198, 21319), (200, 21352), (201, 21355), (210, 21436), (212, 21448), (213, 21472), (235, 21637), (237, 21640), (242, 21682), (245, 21703), (247, 21718), (249, 21727), (254, 21778),

(258, 21814), (271, 21904), (274, 21925), (281, 21967), (282, 21976), (284, 22009), (289, 22081), (295, 22129), (303, 22171), (305, 22183), (312, 22252), (326, 22339), (329, 22357), (334, 22426), (342, 22489), (343, 22495), (347, 22537), (350, 22570), (357, 22648), (358, 22672),

Gene: Kaleb\_32 Start: 30088, Stop: 32808, Start Num: 18

Candidate Starts for Kaleb\_32:

(Start: 18 @30088 has 31 MA's), (30, 30142), (39, 30181), (46, 30226), (48, 30250), (49, 30253), (53, 30286), (63, 30394), (69, 30415), (70, 30418), (76, 30472), (80, 30532), (82, 30556), (86, 30592), (95, 30640), (99, 30661), (105, 30700), (111, 30739), (115, 30754), (127, 30808), (128, 30820), (132, 30844), (137, 30868), (141, 30880), (144, 30895), (147, 30910), (153, 30952), (158, 30970), (162, 31009), (165, 31033), (185, 31204), (194, 31282), (198, 31342), (201, 31378), (202, 31381), (210, 31459), (213, 31495), (218, 31519), (223, 31540), (244, 31711), (245, 31717), (258, 31828), (263, 31855), (271, 31918), (273, 31924), (274, 31939), (281, 31981), (287, 32068), (293, 32125), (295, 32143), (300, 32164), (301, 32173), (302, 32179), (303, 32185), (305, 32197), (317, 32302), (321, 32320), (326, 32353), (334, 32440), (337, 32470), (338, 32476), (345, 32536), (353, 32629), (354, 32644), (358, 32686), (363, 32800),

Gene: Kheth\_32 Start: 29973, Stop: 32693, Start Num: 18

Candidate Starts for Kheth\_32:

(Start: 18 @29973 has 31 MA's), (30, 30027), (39, 30066), (46, 30111), (48, 30135), (49, 30138), (53, 30171), (63, 30279), (69, 30300), (70, 30303), (76, 30357), (80, 30417), (82, 30441), (86, 30477), (95, 30525), (99, 30546), (105, 30585), (111, 30624), (115, 30639), (127, 30693), (128, 30705), (132, 30729), (137, 30753), (141, 30765), (144, 30780), (147, 30795), (153, 30837), (158, 30855), (162, 30894), (165, 30918), (185, 31089), (194, 31167), (198, 31227), (201, 31263), (202, 31266), (210, 31344), (213, 31380), (218, 31404), (223, 31425), (244, 31596), (245, 31602), (258, 31713), (263, 31740), (271, 31803), (273, 31809), (274, 31824), (281, 31866), (287, 31953), (289, 31980), (293, 32010), (295, 32028), (300, 32049), (301, 32058), (302, 32064), (303, 32070), (305, 32082), (317, 32187), (321, 32205), (326, 32238), (334, 32325), (337, 32355), (338, 32361), (345, 32421), (353, 32514), (354, 32529), (358, 32571), (363, 32685),

Gene: Koella\_18 Start: 17365, Stop: 20229, Start Num: 5

Candidate Starts for Koella\_18:

(3, 17353), (Start: 5 @17365 has 9 MA's), (8, 17386), (10, 17407), (12, 17446), (26, 17515), (27, 17524), (28, 17527), (41, 17578), (50, 17668), (56, 17713), (65, 17803), (68, 17812), (69, 17815), (71, 17836), (72, 17848), (77, 17881), (88, 18016), (98, 18064), (100, 18079), (103, 18100), (108, 18142), (112, 18157), (114, 18166), (118, 18193), (120, 18199), (129, 18244), (130, 18253), (132, 18268), (135, 18280), (136, 18289), (139, 18295), (141, 18304), (145, 18331), (149, 18349), (163, 18442), (168, 18463), (171, 18487), (178, 18553), (179, 18574), (183, 18592), (185, 18625), (188, 18649), (189, 18652), (194, 18703), (197, 18739), (198, 18763), (201, 18799), (203, 18808), (204, 18823), (208, 18850), (210, 18880), (213, 18916), (218, 18940), (230, 19039), (238, 19078), (244, 19132), (258, 19249), (263, 19276), (271, 19339), (273, 19345), (274, 19360), (281, 19402), (287, 19489), (289, 19516), (293, 19546), (295, 19564), (301, 19594), (303, 19606), (305, 19618), (317, 19723), (321, 19741), (326, 19774), (334, 19861), (337, 19891), (338, 19897), (345, 19957), (346, 19966), (347, 19975), (353, 20050), (355, 20071), (358, 20107), (363, 20221),

Gene: Kratio\_24 Start: 20891, Stop: 23401, Start Num: 24

Candidate Starts for Kratio\_24:

(Start: 24 @20891 has 22 MA's), (32, 20939), (34, 20951), (38, 20960), (50, 21059), (64, 21170), (77, 21254), (98, 21407), (101, 21431), (106, 21461), (121, 21542), (122, 21551), (125, 21560), (129, 21587), (132, 21608), (139, 21641), (142, 21653), (147, 21680), (148, 21686), (156, 21731), (166, 21809), (174, 21887), (177, 21908), (181, 21953), (184, 21989), (189, 22025), (191, 22046), (194, 22076), (195, 22088), (206, 22208), (212, 22271), (213, 22295), (226, 22352), (231, 22409), (232, 22424), (239, 22445), (243, 22484), (261, 22625), (274, 22712), (283, 22778), (286, 22814), (288,

22847), (292, 22868), (299, 22904), (310, 22979), (311, 22982), (312, 23006), (316, 23039), (322, 23066), (325, 23087), (327, 23105), (332, 23159), (355, 23387),

Gene: Lars\_32 Start: 30078, Stop: 32798, Start Num: 18

Candidate Starts for Lars\_32:

(Start: 18 @30078 has 31 MA's), (30, 30132), (39, 30171), (46, 30216), (48, 30240), (49, 30243), (53, 30276), (63, 30384), (69, 30405), (70, 30408), (76, 30462), (80, 30522), (82, 30546), (86, 30582), (95, 30630), (99, 30651), (105, 30690), (111, 30729), (115, 30744), (127, 30798), (128, 30810), (132, 30834), (137, 30858), (141, 30870), (144, 30885), (147, 30900), (153, 30942), (158, 30960), (162, 30999), (165, 31023), (185, 31194), (194, 31272), (198, 31332), (201, 31368), (202, 31371), (210, 31449), (213, 31485), (218, 31509), (223, 31530), (244, 31701), (245, 31707), (258, 31818), (263, 31845), (271, 31908), (273, 31914), (274, 31929), (281, 31971), (287, 32058), (289, 32085), (293, 32115), (295, 32133), (300, 32154), (301, 32163), (302, 32169), (303, 32175), (305, 32187), (317, 32292), (321, 32310), (326, 32343), (334, 32430), (337, 32460), (338, 32466), (345, 32526), (353, 32619), (354, 32634), (358, 32676), (363, 32790),

Gene: Larva\_26 Start: 21061, Stop: 23565, Start Num: 24

Candidate Starts for Larva\_26:

(Start: 24 @21061 has 22 MA's), (32, 21109), (34, 21121), (56, 21268), (64, 21337), (77, 21421), (98, 21574), (101, 21598), (105, 21625), (121, 21709), (122, 21718), (125, 21727), (129, 21754), (132, 21775), (139, 21808), (142, 21820), (147, 21847), (166, 21976), (174, 22054), (177, 22075), (181, 22120), (184, 22156), (186, 22168), (189, 22192), (194, 22243), (195, 22255), (199, 22333), (206, 22375), (212, 22438), (213, 22462), (231, 22576), (232, 22591), (239, 22612), (243, 22651), (261, 22792), (274, 22879), (275, 22888), (283, 22945), (286, 22981), (288, 23014), (292, 23035), (310, 23146), (311, 23149), (312, 23173), (313, 23197), (315, 23203), (316, 23206), (322, 23233), (325, 23254), (327, 23272), (332, 23323), (341, 23404), (355, 23551),

Gene: LastJedi\_18 Start: 17396, Stop: 20260, Start Num: 5

Candidate Starts for LastJedi\_18:

(3, 17384), (Start: 5 @17396 has 9 MA's), (8, 17417), (10, 17438), (12, 17477), (26, 17546), (27, 17555), (28, 17558), (41, 17609), (50, 17699), (56, 17744), (65, 17834), (68, 17843), (69, 17846), (71, 17867), (72, 17879), (77, 17912), (88, 18047), (98, 18095), (100, 18110), (103, 18131), (108, 18173), (112, 18188), (114, 18197), (118, 18224), (120, 18230), (129, 18275), (130, 18284), (132, 18299), (135, 18311), (136, 18320), (139, 18326), (141, 18335), (145, 18362), (149, 18380), (163, 18473), (168, 18494), (171, 18518), (178, 18584), (179, 18605), (183, 18623), (185, 18656), (188, 18680), (189, 18683), (194, 18734), (197, 18770), (198, 18794), (201, 18830), (203, 18839), (204, 18854), (208, 18881), (210, 18911), (213, 18947), (218, 18971), (230, 19070), (238, 19109), (244, 19163), (258, 19280), (263, 19307), (271, 19370), (273, 19376), (274, 19391), (281, 19433), (287, 19520), (289, 19547), (293, 19577), (295, 19595), (301, 19625), (303, 19637), (305, 19649), (317, 19754), (321, 19772), (326, 19805), (334, 19892), (337, 19922), (338, 19928), (345, 19988), (346, 19997), (347, 20006), (353, 20081), (355, 20102), (358, 20138), (363, 20252),

Gene: LeBron\_20 Start: 19023, Stop: 21704, Start Num: 21

Candidate Starts for LeBron\_20:

(Start: 21 @19023 has 19 MA's), (22, 19029), (52, 19206), (56, 19236), (62, 19299), (73, 19374), (78, 19428), (84, 19488), (85, 19494), (96, 19560), (107, 19623), (111, 19656), (112, 19659), (117, 19683), (122, 19707), (124, 19713), (126, 19719), (133, 19767), (138, 19788), (143, 19803), (146, 19824), (152, 19863), (155, 19875), (161, 19893), (171, 19968), (173, 19998), (175, 20022), (176, 20025), (182, 20070), (187, 20121), (190, 20139), (195, 20193), (199, 20265), (201, 20277), (203, 20286), (205, 20304), (208, 20328), (210, 20358), (213, 20394), (220, 20427), (222, 20433), (228, 20499), (240, 20565), (244, 20604), (254, 20685), (258, 20721), (259, 20727), (274, 20832), (275, 20841), (279, 20856), (281, 20874), (284, 20916), (291, 21012), (293, 21018), (302, 21072), (303, 21078), (305, 21090), (319, 21201), (323, 21231), (324, 21237), (334, 21333), (335, 21339), (337, 21363),

(338, 21369), (339, 21375), (344, 21420), (345, 21429), (346, 21438), (350, 21477), (352, 21513), (353, 21522), (354, 21537), (359, 21633), (361, 21684), (362, 21690),

Gene: Lephleur\_32 Start: 29971, Stop: 32691, Start Num: 18

Candidate Starts for Lephleur\_32:

(Start: 18 @29971 has 31 MA's), (30, 30025), (39, 30064), (46, 30109), (48, 30133), (49, 30136), (53, 30169), (63, 30277), (69, 30298), (70, 30301), (76, 30355), (80, 30415), (82, 30439), (86, 30475), (95, 30523), (99, 30544), (105, 30583), (111, 30622), (115, 30637), (127, 30691), (128, 30703), (132, 30727), (137, 30751), (141, 30763), (144, 30778), (147, 30793), (153, 30835), (158, 30853), (162, 30892), (165, 30916), (185, 31087), (194, 31165), (198, 31225), (201, 31261), (202, 31264), (210, 31342), (213, 31378), (218, 31402), (223, 31423), (244, 31594), (245, 31600), (258, 31711), (263, 31738), (271, 31801), (273, 31807), (274, 31822), (281, 31864), (287, 31951), (293, 32008), (295, 32026), (300, 32047), (301, 32056), (302, 32062), (303, 32068), (305, 32080), (317, 32185), (321, 32203), (326, 32236), (334, 32323), (337, 32353), (338, 32359), (345, 32419), (353, 32512), (354, 32527), (358, 32569), (363, 32683),

Gene: Leston\_25 Start: 21290, Stop: 23788, Start Num: 24

Candidate Starts for Leston\_25:

(Start: 24 @21290 has 22 MA's), (34, 21350), (38, 21359), (56, 21500), (64, 21569), (77, 21653), (98, 21806), (101, 21830), (105, 21857), (112, 21899), (116, 21926), (119, 21938), (121, 21941), (122, 21950), (125, 21959), (129, 21986), (134, 22019), (139, 22040), (147, 22079), (156, 22130), (166, 22208), (174, 22286), (180, 22343), (181, 22352), (184, 22388), (188, 22421), (189, 22424), (191, 22445), (194, 22475), (195, 22487), (209, 22646), (214, 22706), (217, 22715), (221, 22730), (226, 22751), (232, 22823), (236, 22838), (241, 22868), (242, 22871), (246, 22895), (248, 22910), (251, 22937), (255, 22985), (260, 23015), (262, 23018), (265, 23030), (266, 23042), (274, 23099), (278, 23120), (280, 23132), (285, 23180), (286, 23207), (296, 23285), (297, 23288), (308, 23363), (311, 23375), (314, 23417), (315, 23420), (320, 23432), (343, 23633), (345, 23657), (346, 23666), (348, 23681), (355, 23774), (356, 23777),

Gene: LizLemon\_32 Start: 30087, Stop: 32807, Start Num: 18

Candidate Starts for LizLemon\_32:

(Start: 18 @30087 has 31 MA's), (30, 30141), (39, 30180), (46, 30225), (48, 30249), (49, 30252), (53, 30285), (63, 30393), (69, 30414), (70, 30417), (76, 30471), (80, 30531), (82, 30555), (86, 30591), (95, 30639), (99, 30660), (105, 30699), (111, 30738), (115, 30753), (127, 30807), (128, 30819), (132, 30843), (137, 30867), (141, 30879), (144, 30894), (147, 30909), (153, 30951), (158, 30969), (162, 31008), (165, 31032), (185, 31203), (194, 31281), (198, 31341), (201, 31377), (202, 31380), (210, 31458), (213, 31494), (218, 31518), (230, 31617), (238, 31656), (244, 31710), (258, 31827), (263, 31854), (271, 31917), (273, 31923), (274, 31938), (281, 31980), (287, 32067), (293, 32124), (295, 32142), (300, 32163), (301, 32172), (302, 32178), (303, 32184), (305, 32196), (317, 32301), (321, 32319), (326, 32352), (334, 32439), (337, 32469), (338, 32475), (345, 32535), (353, 32628), (354, 32643), (358, 32685), (363, 32799),

Gene: MAckerman\_20 Start: 18997, Stop: 21678, Start Num: 21

Candidate Starts for MAckerman\_20:

(Start: 21 @18997 has 19 MA's), (22, 19003), (52, 19180), (56, 19210), (62, 19273), (73, 19348), (78, 19402), (84, 19462), (85, 19468), (96, 19534), (107, 19597), (111, 19630), (112, 19633), (117, 19657), (124, 19687), (126, 19693), (133, 19741), (138, 19762), (143, 19777), (146, 19798), (152, 19837), (155, 19849), (161, 19867), (167, 19924), (171, 19942), (173, 19972), (175, 19996), (176, 19999), (182, 20044), (187, 20095), (190, 20113), (195, 20167), (199, 20239), (201, 20251), (203, 20260), (208, 20302), (210, 20332), (213, 20368), (216, 20386), (220, 20401), (222, 20407), (227, 20440), (243, 20569), (244, 20578), (254, 20659), (258, 20695), (259, 20701), (274, 20806), (275, 20815), (279, 20830), (281, 20848), (284, 20890), (291, 20986), (293, 20992), (302, 21046), (303, 21052), (305, 21064), (319, 21175), (323, 21205), (324, 21211), (334, 21307), (335, 21313), (337, 21337),

(338, 21343), (339, 21349), (344, 21394), (345, 21403), (346, 21412), (350, 21451), (352, 21487), (353, 21496), (354, 21511), (359, 21607), (361, 21658), (362, 21664),

Gene: Mao1\_26 Start: 25993, Stop: 28746, Start Num: 17

Candidate Starts for Mao1\_26:

(Start: 7 @25900 has 1 MA's), (Start: 17 @25993 has 3 MA's), (36, 26071), (43, 26107), (46, 26134), (48, 26158), (56, 26227), (61, 26296), (66, 26320), (70, 26332), (94, 26566), (97, 26578), (99, 26593), (104, 26629), (111, 26671), (123, 26725), (132, 26773), (137, 26803), (139, 26806), (160, 26914), (165, 26968), (169, 26983), (170, 26998), (178, 27067), (179, 27088), (183, 27106), (185, 27139), (188, 27163), (189, 27166), (194, 27217), (197, 27253), (198, 27277), (201, 27313), (203, 27322), (204, 27337), (208, 27364), (210, 27394), (213, 27430), (216, 27448), (217, 27451), (219, 27460), (234, 27586), (242, 27634), (258, 27766), (263, 27793), (270, 27844), (271, 27856), (273, 27862), (281, 27919), (283, 27958), (287, 28006), (289, 28033), (293, 28063), (295, 28081), (301, 28111), (303, 28123), (305, 28135), (318, 28243), (321, 28258), (326, 28291), (330, 28312), (334, 28378), (337, 28408), (338, 28414), (345, 28474), (346, 28483), (347, 28492), (353, 28567), (354, 28582), (355, 28588), (358, 28624), (363, 28738),

Gene: Mask\_27 Start: 25986, Stop: 28739, Start Num: 17

Candidate Starts for Mask\_27:

(Start: 7 @25893 has 1 MA's), (Start: 17 @25986 has 3 MA's), (36, 26064), (43, 26100), (46, 26127), (48, 26151), (56, 26220), (61, 26289), (66, 26313), (70, 26325), (94, 26559), (97, 26571), (99, 26586), (104, 26622), (111, 26664), (123, 26718), (132, 26766), (137, 26796), (139, 26799), (160, 26907), (165, 26961), (169, 26976), (170, 26991), (178, 27060), (179, 27081), (183, 27099), (185, 27132), (188, 27156), (189, 27159), (194, 27210), (197, 27246), (198, 27270), (201, 27306), (203, 27315), (204, 27330), (208, 27357), (210, 27387), (213, 27423), (216, 27441), (217, 27444), (219, 27453), (234, 27579), (242, 27627), (258, 27759), (263, 27786), (270, 27837), (271, 27849), (273, 27855), (281, 27912), (283, 27951), (287, 27999), (289, 28026), (293, 28056), (295, 28074), (301, 28104), (303, 28116), (305, 28128), (318, 28236), (321, 28251), (326, 28284), (330, 28305), (334, 28371), (337, 28401), (338, 28407), (345, 28467), (346, 28476), (347, 28485), (353, 28560), (354, 28575), (355, 28581), (358, 28617), (363, 28731),

Gene: MasterPo\_32 Start: 29974, Stop: 32694, Start Num: 18

Candidate Starts for MasterPo\_32:

(Start: 18 @29974 has 31 MA's), (30, 30028), (39, 30067), (46, 30112), (48, 30136), (49, 30139), (53, 30172), (63, 30280), (69, 30301), (70, 30304), (76, 30358), (80, 30418), (82, 30442), (86, 30478), (95, 30526), (99, 30547), (105, 30586), (111, 30625), (115, 30640), (127, 30694), (128, 30706), (132, 30730), (137, 30754), (141, 30766), (144, 30781), (147, 30796), (153, 30838), (158, 30856), (162, 30895), (165, 30919), (185, 31090), (194, 31168), (198, 31228), (201, 31264), (202, 31267), (210, 31345), (213, 31381), (218, 31405), (223, 31426), (244, 31597), (245, 31603), (258, 31714), (263, 31741), (271, 31804), (273, 31810), (274, 31825), (281, 31867), (287, 31954), (289, 31981), (293, 32011), (295, 32029), (300, 32050), (301, 32059), (302, 32065), (303, 32071), (305, 32083), (317, 32188), (321, 32206), (326, 32239), (334, 32326), (337, 32356), (338, 32362), (345, 32422), (353, 32515), (354, 32530), (355, 32536), (358, 32572), (363, 32686),

Gene: Miryou\_25 Start: 21145, Stop: 23643, Start Num: 24

Candidate Starts for Miryou\_25:

(Start: 24 @21145 has 22 MA's), (34, 21205), (38, 21214), (56, 21355), (64, 21424), (77, 21508), (98, 21661), (101, 21685), (105, 21712), (112, 21754), (116, 21781), (119, 21793), (121, 21796), (122, 21805), (125, 21814), (129, 21841), (134, 21874), (139, 21895), (147, 21934), (156, 21985), (166, 22063), (174, 22141), (177, 22162), (181, 22207), (184, 22243), (189, 22279), (191, 22300), (194, 22330), (195, 22342), (209, 22501), (214, 22561), (217, 22570), (221, 22585), (226, 22606), (232, 22678), (236, 22693), (241, 22723), (242, 22726), (246, 22750), (248, 22765), (251, 22792), (255, 22840), (260, 22870), (262, 22873), (265, 22885), (266, 22897), (274, 22954), (278, 22975), (280,

22987), (285, 23035), (286, 23062), (296, 23140), (297, 23143), (308, 23218), (311, 23230), (314, 23272), (315, 23275), (320, 23287), (343, 23488), (345, 23512), (346, 23521), (348, 23536), (355, 23629), (356, 23632),

Gene: OhShagHennessy\_20 Start: 18962, Stop: 21643, Start Num: 21

Candidate Starts for OhShagHennessy\_20:

(Start: 21 @18962 has 19 MA's), (22, 18968), (52, 19145), (56, 19175), (62, 19238), (73, 19313), (84, 19427), (85, 19433), (96, 19499), (107, 19562), (111, 19595), (112, 19598), (117, 19622), (122, 19646), (124, 19652), (126, 19658), (133, 19706), (138, 19727), (143, 19742), (146, 19763), (152, 19802), (155, 19814), (161, 19832), (171, 19907), (173, 19937), (175, 19961), (176, 19964), (182, 20009), (187, 20060), (190, 20078), (195, 20132), (199, 20204), (201, 20216), (203, 20225), (205, 20243), (208, 20267), (210, 20297), (213, 20333), (220, 20366), (222, 20372), (228, 20438), (240, 20504), (244, 20543), (254, 20624), (258, 20660), (259, 20666), (274, 20771), (275, 20780), (279, 20795), (281, 20813), (284, 20855), (291, 20951), (302, 21011), (303, 21017), (305, 21029), (319, 21140), (323, 21170), (324, 21176), (334, 21272), (335, 21278), (337, 21302), (338, 21308), (339, 21314), (344, 21359), (345, 21368), (346, 21377), (350, 21416), (352, 21452), (353, 21461), (354, 21476), (359, 21572), (361, 21623), (362, 21629),

Gene: OkiRoe\_25 Start: 21161, Stop: 23659, Start Num: 24

Candidate Starts for OkiRoe\_25:

(Start: 24 @21161 has 22 MA's), (34, 21221), (38, 21230), (56, 21371), (64, 21440), (77, 21524), (98, 21677), (101, 21701), (105, 21728), (112, 21770), (116, 21797), (119, 21809), (121, 21812), (122, 21821), (125, 21830), (129, 21857), (134, 21890), (147, 21950), (156, 22001), (166, 22079), (174, 22157), (177, 22178), (180, 22214), (181, 22223), (184, 22259), (188, 22292), (189, 22295), (191, 22316), (194, 22346), (195, 22358), (209, 22517), (214, 22577), (217, 22586), (221, 22601), (226, 22622), (232, 22694), (236, 22709), (241, 22739), (242, 22742), (248, 22781), (251, 22808), (255, 22856), (260, 22886), (262, 22889), (265, 22901), (266, 22913), (274, 22970), (278, 22991), (280, 23003), (285, 23051), (286, 23078), (296, 23156), (297, 23159), (308, 23234), (311, 23246), (314, 23288), (315, 23291), (320, 23303), (343, 23504), (345, 23528), (346, 23537), (348, 23552), (355, 23645), (356, 23648),

Gene: Omnicron\_26 Start: 19980, Stop: 22484, Start Num: 24

Candidate Starts for Omnicron\_26:

(Start: 24 @19980 has 22 MA's), (32, 20028), (34, 20040), (56, 20187), (64, 20256), (67, 20268), (98, 20493), (101, 20517), (102, 20523), (106, 20547), (110, 20580), (116, 20613), (121, 20628), (122, 20637), (125, 20646), (129, 20673), (132, 20694), (139, 20727), (142, 20739), (147, 20766), (151, 20802), (166, 20895), (174, 20973), (177, 20994), (180, 21030), (181, 21039), (184, 21075), (186, 21087), (188, 21108), (189, 21111), (191, 21132), (194, 21162), (195, 21174), (206, 21294), (207, 21300), (208, 21315), (212, 21357), (213, 21381), (226, 21438), (231, 21495), (232, 21510), (239, 21531), (240, 21540), (246, 21588), (251, 21633), (256, 21684), (261, 21711), (274, 21798), (286, 21900), (288, 21933), (292, 21954), (294, 21969), (299, 21990), (307, 22038), (310, 22065), (311, 22068), (312, 22092), (313, 22116), (315, 22122), (316, 22125), (317, 22128), (327, 22191), (332, 22242), (355, 22470),

Gene: Opia\_32 Start: 29961, Stop: 32681, Start Num: 18

Candidate Starts for Opia\_32:

(Start: 18 @29961 has 31 MA's), (30, 30015), (39, 30054), (46, 30099), (48, 30123), (49, 30126), (53, 30159), (63, 30267), (69, 30288), (70, 30291), (76, 30345), (80, 30405), (82, 30429), (86, 30465), (95, 30513), (99, 30534), (105, 30573), (111, 30612), (115, 30627), (127, 30681), (128, 30693), (132, 30717), (137, 30741), (141, 30753), (144, 30768), (147, 30783), (153, 30825), (158, 30843), (162, 30882), (165, 30906), (185, 31077), (194, 31155), (198, 31215), (201, 31251), (202, 31254), (210, 31332), (213, 31368), (218, 31392), (223, 31413), (244, 31584), (245, 31590), (258, 31701), (263, 31728), (271, 31791), (273, 31797), (274, 31812), (281, 31854), (287, 31941), (289, 31968), (293,

31998), (295, 32016), (300, 32037), (301, 32046), (302, 32052), (303, 32058), (305, 32070), (317, 32175), (321, 32193), (326, 32226), (334, 32313), (337, 32343), (338, 32349), (345, 32409), (353, 32502), (354, 32517), (358, 32559), (363, 32673),

Gene: PR\_24 Start: 27208, Stop: 29922, Start Num: 19

Candidate Starts for PR\_24:

(Start: 19 @27208 has 4 MA's), (35, 27277), (43, 27310), (45, 27331), (51, 27388), (54, 27418), (58, 27436), (69, 27529), (70, 27532), (76, 27586), (77, 27592), (82, 27670), (86, 27706), (89, 27727), (99, 27775), (105, 27814), (115, 27868), (127, 27922), (128, 27934), (132, 27958), (137, 27982), (139, 27985), (147, 28024), (153, 28066), (165, 28147), (169, 28162), (172, 28192), (183, 28285), (185, 28318), (192, 28375), (193, 28387), (194, 28396), (198, 28456), (201, 28492), (202, 28495), (210, 28573), (213, 28609), (219, 28639), (223, 28654), (234, 28762), (242, 28810), (243, 28816), (244, 28825), (245, 28831), (258, 28942), (263, 28969), (271, 29032), (273, 29038), (274, 29053), (281, 29095), (293, 29239), (295, 29257), (303, 29299), (305, 29311), (317, 29416), (321, 29434), (326, 29467), (334, 29554), (337, 29584), (338, 29590), (340, 29611), (345, 29650), (347, 29668), (353, 29743), (355, 29764), (358, 29800), (363, 29914),

Gene: Paola\_25 Start: 21160, Stop: 23658, Start Num: 24

Candidate Starts for Paola\_25:

(Start: 24 @21160 has 22 MA's), (34, 21220), (38, 21229), (56, 21370), (64, 21439), (77, 21523), (98, 21676), (101, 21700), (105, 21727), (112, 21769), (116, 21796), (119, 21808), (121, 21811), (122, 21820), (125, 21829), (129, 21856), (134, 21889), (139, 21910), (147, 21949), (156, 22000), (166, 22078), (174, 22156), (180, 22213), (181, 22222), (184, 22258), (188, 22291), (189, 22294), (191, 22315), (194, 22345), (195, 22357), (209, 22516), (214, 22576), (217, 22585), (221, 22600), (226, 22621), (232, 22693), (236, 22708), (241, 22738), (242, 22741), (246, 22765), (248, 22780), (251, 22807), (255, 22855), (260, 22885), (262, 22888), (265, 22900), (266, 22912), (274, 22969), (278, 22990), (280, 23002), (285, 23050), (286, 23077), (296, 23155), (297, 23158), (308, 23233), (311, 23245), (314, 23287), (315, 23290), (320, 23302), (343, 23503), (345, 23527), (346, 23536), (348, 23551), (355, 23644), (356, 23647),

Gene: Phantasmagoria\_32 Start: 29972, Stop: 32692, Start Num: 18

Candidate Starts for Phantasmagoria\_32:

(Start: 18 @29972 has 31 MA's), (30, 30026), (39, 30065), (46, 30110), (48, 30134), (49, 30137), (53, 30170), (63, 30278), (69, 30299), (70, 30302), (76, 30356), (80, 30416), (82, 30440), (86, 30476), (95, 30524), (99, 30545), (105, 30584), (111, 30623), (115, 30638), (127, 30692), (128, 30704), (132, 30728), (137, 30752), (141, 30764), (144, 30779), (147, 30794), (153, 30836), (158, 30854), (162, 30893), (165, 30917), (185, 31088), (194, 31166), (198, 31226), (201, 31262), (202, 31265), (210, 31343), (213, 31379), (218, 31403), (223, 31424), (244, 31595), (245, 31601), (258, 31712), (263, 31739), (271, 31802), (273, 31808), (274, 31823), (281, 31865), (287, 31952), (289, 31979), (293, 32009), (295, 32027), (300, 32048), (301, 32057), (302, 32063), (303, 32069), (305, 32081), (317, 32186), (321, 32204), (326, 32237), (334, 32324), (337, 32354), (338, 32360), (345, 32420), (353, 32513), (354, 32528), (358, 32570), (363, 32684),

Gene: Phrann\_20 Start: 17560, Stop: 20412, Start Num: 6

Candidate Starts for Phrann\_20:

(Start: 4 @17548 has 2 MA's), (Start: 6 @17560 has 2 MA's), (8, 17572), (23, 17683), (27, 17707), (28, 17710), (29, 17719), (50, 17857), (55, 17899), (56, 17902), (65, 17992), (69, 18004), (71, 18025), (74, 18049), (79, 18124), (87, 18196), (93, 18226), (100, 18262), (108, 18325), (112, 18340), (118, 18373), (132, 18448), (136, 18472), (139, 18478), (149, 18532), (150, 18538), (163, 18625), (168, 18646), (171, 18670), (178, 18736), (179, 18757), (183, 18775), (185, 18808), (189, 18835), (194, 18886), (197, 18922), (198, 18946), (201, 18982), (203, 18991), (204, 19006), (208, 19033), (210, 19063), (213, 19099), (218, 19123), (230, 19222), (238, 19261), (242, 19300), (245, 19321), (258, 19432), (263, 19459), (267, 19489), (270, 19510), (271, 19522), (273, 19528), (281, 19585), (283,



19624), (293, 19729), (295, 19747), (303, 19789), (305, 19801), (326, 19957), (334, 20044), (337, 20074), (338, 20080), (345, 20140), (347, 20158), (353, 20233), (355, 20254), (358, 20290), (363, 20404),

Gene: Pippy\_18 Start: 17389, Stop: 20253, Start Num: 5

Candidate Starts for Pippy\_18:

(3, 17377), (Start: 5 @17389 has 9 MA's), (8, 17410), (10, 17431), (12, 17470), (26, 17539), (27, 17548), (28, 17551), (41, 17602), (50, 17692), (56, 17737), (65, 17827), (68, 17836), (69, 17839), (71, 17860), (72, 17872), (77, 17905), (88, 18040), (98, 18088), (100, 18103), (103, 18124), (108, 18166), (112, 18181), (114, 18190), (118, 18217), (120, 18223), (129, 18268), (130, 18277), (132, 18292), (136, 18313), (139, 18319), (141, 18328), (145, 18355), (149, 18373), (163, 18466), (168, 18487), (171, 18511), (178, 18577), (179, 18598), (183, 18616), (185, 18649), (188, 18673), (189, 18676), (194, 18727), (197, 18763), (198, 18787), (201, 18823), (203, 18832), (204, 18847), (208, 18874), (210, 18904), (213, 18940), (218, 18964), (230, 19063), (238, 19102), (244, 19156), (258, 19273), (263, 19300), (271, 19363), (273, 19369), (274, 19384), (281, 19426), (287, 19513), (289, 19540), (293, 19570), (295, 19588), (301, 19618), (303, 19630), (305, 19642), (317, 19747), (321, 19765), (326, 19798), (334, 19885), (337, 19915), (338, 19921), (345, 19981), (346, 19990), (347, 19999), (353, 20074), (355, 20095), (358, 20131), (363, 20245),

Gene: Psycho\_26 Start: 21191, Stop: 23695, Start Num: 24

Candidate Starts for Psycho\_26:

(Start: 24 @21191 has 22 MA's), (32, 21239), (34, 21251), (56, 21398), (64, 21467), (77, 21551), (98, 21704), (101, 21728), (105, 21755), (121, 21839), (122, 21848), (125, 21857), (129, 21884), (132, 21905), (139, 21938), (142, 21950), (147, 21977), (166, 22106), (174, 22184), (177, 22205), (181, 22250), (184, 22286), (186, 22298), (189, 22322), (194, 22373), (195, 22385), (199, 22463), (206, 22505), (212, 22568), (213, 22592), (231, 22706), (232, 22721), (239, 22742), (243, 22781), (261, 22922), (274, 23009), (275, 23018), (283, 23075), (286, 23111), (288, 23144), (292, 23165), (310, 23276), (311, 23279), (312, 23303), (313, 23327), (315, 23333), (316, 23336), (322, 23363), (325, 23384), (327, 23402), (332, 23453), (341, 23534), (355, 23681),

Gene: Qyrzula\_30 Start: 30056, Stop: 32776, Start Num: 18

Candidate Starts for Qyrzula\_30:

(Start: 18 @30056 has 31 MA's), (30, 30110), (39, 30149), (46, 30194), (48, 30218), (49, 30221), (53, 30254), (63, 30362), (69, 30383), (70, 30386), (76, 30440), (80, 30500), (82, 30524), (86, 30560), (88, 30578), (89, 30581), (95, 30608), (99, 30629), (105, 30668), (111, 30707), (115, 30722), (127, 30776), (128, 30788), (132, 30812), (137, 30836), (141, 30848), (144, 30863), (147, 30878), (153, 30920), (158, 30938), (162, 30977), (165, 31001), (185, 31172), (194, 31250), (198, 31310), (201, 31346), (202, 31349), (210, 31427), (213, 31463), (218, 31487), (230, 31586), (238, 31625), (244, 31679), (258, 31796), (263, 31823), (271, 31886), (273, 31892), (274, 31907), (281, 31949), (287, 32036), (289, 32063), (293, 32093), (295, 32111), (300, 32132), (301, 32141), (302, 32147), (303, 32153), (305, 32165), (317, 32270), (321, 32288), (326, 32321), (334, 32408), (337, 32438), (338, 32444), (345, 32504), (353, 32597), (358, 32654), (363, 32768),

Gene: Rando14\_26 Start: 19880, Stop: 22384, Start Num: 24

Candidate Starts for Rando14\_26:

(13, 19835), (Start: 24 @19880 has 22 MA's), (32, 19928), (34, 19940), (56, 20087), (64, 20156), (98, 20393), (101, 20417), (102, 20423), (106, 20447), (116, 20513), (121, 20528), (122, 20537), (125, 20546), (129, 20573), (132, 20594), (139, 20627), (147, 20666), (174, 20873), (177, 20894), (180, 20930), (181, 20939), (184, 20975), (188, 21008), (189, 21011), (191, 21032), (194, 21062), (195, 21074), (206, 21194), (207, 21200), (208, 21215), (209, 21230), (211, 21251), (212, 21257), (213, 21281), (226, 21338), (231, 21395), (232, 21410), (239, 21431), (240, 21440), (244, 21479), (246, 21488), (261, 21611), (274, 21698), (286, 21800), (288, 21833), (292, 21854), (294, 21869), (299, 21890), (306, 21932), (307, 21938), (310, 21965), (311, 21968), (312, 21992), (313, 22016), (315,

22022), (316, 22025), (317, 22028), (332, 22142), (334, 22160), (341, 22223), (355, 22370),

Gene: Raymond7\_20 Start: 17560, Stop: 20415, Start Num: 6

Candidate Starts for Raymond7\_20:

(Start: 4 @17548 has 2 MA's), (Start: 6 @17560 has 2 MA's), (8, 17572), (23, 17683), (27, 17707), (28, 17710), (29, 17719), (65, 17992), (69, 18004), (71, 18025), (74, 18049), (79, 18124), (87, 18196), (93, 18226), (100, 18262), (108, 18325), (112, 18340), (118, 18373), (132, 18448), (136, 18472), (139, 18478), (142, 18490), (149, 18532), (150, 18538), (163, 18625), (168, 18646), (171, 18670), (178, 18736), (179, 18757), (183, 18775), (185, 18808), (188, 18832), (189, 18835), (194, 18886), (197, 18922), (198, 18946), (201, 18982), (213, 19099), (216, 19117), (217, 19120), (229, 19219), (244, 19318), (245, 19324), (258, 19435), (263, 19462), (271, 19525), (273, 19531), (274, 19546), (281, 19588), (283, 19627), (287, 19675), (289, 19702), (293, 19732), (295, 19750), (301, 19780), (302, 19786), (303, 19792), (305, 19804), (317, 19909), (321, 19927), (326, 19960), (328, 19975), (337, 20077), (338, 20083), (345, 20143), (346, 20152), (347, 20161), (349, 20188), (353, 20236), (354, 20251), (355, 20257), (358, 20293), (363, 20407),

Gene: Rhinoforte\_32 Start: 30081, Stop: 32801, Start Num: 18

Candidate Starts for Rhinoforte\_32:

(Start: 18 @30081 has 31 MA's), (30, 30135), (39, 30174), (46, 30219), (48, 30243), (49, 30246), (53, 30279), (63, 30387), (69, 30408), (70, 30411), (76, 30465), (80, 30525), (82, 30549), (86, 30585), (95, 30633), (99, 30654), (105, 30693), (111, 30732), (115, 30747), (127, 30801), (128, 30813), (132, 30837), (137, 30861), (141, 30873), (144, 30888), (147, 30903), (153, 30945), (158, 30963), (162, 31002), (165, 31026), (185, 31197), (194, 31275), (198, 31335), (201, 31371), (202, 31374), (210, 31452), (213, 31488), (218, 31512), (223, 31533), (244, 31704), (245, 31710), (258, 31821), (263, 31848), (271, 31911), (273, 31917), (274, 31932), (281, 31974), (287, 32061), (289, 32088), (293, 32118), (295, 32136), (300, 32157), (301, 32166), (302, 32172), (303, 32178), (305, 32190), (317, 32295), (321, 32313), (326, 32346), (334, 32433), (337, 32463), (338, 32469), (345, 32529), (353, 32622), (354, 32637), (358, 32679), (363, 32793),

Gene: Rose5\_20 Start: 18997, Stop: 21678, Start Num: 21

Candidate Starts for Rose5\_20:

(Start: 21 @18997 has 19 MA's), (22, 19003), (52, 19180), (56, 19210), (62, 19273), (73, 19348), (78, 19402), (84, 19462), (85, 19468), (96, 19534), (107, 19597), (111, 19630), (112, 19633), (117, 19657), (124, 19687), (126, 19693), (133, 19741), (138, 19762), (143, 19777), (146, 19798), (152, 19837), (155, 19849), (161, 19867), (167, 19924), (171, 19942), (173, 19972), (175, 19996), (176, 19999), (182, 20044), (187, 20095), (190, 20113), (195, 20167), (199, 20239), (201, 20251), (203, 20260), (208, 20302), (210, 20332), (213, 20368), (216, 20386), (220, 20401), (222, 20407), (227, 20440), (243, 20569), (244, 20578), (254, 20659), (258, 20695), (259, 20701), (274, 20806), (275, 20815), (279, 20830), (281, 20848), (284, 20890), (291, 20986), (293, 20992), (302, 21046), (303, 21052), (305, 21064), (319, 21175), (323, 21205), (324, 21211), (334, 21307), (335, 21313), (337, 21337), (338, 21343), (339, 21349), (344, 21394), (345, 21403), (346, 21412), (350, 21451), (352, 21487), (353, 21496), (354, 21511), (359, 21607), (361, 21658), (362, 21664),

Gene: Rosebush\_32 Start: 30088, Stop: 32808, Start Num: 18

Candidate Starts for Rosebush\_32:

(Start: 18 @30088 has 31 MA's), (30, 30142), (39, 30181), (46, 30226), (48, 30250), (49, 30253), (53, 30286), (63, 30394), (69, 30415), (70, 30418), (76, 30472), (80, 30532), (82, 30556), (86, 30592), (95, 30640), (99, 30661), (105, 30700), (111, 30739), (115, 30754), (127, 30808), (128, 30820), (132, 30844), (137, 30868), (141, 30880), (144, 30895), (147, 30910), (153, 30952), (158, 30970), (162, 31009), (165, 31033), (185, 31204), (194, 31282), (198, 31342), (201, 31378), (202, 31381), (210, 31459), (213, 31495), (218, 31519), (223, 31540), (244, 31711), (245, 31717), (258, 31828), (263, 31855), (271, 31918), (273, 31924), (274, 31939), (281, 31981), (287, 32068), (289, 32095), (293, 32125), (295, 32143), (300, 32164), (301, 32173), (302, 32179), (303, 32185), (305, 32197), (317,

32302), (321, 32320), (326, 32353), (334, 32440), (337, 32470), (338, 32476), (345, 32536), (353, 32629), (354, 32644), (358, 32686), (363, 32800),

Gene: Sabella\_32 Start: 29965, Stop: 32685, Start Num: 18

Candidate Starts for Sabella\_32:

(Start: 18 @29965 has 31 MA's), (30, 30019), (39, 30058), (46, 30103), (48, 30127), (49, 30130), (53, 30163), (63, 30271), (69, 30292), (70, 30295), (76, 30349), (80, 30409), (82, 30433), (86, 30469), (88, 30487), (89, 30490), (95, 30517), (99, 30538), (105, 30577), (115, 30631), (127, 30685), (128, 30697), (132, 30721), (137, 30745), (141, 30757), (144, 30772), (147, 30787), (153, 30829), (158, 30847), (162, 30886), (165, 30910), (185, 31081), (194, 31159), (198, 31219), (201, 31255), (202, 31258), (210, 31336), (213, 31372), (218, 31396), (223, 31417), (244, 31588), (245, 31594), (258, 31705), (263, 31732), (271, 31795), (273, 31801), (274, 31816), (281, 31858), (287, 31945), (289, 31972), (293, 32002), (295, 32020), (300, 32041), (301, 32050), (302, 32056), (303, 32062), (305, 32074), (317, 32179), (321, 32197), (326, 32230), (334, 32317), (337, 32347), (338, 32353), (345, 32413), (353, 32506), (354, 32521), (358, 32563), (363, 32677),

Gene: SamScheppers\_26 Start: 21811, Stop: 24555, Start Num: 16

Candidate Starts for SamScheppers\_26:

(Start: 16 @21811 has 3 MA's), (37, 21901), (42, 21922), (46, 21946), (47, 21952), (48, 21970), (56, 22036), (65, 22126), (68, 22135), (69, 22138), (71, 22159), (72, 22171), (77, 22204), (88, 22339), (98, 22387), (100, 22402), (103, 22423), (106, 22441), (108, 22465), (112, 22480), (114, 22489), (118, 22516), (120, 22522), (129, 22567), (132, 22591), (135, 22603), (136, 22612), (139, 22618), (141, 22627), (145, 22654), (149, 22672), (163, 22765), (165, 22777), (168, 22786), (178, 22876), (179, 22897), (183, 22915), (185, 22948), (189, 22975), (194, 23026), (197, 23062), (198, 23086), (201, 23122), (203, 23131), (204, 23146), (208, 23173), (210, 23203), (213, 23239), (216, 23257), (217, 23260), (219, 23269), (240, 23419), (244, 23458), (258, 23575), (263, 23602), (271, 23665), (273, 23671), (274, 23686), (281, 23728), (287, 23815), (289, 23842), (293, 23872), (295, 23890), (301, 23920), (303, 23932), (305, 23944), (318, 24052), (321, 24067), (326, 24100), (330, 24121), (334, 24187), (337, 24217), (338, 24223), (345, 24283), (347, 24301), (353, 24376), (355, 24397), (358, 24433), (363, 24547),

Gene: Sarma624\_19 Start: 17226, Stop: 20090, Start Num: 5

Candidate Starts for Sarma624\_19:

(Start: 5 @17226 has 9 MA's), (8, 17247), (10, 17268), (12, 17307), (26, 17376), (27, 17385), (28, 17388), (41, 17439), (50, 17529), (57, 17580), (65, 17664), (69, 17676), (71, 17697), (75, 17730), (88, 17877), (100, 17940), (106, 17979), (108, 18003), (112, 18018), (114, 18027), (118, 18054), (120, 18060), (132, 18129), (136, 18150), (139, 18156), (145, 18192), (149, 18210), (163, 18303), (168, 18324), (171, 18348), (178, 18414), (179, 18435), (183, 18453), (185, 18486), (189, 18513), (194, 18564), (197, 18600), (198, 18624), (201, 18660), (203, 18669), (204, 18684), (208, 18711), (210, 18741), (213, 18777), (218, 18801), (230, 18900), (238, 18939), (242, 18978), (245, 18999), (258, 19110), (263, 19137), (267, 19167), (270, 19188), (271, 19200), (273, 19206), (281, 19263), (293, 19407), (295, 19425), (303, 19467), (305, 19479), (326, 19635), (334, 19722), (337, 19752), (338, 19758), (345, 19818), (347, 19836), (353, 19911), (355, 19932), (358, 19968), (363, 20082),

Gene: Sejanus\_27 Start: 26927, Stop: 29680, Start Num: 17

Candidate Starts for Sejanus\_27:

(Start: 7 @26834 has 1 MA's), (Start: 17 @26927 has 3 MA's), (36, 27005), (43, 27041), (46, 27068), (48, 27092), (56, 27161), (61, 27230), (66, 27254), (70, 27266), (94, 27500), (97, 27512), (99, 27527), (104, 27563), (111, 27605), (123, 27659), (132, 27707), (137, 27737), (139, 27740), (160, 27848), (165, 27902), (169, 27917), (170, 27932), (178, 28001), (179, 28022), (183, 28040), (185, 28073), (188, 28097), (189, 28100), (194, 28151), (197, 28187), (198, 28211), (201, 28247), (203, 28256), (204, 28271), (208, 28298), (210, 28328), (213, 28364), (216, 28382), (217, 28385), (219, 28394), (234, 28520), (242, 28568), (258, 28700), (263, 28727), (270, 28778), (271, 28790), (273, 28796),

(281, 28853), (283, 28892), (287, 28940), (289, 28967), (293, 28997), (295, 29015), (301, 29045), (303, 29057), (305, 29069), (318, 29177), (321, 29192), (326, 29225), (330, 29246), (334, 29312), (337, 29342), (338, 29348), (345, 29408), (346, 29417), (347, 29426), (353, 29501), (354, 29516), (355, 29522), (358, 29558), (363, 29672),

Gene: Silverleaf\_20 Start: 18997, Stop: 21678, Start Num: 21

Candidate Starts for Silverleaf\_20:

(Start: 21 @18997 has 19 MA's), (22, 19003), (52, 19180), (56, 19210), (62, 19273), (73, 19348), (78, 19402), (84, 19462), (85, 19468), (96, 19534), (107, 19597), (111, 19630), (112, 19633), (117, 19657), (122, 19681), (124, 19687), (126, 19693), (133, 19741), (138, 19762), (143, 19777), (146, 19798), (152, 19837), (155, 19849), (161, 19867), (167, 19924), (171, 19942), (173, 19972), (175, 19996), (176, 19999), (182, 20044), (187, 20095), (190, 20113), (195, 20167), (199, 20239), (201, 20251), (203, 20260), (208, 20302), (210, 20332), (213, 20368), (216, 20386), (220, 20401), (222, 20407), (227, 20440), (243, 20569), (244, 20578), (254, 20659), (258, 20695), (259, 20701), (274, 20806), (275, 20815), (279, 20830), (281, 20848), (284, 20890), (291, 20986), (293, 20992), (302, 21046), (303, 21052), (305, 21064), (319, 21175), (323, 21205), (324, 21211), (330, 21241), (334, 21307), (335, 21313), (337, 21337), (338, 21343), (339, 21349), (344, 21394), (345, 21403), (346, 21412), (350, 21451), (352, 21487), (353, 21496), (354, 21511), (359, 21607), (361, 21658), (362, 21664),

Gene: SoSeph\_25 Start: 21308, Stop: 23806, Start Num: 24

Candidate Starts for SoSeph\_25:

(Start: 24 @21308 has 22 MA's), (34, 21368), (38, 21377), (56, 21518), (64, 21587), (77, 21671), (98, 21824), (101, 21848), (105, 21875), (112, 21917), (116, 21944), (119, 21956), (121, 21959), (122, 21968), (125, 21977), (129, 22004), (134, 22037), (147, 22097), (156, 22148), (166, 22226), (174, 22304), (177, 22325), (181, 22370), (184, 22406), (189, 22442), (191, 22463), (194, 22493), (195, 22505), (209, 22664), (214, 22724), (217, 22733), (221, 22748), (226, 22769), (232, 22841), (236, 22856), (241, 22886), (242, 22889), (246, 22913), (248, 22928), (251, 22955), (255, 23003), (260, 23033), (262, 23036), (265, 23048), (266, 23060), (274, 23117), (278, 23138), (280, 23150), (285, 23198), (286, 23225), (296, 23303), (297, 23306), (308, 23381), (311, 23393), (314, 23435), (315, 23438), (320, 23450), (343, 23651), (345, 23675), (346, 23684), (348, 23699), (355, 23792), (356, 23795),

Gene: TA17A\_32 Start: 29955, Stop: 32675, Start Num: 18

Candidate Starts for TA17A\_32:

(Start: 18 @29955 has 31 MA's), (30, 30009), (39, 30048), (43, 30066), (46, 30093), (48, 30117), (49, 30120), (53, 30153), (63, 30261), (69, 30282), (70, 30285), (76, 30339), (80, 30399), (82, 30423), (86, 30459), (95, 30507), (99, 30528), (105, 30567), (115, 30621), (127, 30675), (128, 30687), (132, 30711), (137, 30735), (141, 30747), (144, 30762), (147, 30777), (153, 30819), (158, 30837), (162, 30876), (165, 30900), (185, 31071), (194, 31149), (198, 31209), (201, 31245), (202, 31248), (210, 31326), (213, 31362), (218, 31386), (230, 31485), (238, 31524), (244, 31578), (258, 31695), (263, 31722), (271, 31785), (273, 31791), (281, 31848), (287, 31935), (289, 31962), (293, 31992), (295, 32010), (300, 32031), (301, 32040), (302, 32046), (303, 32052), (305, 32064), (317, 32169), (321, 32187), (326, 32220), (334, 32307), (337, 32337), (338, 32343), (345, 32403), (353, 32496), (354, 32511), (358, 32553), (363, 32667),

Gene: Taquito\_26 Start: 21892, Stop: 24636, Start Num: 16

Candidate Starts for Taquito\_26:

(Start: 16 @21892 has 3 MA's), (37, 21982), (42, 22003), (46, 22027), (48, 22051), (56, 22117), (65, 22207), (68, 22216), (69, 22219), (71, 22240), (72, 22252), (77, 22285), (88, 22420), (98, 22468), (100, 22483), (103, 22504), (106, 22522), (108, 22546), (112, 22561), (114, 22570), (118, 22597), (120, 22603), (129, 22648), (132, 22672), (135, 22684), (136, 22693), (139, 22699), (141, 22708), (145, 22735), (149, 22753), (163, 22846), (165, 22858), (168, 22867), (178, 22957), (179, 22978), (183, 22996), (185, 23029), (189, 23056), (194, 23107), (197, 23143), (198, 23167), (201, 23203),

(203, 23212), (204, 23227), (208, 23254), (210, 23284), (213, 23320), (216, 23338), (217, 23341), (219, 23350), (240, 23500), (244, 23539), (258, 23656), (263, 23683), (271, 23746), (273, 23752), (274, 23767), (281, 23809), (287, 23896), (289, 23923), (293, 23953), (295, 23971), (303, 24013), (305, 24025), (318, 24133), (321, 24148), (326, 24181), (330, 24202), (334, 24268), (337, 24298), (338, 24304), (345, 24364), (347, 24382), (353, 24457), (355, 24478), (358, 24514), (363, 24628),

Gene: Thyatira\_25 Start: 21160, Stop: 23658, Start Num: 24

Candidate Starts for Thyatira\_25:

(Start: 24 @21160 has 22 MA's), (34, 21220), (38, 21229), (56, 21370), (64, 21439), (77, 21523), (98, 21676), (101, 21700), (105, 21727), (112, 21769), (116, 21796), (119, 21808), (121, 21811), (122, 21820), (125, 21829), (129, 21856), (139, 21910), (147, 21949), (156, 22000), (166, 22078), (174, 22156), (177, 22177), (181, 22222), (184, 22258), (189, 22294), (191, 22315), (194, 22345), (195, 22357), (209, 22516), (214, 22576), (217, 22585), (221, 22600), (226, 22621), (232, 22693), (236, 22708), (241, 22738), (242, 22741), (246, 22765), (248, 22780), (251, 22807), (255, 22855), (260, 22885), (262, 22888), (265, 22900), (266, 22912), (274, 22969), (278, 22990), (280, 23002), (285, 23050), (286, 23077), (296, 23155), (297, 23158), (308, 23233), (311, 23245), (314, 23287), (315, 23290), (320, 23302), (343, 23503), (345, 23527), (346, 23536), (348, 23551), (355, 23644), (356, 23647),

Gene: Tinciduntolum\_33 Start: 30093, Stop: 32813, Start Num: 18

Candidate Starts for Tinciduntolum\_33:

(Start: 18 @30093 has 31 MA's), (30, 30147), (39, 30186), (46, 30231), (48, 30255), (49, 30258), (53, 30291), (63, 30399), (69, 30420), (70, 30423), (76, 30477), (80, 30537), (82, 30561), (86, 30597), (95, 30645), (99, 30666), (105, 30705), (111, 30744), (115, 30759), (127, 30813), (128, 30825), (132, 30849), (137, 30873), (141, 30885), (144, 30900), (147, 30915), (153, 30957), (158, 30975), (162, 31014), (165, 31038), (185, 31209), (194, 31287), (198, 31347), (201, 31383), (202, 31386), (210, 31464), (213, 31500), (218, 31524), (223, 31545), (244, 31716), (245, 31722), (258, 31833), (263, 31860), (271, 31923), (273, 31929), (274, 31944), (281, 31986), (287, 32073), (289, 32100), (293, 32130), (295, 32148), (300, 32169), (301, 32178), (302, 32184), (303, 32190), (305, 32202), (317, 32307), (321, 32325), (326, 32358), (334, 32445), (337, 32475), (338, 32481), (345, 32541), (353, 32634), (354, 32649), (358, 32691), (363, 32805),

Gene: Tres\_32 Start: 29968, Stop: 32688, Start Num: 18

Candidate Starts for Tres\_32:

(Start: 18 @29968 has 31 MA's), (30, 30022), (39, 30061), (46, 30106), (48, 30130), (49, 30133), (53, 30166), (63, 30274), (69, 30295), (70, 30298), (76, 30352), (80, 30412), (82, 30436), (86, 30472), (95, 30520), (99, 30541), (105, 30580), (111, 30619), (115, 30634), (127, 30688), (132, 30724), (137, 30748), (141, 30760), (144, 30775), (147, 30790), (153, 30832), (158, 30850), (162, 30889), (165, 30913), (185, 31084), (194, 31162), (198, 31222), (201, 31258), (202, 31261), (210, 31339), (213, 31375), (218, 31399), (223, 31420), (244, 31591), (245, 31597), (258, 31708), (263, 31735), (271, 31798), (273, 31804), (274, 31819), (281, 31861), (287, 31948), (289, 31975), (293, 32005), (295, 32023), (300, 32044), (301, 32053), (302, 32059), (303, 32065), (305, 32077), (317, 32182), (321, 32200), (326, 32233), (334, 32320), (337, 32350), (338, 32356), (345, 32416), (353, 32509), (354, 32524), (358, 32566), (363, 32680),

Gene: Tyson\_20 Start: 18997, Stop: 21678, Start Num: 21

Candidate Starts for Tyson\_20:

(Start: 21 @18997 has 19 MA's), (22, 19003), (52, 19180), (56, 19210), (62, 19273), (73, 19348), (84, 19462), (85, 19468), (96, 19534), (107, 19597), (111, 19630), (112, 19633), (117, 19657), (122, 19681), (124, 19687), (126, 19693), (133, 19741), (138, 19762), (143, 19777), (146, 19798), (152, 19837), (155, 19849), (161, 19867), (171, 19942), (173, 19972), (175, 19996), (176, 19999), (182, 20044), (187, 20095), (190, 20113), (195, 20167), (199, 20239), (201, 20251), (203, 20260), (208, 20302), (210, 20332), (213, 20368), (216, 20386), (220, 20401), (222, 20407), (227, 20440), (243,

20569), (244, 20578), (254, 20659), (258, 20695), (259, 20701), (274, 20806), (275, 20815), (279, 20830), (281, 20848), (284, 20890), (291, 20986), (293, 20992), (302, 21046), (303, 21052), (305, 21064), (319, 21175), (323, 21205), (324, 21211), (330, 21241), (334, 21307), (335, 21313), (337, 21337), (338, 21343), (339, 21349), (344, 21394), (345, 21403), (346, 21412), (350, 21451), (352, 21487), (353, 21496), (354, 21511), (359, 21607), (361, 21658), (362, 21664),

Gene: UPIE\_20 Start: 18995, Stop: 21676, Start Num: 21

Candidate Starts for UPIE\_20:

(Start: 21 @18995 has 19 MA's), (22, 19001), (52, 19178), (56, 19208), (62, 19271), (73, 19346), (78, 19400), (84, 19460), (85, 19466), (96, 19532), (107, 19595), (111, 19628), (112, 19631), (117, 19655), (124, 19685), (126, 19691), (133, 19739), (138, 19760), (143, 19775), (146, 19796), (152, 19835), (155, 19847), (161, 19865), (167, 19922), (171, 19940), (173, 19970), (175, 19994), (176, 19997), (182, 20042), (187, 20093), (190, 20111), (195, 20165), (199, 20237), (201, 20249), (203, 20258), (208, 20300), (210, 20330), (213, 20366), (216, 20384), (220, 20399), (222, 20405), (227, 20438), (243, 20567), (244, 20576), (254, 20657), (258, 20693), (259, 20699), (274, 20804), (275, 20813), (279, 20828), (281, 20846), (284, 20888), (291, 20984), (293, 20990), (302, 21044), (303, 21050), (305, 21062), (319, 21173), (323, 21203), (324, 21209), (330, 21239), (334, 21305), (335, 21311), (337, 21335), (338, 21341), (339, 21347), (344, 21392), (345, 21401), (346, 21410), (350, 21449), (352, 21485), (353, 21494), (354, 21509), (359, 21605), (361, 21656), (362, 21662),

Gene: Velveteen\_19 Start: 17226, Stop: 20090, Start Num: 5

Candidate Starts for Velveteen\_19:

(Start: 5 @17226 has 9 MA's), (8, 17247), (10, 17268), (12, 17307), (26, 17376), (27, 17385), (28, 17388), (41, 17439), (50, 17529), (57, 17580), (65, 17664), (69, 17676), (71, 17697), (75, 17730), (88, 17877), (100, 17940), (106, 17979), (108, 18003), (112, 18018), (114, 18027), (118, 18054), (120, 18060), (132, 18129), (136, 18150), (139, 18156), (145, 18192), (149, 18210), (163, 18303), (168, 18324), (171, 18348), (178, 18414), (179, 18435), (183, 18453), (185, 18486), (189, 18513), (194, 18564), (197, 18600), (198, 18624), (201, 18660), (203, 18669), (204, 18684), (208, 18711), (210, 18741), (213, 18777), (218, 18801), (230, 18900), (238, 18939), (242, 18978), (245, 18999), (258, 19110), (263, 19137), (267, 19167), (270, 19188), (271, 19200), (273, 19206), (281, 19263), (293, 19407), (295, 19425), (303, 19467), (305, 19479), (326, 19635), (334, 19722), (337, 19752), (338, 19758), (345, 19818), (347, 19836), (353, 19911), (355, 19932), (358, 19968), (363, 20082),

Gene: Vic9\_33 Start: 30412, Stop: 33132, Start Num: 18

Candidate Starts for Vic9\_33:

(Start: 18 @30412 has 31 MA's), (30, 30466), (39, 30505), (43, 30523), (46, 30550), (48, 30574), (49, 30577), (53, 30610), (63, 30718), (69, 30739), (70, 30742), (76, 30796), (80, 30856), (82, 30880), (86, 30916), (95, 30964), (99, 30985), (105, 31024), (111, 31063), (115, 31078), (127, 31132), (128, 31144), (132, 31168), (137, 31192), (141, 31204), (144, 31219), (147, 31234), (153, 31276), (158, 31294), (162, 31333), (165, 31357), (185, 31528), (194, 31606), (198, 31666), (201, 31702), (202, 31705), (210, 31783), (213, 31819), (218, 31843), (230, 31942), (238, 31981), (244, 32035), (258, 32152), (263, 32179), (271, 32242), (273, 32248), (274, 32263), (281, 32305), (287, 32392), (293, 32449), (295, 32467), (303, 32509), (305, 32521), (317, 32626), (321, 32644), (323, 32662), (326, 32677), (334, 32764), (337, 32794), (338, 32800), (345, 32860), (353, 32953), (354, 32968), (358, 33010), (363, 33124),

Gene: Wamburgxpress\_20 Start: 19010, Stop: 21691, Start Num: 21

Candidate Starts for Wamburgxpress\_20:

(Start: 21 @19010 has 19 MA's), (22, 19016), (52, 19193), (56, 19223), (62, 19286), (73, 19361), (84, 19475), (85, 19481), (96, 19547), (107, 19610), (111, 19643), (112, 19646), (117, 19670), (122, 19694), (124, 19700), (126, 19706), (133, 19754), (138, 19775), (143, 19790), (146, 19811), (152, 19850), (155, 19862), (161, 19880), (171, 19955), (173, 19985), (175, 20009), (176, 20012), (182, 20057), (187, 20108), (190, 20126), (195, 20180), (199, 20252), (201, 20264), (203, 20273), (208,

20315), (210, 20345), (213, 20381), (216, 20399), (220, 20414), (222, 20420), (227, 20453), (243, 20582), (244, 20591), (254, 20672), (258, 20708), (259, 20714), (274, 20819), (275, 20828), (279, 20843), (281, 20861), (284, 20903), (291, 20999), (293, 21005), (302, 21059), (303, 21065), (305, 21077), (319, 21188), (323, 21218), (324, 21224), (330, 21254), (334, 21320), (335, 21326), (337, 21350), (338, 21356), (339, 21362), (344, 21407), (345, 21416), (346, 21425), (350, 21464), (352, 21500), (353, 21509), (354, 21524), (359, 21620), (361, 21671), (362, 21677),

Gene: Waterfoul\_25 Start: 21181, Stop: 23679, Start Num: 24

Candidate Starts for Waterfoul\_25:

(Start: 24 @21181 has 22 MA's), (34, 21241), (38, 21250), (56, 21391), (64, 21460), (77, 21544), (98, 21697), (101, 21721), (105, 21748), (112, 21790), (116, 21817), (119, 21829), (121, 21832), (122, 21841), (125, 21850), (129, 21877), (134, 21910), (139, 21931), (147, 21970), (156, 22021), (166, 22099), (174, 22177), (177, 22198), (181, 22243), (184, 22279), (189, 22315), (191, 22336), (194, 22366), (195, 22378), (209, 22537), (214, 22597), (217, 22606), (221, 22621), (226, 22642), (232, 22714), (236, 22729), (241, 22759), (242, 22762), (246, 22786), (248, 22801), (251, 22828), (255, 22876), (260, 22906), (262, 22909), (265, 22921), (266, 22933), (274, 22990), (278, 23011), (280, 23023), (285, 23071), (286, 23098), (296, 23176), (297, 23179), (308, 23254), (311, 23266), (314, 23308), (315, 23311), (320, 23323), (343, 23524), (345, 23548), (346, 23557), (348, 23572), (355, 23665), (356, 23668),

Gene: West99\_32 Start: 30088, Stop: 32808, Start Num: 18

Candidate Starts for West99\_32:

(Start: 18 @30088 has 31 MA's), (30, 30142), (39, 30181), (46, 30226), (48, 30250), (49, 30253), (53, 30286), (63, 30394), (69, 30415), (70, 30418), (76, 30472), (80, 30532), (82, 30556), (86, 30592), (95, 30640), (99, 30661), (105, 30700), (111, 30739), (115, 30754), (127, 30808), (128, 30820), (132, 30844), (137, 30868), (141, 30880), (144, 30895), (147, 30910), (153, 30952), (158, 30970), (162, 31009), (165, 31033), (185, 31204), (194, 31282), (198, 31342), (201, 31378), (202, 31381), (210, 31459), (213, 31495), (218, 31519), (223, 31540), (244, 31711), (245, 31717), (258, 31828), (263, 31855), (271, 31918), (273, 31924), (274, 31939), (281, 31981), (287, 32068), (289, 32095), (293, 32125), (295, 32143), (300, 32164), (301, 32173), (302, 32179), (303, 32185), (305, 32197), (317, 32302), (321, 32320), (326, 32353), (334, 32440), (337, 32470), (338, 32476), (345, 32536), (353, 32629), (354, 32644), (358, 32686), (363, 32800),

Gene: Wyatt2\_20 Start: 18997, Stop: 21678, Start Num: 21

Candidate Starts for Wyatt2\_20:

(Start: 21 @18997 has 19 MA's), (22, 19003), (52, 19180), (56, 19210), (62, 19273), (73, 19348), (78, 19402), (84, 19462), (85, 19468), (96, 19534), (107, 19597), (111, 19630), (112, 19633), (117, 19657), (124, 19687), (126, 19693), (133, 19741), (138, 19762), (143, 19777), (146, 19798), (152, 19837), (155, 19849), (161, 19867), (167, 19924), (171, 19942), (173, 19972), (175, 19996), (176, 19999), (182, 20044), (187, 20095), (190, 20113), (195, 20167), (199, 20239), (201, 20251), (203, 20260), (208, 20302), (210, 20332), (213, 20368), (216, 20386), (220, 20401), (222, 20407), (227, 20440), (243, 20569), (244, 20578), (254, 20659), (258, 20695), (259, 20701), (274, 20806), (275, 20815), (279, 20830), (281, 20848), (284, 20890), (291, 20986), (293, 20992), (302, 21046), (303, 21052), (305, 21064), (319, 21175), (323, 21205), (324, 21211), (334, 21307), (335, 21313), (337, 21337), (338, 21343), (339, 21349), (344, 21394), (345, 21403), (346, 21412), (350, 21451), (352, 21487), (353, 21496), (354, 21511), (359, 21607), (361, 21658), (362, 21664),

Gene: Xavia\_21 Start: 19042, Stop: 21888, Start Num: 4

Candidate Starts for Xavia\_21:

(Start: 4 @19042 has 2 MA's), (28, 19195), (65, 19468), (69, 19480), (71, 19501), (74, 19525), (79, 19600), (87, 19672), (93, 19702), (100, 19738), (108, 19801), (112, 19816), (118, 19849), (132, 19924), (136, 19948), (139, 19954), (142, 19966), (149, 20008), (150, 20014), (163, 20101), (168, 20122), (171, 20146), (178, 20212), (179, 20233), (183, 20251), (185, 20284), (188, 20308), (189,

20311), (192, 20341), (194, 20362), (198, 20422), (201, 20458), (202, 20461), (203, 20467), (210, 20539), (213, 20575), (216, 20593), (217, 20596), (219, 20605), (223, 20620), (234, 20728), (244, 20791), (253, 20866), (258, 20908), (263, 20935), (271, 20998), (273, 21004), (274, 21019), (281, 21061), (283, 21100), (287, 21148), (289, 21175), (290, 21178), (293, 21205), (295, 21223), (301, 21253), (303, 21265), (305, 21277), (317, 21382), (321, 21400), (326, 21433), (334, 21520), (337, 21550), (338, 21556), (345, 21616), (346, 21625), (347, 21634), (349, 21661), (353, 21709), (354, 21724), (355, 21730), (358, 21766), (363, 21880),

Gene: Zaria\_20 Start: 19011, Stop: 21692, Start Num: 21

Candidate Starts for Zaria\_20:

(Start: 21 @19011 has 19 MA's), (22, 19017), (52, 19194), (56, 19224), (62, 19287), (73, 19362), (78, 19416), (84, 19476), (85, 19482), (96, 19548), (107, 19611), (111, 19644), (112, 19647), (117, 19671), (122, 19695), (124, 19701), (126, 19707), (133, 19755), (138, 19776), (143, 19791), (146, 19812), (152, 19851), (155, 19863), (161, 19881), (171, 19956), (173, 19986), (175, 20010), (176, 20013), (182, 20058), (187, 20109), (190, 20127), (195, 20181), (199, 20253), (201, 20265), (203, 20274), (208, 20316), (210, 20346), (213, 20382), (216, 20400), (220, 20415), (222, 20421), (227, 20454), (243, 20583), (244, 20592), (254, 20673), (258, 20709), (259, 20715), (274, 20820), (275, 20829), (279, 20844), (281, 20862), (284, 20904), (291, 21000), (293, 21006), (302, 21060), (303, 21066), (305, 21078), (319, 21189), (323, 21219), (324, 21225), (334, 21321), (335, 21327), (337, 21351), (338, 21357), (339, 21363), (344, 21408), (345, 21417), (346, 21426), (350, 21465), (352, 21501), (353, 21510), (354, 21525), (359, 21621), (361, 21672), (362, 21678),