



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 294669 Report

This analysis was run 04/18/26 on database version 643.

Pham number 294669 has 77 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Doomslug\_55
- Track 2 : BlueCrab\_45, MisterCuddles\_47, Job42\_48, Dorothy\_44, Doomphist\_47, Girr\_48, Blexus\_45, Ruby\_46, Stap\_46, Poenanya\_47, Madiba\_43, RedBird\_44
- Track 3 : DotProduct\_44, Totinger\_47, Slim\_48, Emmaloid\_48
- Track 4 : Jant\_52, Beakin\_49
- Track 5 : Seagreen\_48
- Track 6 : DillTech15\_46, Ogotogo\_48, DaWorst\_49, Cheese puff\_53
- Track 7 : Karhdo\_46, Vivum\_50, Mantra\_44, GigiOuiOui\_44, Wee\_50, Veteran\_45, SiSi\_47, BuzzLyseyear\_52, GUmbe\_45, Tweety\_47, Hamulus\_48, Starcevich\_47
- Track 8 : Mwanjiwa\_53
- Track 9 : Phalconet\_46, Okabe\_43, PhesterPhotato\_49
- Track 10 : LittleShirley\_47
- Track 11 : Beanstalk\_50, MadMen\_42, Krakatau\_45
- Track 12 : Estave1\_48, PopTart\_43, SassyB\_43
- Track 13 : Marker\_48
- Track 14 : Fastidio\_49
- Track 15 : Filuzino\_45
- Track 16 : Zerg\_46, Phasih\_45, RockyHorror\_48
- Track 17 : Latretium\_50
- Track 18 : Fruitloop\_46, Brushbloom\_50, SuperGrey\_48
- Track 19 : Topiatin\_52, Boomer\_50, Rockne\_45, Pollywog\_46, PMC\_42
- Track 20 : KristaRAM\_47
- Track 21 : Dante\_47
- Track 22 : Cornucopia\_51
- Track 23 : Frankie\_51
- Track 24 : Nivrat\_45, LilMoolah\_46
- Track 25 : Eish\_48
- Track 26 : Chuckly\_47
- Track 27 : Harley\_50
- Track 28 : SimranZ1\_47
- Track 29 : Grimmer\_57
- Track 30 : ShroomBoi\_47
- Track 31 : Che9d\_54
- Track 32 : Demsculpinboyz\_56
- Track 33 : Yoshi\_60

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

The start number called the most often in the published annotations is 10, it was called in 70 of the 70 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Beakin\_49, Beanstalk\_50, Blexus\_45, BlueCrab\_45, Boomer\_50, Brushbloom\_50, BuzzLyseyear\_52, Che9d\_54, CheesePuff\_53, Chuckly\_47, Cornucopia\_51, DaWorst\_49, Dante\_47, Demsculpinboyz\_56, DillTech15\_46, Doomphist\_47, Doomslug\_55, Dorothy\_44, DotProduct\_44, Eish\_48, Emmaloid\_48, Estave1\_48, Fastidio\_49, Filuzino\_45, Frankie\_51, Fruitloop\_46, GUmbie\_45, GigiOuiOui\_44, Girr\_48, Grimmer\_57, Hamulus\_48, Harley\_50, Jant\_52, Job42\_48, Karhdo\_46, Krakatau\_45, KristaRAM\_47, Latretium\_50, LilMoolah\_46, LittleShirley\_47, MadMen\_42, Madiba\_43, Mantra\_44, Marker\_48, MisterCuddles\_47, Mwanjiwa\_53, Nivrat\_45, OgoPogo\_48, Okabe\_43, PMC\_42, Phalconet\_46, Phasih\_45, PhesterPhotato\_49, Poenanya\_47, Pollywog\_46, PopTart\_43, RedBird\_44, Rockne\_45, RockyHorror\_48, Ruby\_46, SassyB\_43, Seagreen\_48, ShroomBoi\_47, SiSi\_47, SimranZ1\_47, Slim\_48, Stap\_46, Starcevich\_47, SuperGrey\_48, Topiatin\_52, Totinger\_47, Tweety\_47, Veteran\_45, Vivum\_50, Wee\_50, Yoshi\_60, Zerg\_46,

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

- 

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

- 

## **Summary by start number:**

Start 10:

- Found in 77 of 77 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 70 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beakin\_49 (F1), Beanstalk\_50 (F1), Blexus\_45 (F1), BlueCrab\_45 (F1), Boomer\_50 (F1), Brushbloom\_50 (F1), BuzzLyseyear\_52 (F1), Che9d\_54 (F2), CheesePuff\_53 (F1), Chuckly\_47 (F1), Cornucopia\_51 (F1), DaWorst\_49 (F1), Dante\_47 (F1), Demsculpinboyz\_56 (F2), DillTech15\_46 (F1), Doomphist\_47 (F1), Doomslug\_55 (F), Dorothy\_44 (F1), DotProduct\_44 (F1), Eish\_48 (F1), Emmaloid\_48 (F1), Estave1\_48 (F1), Fastidio\_49 (F1), Filuzino\_45 (F1), Frankie\_51 (F1), Fruitloop\_46 (F1), GUmbie\_45 (F1), GigiOuiOui\_44 (F1), Girr\_48 (F1), Grimmer\_57 (F1), Hamulus\_48 (F1), Harley\_50 (F1), Jant\_52 (F1), Job42\_48 (F1), Karhdo\_46 (F1), Krakatau\_45 (F1), KristaRAM\_47 (F1), Latretium\_50 (F1), LilMoolah\_46 (F1), LittleShirley\_47 (F1), MadMen\_42 (F1), Madiba\_43 (F1), Mantra\_44 (F1), Marker\_48 (F1), MisterCuddles\_47 (F1), Mwanjiwa\_53 (F1), Nivrat\_45 (F1), OgoPogo\_48 (F1), Okabe\_43 (F8), PMC\_42 (F1), Phalconet\_46 (F1), Phasih\_45 (F1), PhesterPhotato\_49 (F1), Poenanya\_47 (F1), Pollywog\_46 (F1), PopTart\_43 (F1), RedBird\_44 (F1), Rockne\_45 (F1), RockyHorror\_48 (F1), Ruby\_46 (F1), SassyB\_43 (F1), Seagreen\_48 (F1), ShroomBoi\_47 (F1), SiSi\_47 (F1), SimranZ1\_47 (F1), Slim\_48 (F1), Stap\_46 (F1), Starcevich\_47 (F1), SuperGrey\_48 (F1), Topiatin\_52 (F1), Totinger\_47 (F1), Tweety\_47 (F1), Veteran\_45 (F1), Vivum\_50 (F1), Wee\_50 (F1), Yoshi\_60 (F2), Zerg\_46 (F1),

## Summary by clusters:

There are 4 clusters represented in this pham: F8, F1, F2, F,

Info for manual annotations of cluster F1:

- Start number 10 was manually annotated 67 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 10 was manually annotated 3 times for cluster F2.

## Gene Information:

Gene: Beakin\_49 Start: 35134, Stop: 36138, Start Num: 10

Candidate Starts for Beakin\_49:

(Start: 10 @35134 has 70 MA's), (11, 35302), (12, 35323), (13, 35335), (14, 35368), (15, 35383), (16, 35401), (17, 35410), (18, 35446), (19, 35494), (20, 35512), (22, 35524), (23, 35551), (25, 35575), (26, 35587), (27, 35590), (28, 35611), (29, 35632), (30, 35644), (31, 35647), (33, 35731), (35, 35776), (36, 35782), (39, 35839), (40, 35857), (42, 35878), (44, 35911), (45, 35929), (46, 35971), (47, 35998), (49, 36055), (51, 36085), (53, 36121), (54, 36124),

Gene: Beanstalk\_50 Start: 34763, Stop: 35770, Start Num: 10

Candidate Starts for Beanstalk\_50:

(1, 34268), (2, 34319), (3, 34442), (4, 34448), (5, 34463), (6, 34517), (7, 34589), (8, 34598), (Start: 10 @34763 has 70 MA's), (12, 34955), (13, 34967), (16, 35033), (17, 35042), (18, 35078), (20, 35144), (22, 35156), (23, 35183), (25, 35207), (27, 35222), (28, 35243), (29, 35264), (30, 35276), (31, 35279), (33, 35363), (35, 35408), (36, 35414), (37, 35420), (38, 35444), (39, 35471), (40, 35489), (42, 35510), (44, 35543), (46, 35603), (47, 35630), (48, 35669), (49, 35687), (50, 35708), (51, 35717), (53, 35753), (55, 35762),

Gene: Blexus\_45 Start: 35131, Stop: 36135, Start Num: 10

Candidate Starts for Blexus\_45:

(Start: 10 @35131 has 70 MA's), (12, 35320), (13, 35332), (16, 35398), (17, 35407), (18, 35443), (20, 35509), (22, 35521), (23, 35548), (25, 35572), (27, 35587), (28, 35608), (29, 35629), (30, 35641), (31, 35644), (33, 35728), (35, 35773), (36, 35779), (38, 35809), (39, 35836), (40, 35854), (42, 35875), (44, 35908), (46, 35968), (47, 35995), (48, 36034), (49, 36052), (50, 36073), (51, 36082), (53, 36118), (55, 36127),

Gene: BlueCrab\_45 Start: 34857, Stop: 35861, Start Num: 10

Candidate Starts for BlueCrab\_45:

(Start: 10 @34857 has 70 MA's), (12, 35046), (13, 35058), (16, 35124), (17, 35133), (18, 35169), (20, 35235), (22, 35247), (23, 35274), (25, 35298), (27, 35313), (28, 35334), (29, 35355), (30, 35367), (31, 35370), (33, 35454), (35, 35499), (36, 35505), (38, 35535), (39, 35562), (40, 35580), (42, 35601), (44, 35634), (46, 35694), (47, 35721), (48, 35760), (49, 35778), (50, 35799), (51, 35808), (53, 35844), (55, 35853),

Gene: Boomer\_50 Start: 36306, Stop: 37310, Start Num: 10

Candidate Starts for Boomer\_50:

(Start: 10 @36306 has 70 MA's), (12, 36495), (13, 36507), (16, 36573), (17, 36582), (18, 36618), (20, 36684), (22, 36696), (23, 36723), (25, 36747), (27, 36762), (28, 36783), (29, 36804), (30, 36816), (31, 36819), (33, 36903), (35, 36948), (36, 36954), (38, 36984), (39, 37011), (40, 37029), (42, 37050), (44, 37083), (46, 37143), (48, 37209), (49, 37227), (50, 37248), (51, 37257), (53, 37293), (55, 37302),

Gene: Brushbloom\_50 Start: 35774, Stop: 36778, Start Num: 10

Candidate Starts for Brushbloom\_50:

(Start: 10 @35774 has 70 MA's), (11, 35942), (12, 35963), (13, 35975), (14, 36008), (15, 36023), (16, 36041), (17, 36050), (18, 36086), (19, 36134), (20, 36152), (22, 36164), (23, 36191), (25, 36215), (26, 36227), (27, 36230), (28, 36251), (29, 36272), (30, 36284), (31, 36287), (32, 36359), (33, 36371), (36, 36422), (37, 36428), (39, 36479), (40, 36497), (42, 36518), (44, 36551), (45, 36569), (46, 36611), (47, 36638), (49, 36695), (51, 36725), (53, 36761), (54, 36764),

Gene: BuzzLyseyear\_52 Start: 36683, Stop: 37687, Start Num: 10

Candidate Starts for BuzzLyseyear\_52:

(Start: 10 @36683 has 70 MA's), (12, 36872), (13, 36884), (16, 36950), (17, 36959), (18, 36995), (20, 37061), (22, 37073), (23, 37100), (25, 37124), (27, 37139), (28, 37160), (29, 37181), (30, 37193), (31, 37196), (33, 37280), (35, 37325), (36, 37331), (38, 37361), (39, 37388), (40, 37406), (42, 37427), (44, 37460), (46, 37520), (47, 37547), (48, 37586), (49, 37604), (50, 37625), (51, 37634), (53, 37670), (55, 37679),

Gene: Che9d\_54 Start: 34668, Stop: 35669, Start Num: 10

Candidate Starts for Che9d\_54:

(Start: 10 @34668 has 70 MA's), (11, 34836), (12, 34857), (13, 34869), (16, 34935), (17, 34944), (18, 34980), (20, 35046), (23, 35085), (24, 35088), (26, 35121), (27, 35124), (28, 35145), (29, 35166), (30, 35178), (31, 35181), (33, 35262), (35, 35307), (36, 35313), (39, 35370), (40, 35388), (41, 35391), (42, 35409), (43, 35430), (44, 35442), (45, 35460), (46, 35502), (47, 35529), (48, 35568), (49, 35586), (50, 35607), (53, 35652), (54, 35655),

Gene: Cheesepuff\_53 Start: 37297, Stop: 38301, Start Num: 10

Candidate Starts for Cheesepuff\_53:

(Start: 10 @37297 has 70 MA's), (11, 37465), (12, 37486), (13, 37498), (16, 37564), (17, 37573), (18, 37609), (20, 37675), (23, 37714), (24, 37717), (25, 37738), (27, 37753), (28, 37774), (29, 37795), (30, 37807), (31, 37810), (33, 37894), (36, 37945), (37, 37951), (39, 38002), (40, 38020), (42, 38041), (44, 38074), (45, 38092), (46, 38134), (47, 38161), (49, 38218), (51, 38248), (53, 38284), (54, 38287),

Gene: Chuckly\_47 Start: 35101, Stop: 36108, Start Num: 10

Candidate Starts for Chuckly\_47:

(Start: 10 @35101 has 70 MA's), (12, 35293), (13, 35305), (16, 35371), (17, 35380), (18, 35416), (20, 35482), (22, 35494), (23, 35521), (25, 35545), (27, 35560), (28, 35581), (29, 35602), (30, 35614), (31, 35617), (33, 35701), (35, 35746), (36, 35752), (37, 35758), (38, 35782), (39, 35809), (40, 35827), (42, 35848), (44, 35881), (46, 35941), (47, 35968), (48, 36007), (49, 36025), (50, 36046), (51, 36055), (53, 36091), (55, 36100),

Gene: Cornucopia\_51 Start: 36403, Stop: 37407, Start Num: 10

Candidate Starts for Cornucopia\_51:

(Start: 10 @36403 has 70 MA's), (11, 36571), (12, 36592), (13, 36604), (14, 36637), (15, 36652), (16, 36670), (17, 36679), (18, 36715), (19, 36763), (20, 36781), (22, 36793), (23, 36820), (25, 36844), (26, 36856), (27, 36859), (28, 36880), (29, 36901), (30, 36913), (31, 36916), (33, 37000), (36, 37051), (37, 37057), (39, 37108), (40, 37126), (42, 37147), (44, 37180), (45, 37198), (46, 37240), (47, 37267), (49, 37324), (51, 37354), (53, 37390), (54, 37393),

Gene: DaWorst\_49 Start: 35931, Stop: 36935, Start Num: 10

Candidate Starts for DaWorst\_49:

(Start: 10 @35931 has 70 MA's), (11, 36099), (12, 36120), (13, 36132), (16, 36198), (17, 36207), (18, 36243), (20, 36309), (23, 36348), (24, 36351), (25, 36372), (27, 36387), (28, 36408), (29, 36429), (30, 36441), (31, 36444), (33, 36528), (36, 36579), (37, 36585), (39, 36636), (40, 36654), (42, 36675), (44, 36708), (45, 36726), (46, 36768), (47, 36795), (49, 36852), (51, 36882), (53, 36918), (54, 36921),

Gene: Dante\_47 Start: 34836, Stop: 35840, Start Num: 10

Candidate Starts for Dante\_47:

(Start: 10 @34836 has 70 MA's), (11, 35004), (12, 35025), (13, 35037), (14, 35070), (15, 35085), (16, 35103), (17, 35112), (18, 35148), (19, 35196), (20, 35214), (22, 35226), (23, 35253), (25, 35277), (26, 35289), (27, 35292), (28, 35313), (29, 35334), (30, 35346), (31, 35349), (33, 35433), (35, 35478), (36, 35484), (37, 35490), (39, 35541), (40, 35559), (42, 35580), (44, 35613), (45, 35631), (46, 35673), (47, 35700), (49, 35757), (51, 35787), (53, 35823), (54, 35826),

Gene: Demsculpinboyz\_56 Start: 34780, Stop: 35781, Start Num: 10

Candidate Starts for Demsculpinboyz\_56:

(Start: 10 @34780 has 70 MA's), (11, 34948), (12, 34969), (13, 34981), (14, 35014), (15, 35029), (16, 35047), (17, 35056), (18, 35092), (19, 35140), (20, 35158), (22, 35170), (23, 35197), (25, 35221), (26, 35233), (27, 35236), (28, 35257), (29, 35278), (30, 35290), (31, 35293), (33, 35374), (35, 35419), (36, 35425), (39, 35482), (40, 35500), (41, 35503), (42, 35521), (44, 35554), (45, 35572), (46, 35614), (47, 35641), (48, 35680), (49, 35698), (50, 35719), (51, 35728), (53, 35764), (54, 35767),

Gene: DillTech15\_46 Start: 34346, Stop: 35350, Start Num: 10

Candidate Starts for DillTech15\_46:

(Start: 10 @34346 has 70 MA's), (11, 34514), (12, 34535), (13, 34547), (16, 34613), (17, 34622), (18, 34658), (20, 34724), (23, 34763), (24, 34766), (25, 34787), (27, 34802), (28, 34823), (29, 34844), (30, 34856), (31, 34859), (33, 34943), (36, 34994), (37, 35000), (39, 35051), (40, 35069), (42, 35090), (44, 35123), (45, 35141), (46, 35183), (47, 35210), (49, 35267), (51, 35297), (53, 35333), (54, 35336),

Gene: Doomphist\_47 Start: 36071, Stop: 37075, Start Num: 10

Candidate Starts for Doomphist\_47:

(Start: 10 @36071 has 70 MA's), (12, 36260), (13, 36272), (16, 36338), (17, 36347), (18, 36383), (20, 36449), (22, 36461), (23, 36488), (25, 36512), (27, 36527), (28, 36548), (29, 36569), (30, 36581), (31, 36584), (33, 36668), (35, 36713), (36, 36719), (38, 36749), (39, 36776), (40, 36794), (42, 36815), (44, 36848), (46, 36908), (47, 36935), (48, 36974), (49, 36992), (50, 37013), (51, 37022), (53, 37058), (55, 37067),

Gene: Doomslug\_55 Start: 35048, Stop: 36052, Start Num: 10

Candidate Starts for Doomslug\_55:

(Start: 10 @35048 has 70 MA's), (11, 35216), (12, 35237), (13, 35249), (14, 35282), (15, 35297), (16, 35315), (17, 35324), (18, 35360), (19, 35408), (20, 35426), (22, 35438), (23, 35465), (25, 35489), (26, 35501), (27, 35504), (28, 35525), (29, 35546), (30, 35558), (31, 35561), (33, 35645), (35, 35690), (36, 35696), (38, 35726), (39, 35753), (40, 35771), (42, 35792), (44, 35825), (45, 35843), (46, 35885), (49, 35969), (50, 35990), (53, 36035), (55, 36044),

Gene: Dorothy\_44 Start: 34870, Stop: 35874, Start Num: 10

Candidate Starts for Dorothy\_44:

(Start: 10 @34870 has 70 MA's), (12, 35059), (13, 35071), (16, 35137), (17, 35146), (18, 35182), (20, 35248), (22, 35260), (23, 35287), (25, 35311), (27, 35326), (28, 35347), (29, 35368), (30, 35380), (31, 35383), (33, 35467), (35, 35512), (36, 35518), (38, 35548), (39, 35575), (40, 35593), (42, 35614), (44, 35647), (46, 35707), (47, 35734), (48, 35773), (49, 35791), (50, 35812), (51, 35821), (53, 35857), (55, 35866),

Gene: DotProduct\_44 Start: 34531, Stop: 35535, Start Num: 10

Candidate Starts for DotProduct\_44:

(Start: 10 @34531 has 70 MA's), (12, 34720), (13, 34732), (16, 34798), (17, 34807), (18, 34843), (20, 34909), (22, 34921), (23, 34948), (25, 34972), (27, 34987), (28, 35008), (29, 35029), (30, 35041), (31, 35044), (33, 35128), (35, 35173), (36, 35179), (38, 35209), (39, 35236), (40, 35254), (42, 35275), (44, 35308), (45, 35326), (46, 35368), (47, 35395), (48, 35434), (49, 35452), (50, 35473), (51, 35482), (53, 35518), (55, 35527),

Gene: Eish\_48 Start: 35416, Stop: 36417, Start Num: 10

Candidate Starts for Eish\_48:

(Start: 10 @35416 has 70 MA's), (11, 35584), (12, 35605), (13, 35617), (16, 35683), (17, 35692), (18, 35728), (20, 35794), (23, 35833), (24, 35836), (26, 35869), (27, 35872), (28, 35893), (29, 35914), (30, 35926), (31, 35929), (33, 36010), (35, 36055), (36, 36061), (38, 36091), (39, 36118), (40, 36136), (41, 36139), (42, 36157), (44, 36190), (45, 36208), (46, 36250), (48, 36316), (50, 36355), (53, 36400),

Gene: Emmaloid\_48 Start: 36261, Stop: 37265, Start Num: 10

Candidate Starts for Emmaloid\_48:

(Start: 10 @36261 has 70 MA's), (12, 36450), (13, 36462), (16, 36528), (17, 36537), (18, 36573), (20, 36639), (22, 36651), (23, 36678), (25, 36702), (27, 36717), (28, 36738), (29, 36759), (30, 36771), (31, 36774), (33, 36858), (35, 36903), (36, 36909), (38, 36939), (39, 36966), (40, 36984), (42, 37005), (44, 37038), (45, 37056), (46, 37098), (47, 37125), (48, 37164), (49, 37182), (50, 37203), (51, 37212), (53, 37248), (55, 37257),

Gene: Estave1\_48 Start: 34820, Stop: 35824, Start Num: 10

Candidate Starts for Estave1\_48:

(Start: 10 @34820 has 70 MA's), (11, 34988), (12, 35009), (13, 35021), (14, 35054), (15, 35069), (16, 35087), (17, 35096), (18, 35132), (19, 35180), (20, 35198), (22, 35210), (23, 35237), (25, 35261), (26, 35273), (27, 35276), (28, 35297), (29, 35318), (30, 35330), (31, 35333), (32, 35405), (33, 35417), (35, 35462), (36, 35468), (38, 35498), (39, 35525), (40, 35543), (41, 35546), (42, 35564), (44, 35597), (45, 35615), (46, 35657), (48, 35723), (49, 35741), (50, 35762), (53, 35807),

Gene: Fastidio\_49 Start: 34493, Stop: 35497, Start Num: 10

Candidate Starts for Fastidio\_49:

(Start: 10 @34493 has 70 MA's), (12, 34682), (13, 34694), (16, 34760), (17, 34769), (18, 34805), (20, 34871), (22, 34883), (23, 34910), (25, 34934), (27, 34949), (28, 34970), (29, 34991), (30, 35003), (31, 35006), (33, 35090), (36, 35141), (37, 35147), (39, 35198), (40, 35216), (42, 35237), (44, 35270), (45, 35288), (46, 35330), (47, 35357), (49, 35414), (51, 35444), (53, 35480), (54, 35483),

Gene: Filuzino\_45 Start: 34250, Stop: 35254, Start Num: 10

Candidate Starts for Filuzino\_45:

(Start: 10 @34250 has 70 MA's), (11, 34418), (12, 34439), (13, 34451), (14, 34484), (15, 34499), (16, 34517), (17, 34526), (18, 34562), (19, 34610), (20, 34628), (22, 34640), (23, 34667), (25, 34691), (26, 34703), (27, 34706), (28, 34727), (29, 34748), (30, 34760), (31, 34763), (33, 34847), (36, 34898), (39, 34955), (40, 34973), (42, 34994), (44, 35027), (45, 35045), (46, 35087), (47, 35114), (49, 35171), (51, 35201), (53, 35237), (54, 35240),

Gene: Frankie\_51 Start: 36473, Stop: 37477, Start Num: 10

Candidate Starts for Frankie\_51:

(Start: 10 @36473 has 70 MA's), (11, 36641), (12, 36662), (13, 36674), (14, 36707), (15, 36722), (16, 36740), (17, 36749), (18, 36785), (19, 36833), (20, 36851), (22, 36863), (23, 36890), (25, 36914), (26, 36926), (27, 36929), (28, 36950), (29, 36971), (30, 36983), (31, 36986), (32, 37058), (33, 37070), (34, 37073), (35, 37115), (36, 37121), (38, 37151), (39, 37178), (42, 37217), (44, 37250), (45, 37268), (46, 37310), (47, 37337), (48, 37376), (49, 37394), (50, 37415), (51, 37424), (53, 37460), (55, 37469),

Gene: Fruitloop\_46 Start: 36116, Stop: 37120, Start Num: 10

Candidate Starts for Fruitloop\_46:

(Start: 10 @36116 has 70 MA's), (11, 36284), (12, 36305), (13, 36317), (14, 36350), (15, 36365), (16, 36383), (17, 36392), (18, 36428), (19, 36476), (20, 36494), (22, 36506), (23, 36533), (25, 36557), (26, 36569), (27, 36572), (28, 36593), (29, 36614), (30, 36626), (31, 36629), (32, 36701), (33, 36713), (36, 36764), (37, 36770), (39, 36821), (40, 36839), (42, 36860), (44, 36893), (45, 36911), (46, 36953), (47, 36980), (49, 37037), (51, 37067), (53, 37103), (54, 37106),

Gene: GUmbie\_45 Start: 34760, Stop: 35764, Start Num: 10

Candidate Starts for GUmbie\_45:

(Start: 10 @34760 has 70 MA's), (12, 34949), (13, 34961), (16, 35027), (17, 35036), (18, 35072), (20, 35138), (22, 35150), (23, 35177), (25, 35201), (27, 35216), (28, 35237), (29, 35258), (30, 35270), (31, 35273), (33, 35357), (35, 35402), (36, 35408), (38, 35438), (39, 35465), (40, 35483), (42, 35504), (44, 35537), (46, 35597), (47, 35624), (48, 35663), (49, 35681), (50, 35702), (51, 35711), (53, 35747), (55, 35756),

Gene: GigiOuiOui\_44 Start: 34673, Stop: 35677, Start Num: 10

Candidate Starts for GigiOuiOui\_44:

(Start: 10 @34673 has 70 MA's), (12, 34862), (13, 34874), (16, 34940), (17, 34949), (18, 34985), (20, 35051), (22, 35063), (23, 35090), (25, 35114), (27, 35129), (28, 35150), (29, 35171), (30, 35183), (31, 35186), (33, 35270), (35, 35315), (36, 35321), (38, 35351), (39, 35378), (40, 35396), (42, 35417), (44, 35450), (46, 35510), (47, 35537), (48, 35576), (49, 35594), (50, 35615), (51, 35624), (53, 35660), (55, 35669),

Gene: Girr\_48 Start: 35732, Stop: 36736, Start Num: 10

Candidate Starts for Girr\_48:

(Start: 10 @35732 has 70 MA's), (12, 35921), (13, 35933), (16, 35999), (17, 36008), (18, 36044), (20, 36110), (22, 36122), (23, 36149), (25, 36173), (27, 36188), (28, 36209), (29, 36230), (30, 36242), (31, 36245), (33, 36329), (35, 36374), (36, 36380), (38, 36410), (39, 36437), (40, 36455), (42, 36476), (44, 36509), (46, 36569), (47, 36596), (48, 36635), (49, 36653), (50, 36674), (51, 36683), (53, 36719), (55, 36728),

Gene: Grimmer\_57 Start: 37247, Stop: 38248, Start Num: 10

Candidate Starts for Grimmer\_57:

(Start: 10 @37247 has 70 MA's), (12, 37436), (13, 37448), (15, 37496), (16, 37514), (17, 37523), (18, 37559), (20, 37625), (22, 37637), (23, 37664), (25, 37688), (27, 37703), (28, 37724), (29, 37745), (30, 37757), (31, 37760), (33, 37841), (35, 37886), (36, 37892), (39, 37949), (40, 37967), (42, 37988), (44, 38021), (45, 38039), (46, 38081), (47, 38108), (48, 38147), (49, 38165), (50, 38186), (53, 38231), (54, 38234),

Gene: Hamulus\_48 Start: 36115, Stop: 37119, Start Num: 10

Candidate Starts for Hamulus\_48:

(Start: 10 @36115 has 70 MA's), (12, 36304), (13, 36316), (16, 36382), (17, 36391), (18, 36427), (20, 36493), (22, 36505), (23, 36532), (25, 36556), (27, 36571), (28, 36592), (29, 36613), (30, 36625), (31, 36628), (33, 36712), (35, 36757), (36, 36763), (38, 36793), (39, 36820), (40, 36838), (42, 36859), (44, 36892), (46, 36952), (47, 36979), (48, 37018), (49, 37036), (50, 37057), (51, 37066), (53, 37102), (55, 37111),

Gene: Harley\_50 Start: 35468, Stop: 36472, Start Num: 10

Candidate Starts for Harley\_50:

(Start: 10 @35468 has 70 MA's), (12, 35657), (13, 35669), (16, 35735), (17, 35744), (18, 35780), (20, 35846), (22, 35858), (23, 35885), (25, 35909), (27, 35924), (28, 35945), (29, 35966), (30, 35978), (31,

35981), (33, 36065), (35, 36110), (36, 36116), (38, 36146), (39, 36173), (40, 36191), (42, 36212), (44, 36245), (46, 36305), (48, 36371), (49, 36389), (50, 36410), (51, 36419), (53, 36455), (55, 36464),

Gene: Jant\_52 Start: 37127, Stop: 38131, Start Num: 10

Candidate Starts for Jant\_52:

(Start: 10 @37127 has 70 MA's), (11, 37295), (12, 37316), (13, 37328), (14, 37361), (15, 37376), (16, 37394), (17, 37403), (18, 37439), (19, 37487), (20, 37505), (22, 37517), (23, 37544), (25, 37568), (26, 37580), (27, 37583), (28, 37604), (29, 37625), (30, 37637), (31, 37640), (33, 37724), (35, 37769), (36, 37775), (39, 37832), (40, 37850), (42, 37871), (44, 37904), (45, 37922), (46, 37964), (47, 37991), (49, 38048), (51, 38078), (53, 38114), (54, 38117),

Gene: Job42\_48 Start: 36721, Stop: 37725, Start Num: 10

Candidate Starts for Job42\_48:

(Start: 10 @36721 has 70 MA's), (12, 36910), (13, 36922), (16, 36988), (17, 36997), (18, 37033), (20, 37099), (22, 37111), (23, 37138), (25, 37162), (27, 37177), (28, 37198), (29, 37219), (30, 37231), (31, 37234), (33, 37318), (35, 37363), (36, 37369), (38, 37399), (39, 37426), (40, 37444), (42, 37465), (44, 37498), (46, 37558), (47, 37585), (48, 37624), (49, 37642), (50, 37663), (51, 37672), (53, 37708), (55, 37717),

Gene: Karhdo\_46 Start: 35555, Stop: 36559, Start Num: 10

Candidate Starts for Karhdo\_46:

(Start: 10 @35555 has 70 MA's), (12, 35744), (13, 35756), (16, 35822), (17, 35831), (18, 35867), (20, 35933), (22, 35945), (23, 35972), (25, 35996), (27, 36011), (28, 36032), (29, 36053), (30, 36065), (31, 36068), (33, 36152), (35, 36197), (36, 36203), (38, 36233), (39, 36260), (40, 36278), (42, 36299), (44, 36332), (46, 36392), (47, 36419), (48, 36458), (49, 36476), (50, 36497), (51, 36506), (53, 36542), (55, 36551),

Gene: Krakatau\_45 Start: 35226, Stop: 36230, Start Num: 10

Candidate Starts for Krakatau\_45:

(1, 34731), (2, 34782), (3, 34905), (4, 34911), (5, 34926), (6, 34980), (7, 35052), (8, 35061), (Start: 10 @35226 has 70 MA's), (12, 35415), (13, 35427), (16, 35493), (17, 35502), (18, 35538), (20, 35604), (22, 35616), (23, 35643), (25, 35667), (27, 35682), (28, 35703), (29, 35724), (30, 35736), (31, 35739), (33, 35823), (35, 35868), (36, 35874), (37, 35880), (38, 35904), (39, 35931), (40, 35949), (42, 35970), (44, 36003), (46, 36063), (47, 36090), (48, 36129), (49, 36147), (50, 36168), (51, 36177), (53, 36213), (55, 36222),

Gene: KristaRAM\_47 Start: 36438, Stop: 37442, Start Num: 10

Candidate Starts for KristaRAM\_47:

(Start: 10 @36438 has 70 MA's), (11, 36606), (12, 36627), (13, 36639), (14, 36672), (15, 36687), (16, 36705), (17, 36714), (18, 36750), (19, 36798), (20, 36816), (22, 36828), (23, 36855), (25, 36879), (26, 36891), (27, 36894), (28, 36915), (29, 36936), (30, 36948), (31, 36951), (33, 37035), (35, 37080), (36, 37086), (38, 37116), (39, 37143), (40, 37161), (42, 37182), (44, 37215), (45, 37233), (46, 37275), (47, 37302), (49, 37359), (51, 37389), (53, 37425), (54, 37428),

Gene: Latretium\_50 Start: 36344, Stop: 37345, Start Num: 10

Candidate Starts for Latretium\_50:

(Start: 10 @36344 has 70 MA's), (11, 36512), (12, 36533), (13, 36545), (16, 36611), (17, 36620), (18, 36656), (20, 36722), (21, 36728), (22, 36734), (23, 36761), (26, 36797), (27, 36800), (28, 36821), (29, 36842), (30, 36854), (31, 36857), (33, 36938), (35, 36983), (36, 36989), (37, 36995), (38, 37019), (39, 37046), (40, 37064), (42, 37085), (44, 37118), (45, 37136), (46, 37178), (48, 37244), (49, 37262), (50, 37283), (53, 37328),

Gene: LilMoolah\_46 Start: 35122, Stop: 36126, Start Num: 10

Candidate Starts for LilMoolah\_46:

(9, 34966), (Start: 10 @35122 has 70 MA's), (13, 35323), (16, 35389), (17, 35398), (18, 35434), (20, 35500), (21, 35506), (22, 35512), (23, 35539), (26, 35575), (27, 35578), (28, 35599), (29, 35620), (30, 35632), (31, 35635), (33, 35719), (35, 35764), (36, 35770), (37, 35776), (38, 35800), (39, 35827), (40, 35845), (42, 35866), (44, 35899), (46, 35959), (47, 35986), (48, 36025), (49, 36043), (50, 36064), (53, 36109), (55, 36118),

Gene: LittleShirley\_47 Start: 36153, Stop: 37157, Start Num: 10

Candidate Starts for LittleShirley\_47:

(Start: 10 @36153 has 70 MA's), (11, 36321), (12, 36342), (13, 36354), (16, 36420), (17, 36429), (18, 36465), (20, 36531), (23, 36570), (24, 36573), (25, 36594), (27, 36609), (28, 36630), (29, 36651), (30, 36663), (31, 36666), (33, 36750), (35, 36795), (36, 36801), (38, 36831), (39, 36858), (40, 36876), (42, 36897), (44, 36930), (45, 36948), (46, 36990), (47, 37017), (48, 37056), (49, 37074), (50, 37095), (51, 37104), (53, 37140), (55, 37149),

Gene: MadMen\_42 Start: 34172, Stop: 35179, Start Num: 10

Candidate Starts for MadMen\_42:

(1, 33677), (2, 33728), (3, 33851), (4, 33857), (5, 33872), (6, 33926), (7, 33998), (8, 34007), (Start: 10 @34172 has 70 MA's), (12, 34364), (13, 34376), (16, 34442), (17, 34451), (18, 34487), (20, 34553), (22, 34565), (23, 34592), (25, 34616), (27, 34631), (28, 34652), (29, 34673), (30, 34685), (31, 34688), (33, 34772), (35, 34817), (36, 34823), (37, 34829), (38, 34853), (39, 34880), (40, 34898), (42, 34919), (44, 34952), (46, 35012), (47, 35039), (48, 35078), (49, 35096), (50, 35117), (51, 35126), (53, 35162), (55, 35171),

Gene: Madiba\_43 Start: 33464, Stop: 34468, Start Num: 10

Candidate Starts for Madiba\_43:

(Start: 10 @33464 has 70 MA's), (12, 33653), (13, 33665), (16, 33731), (17, 33740), (18, 33776), (20, 33842), (22, 33854), (23, 33881), (25, 33905), (27, 33920), (28, 33941), (29, 33962), (30, 33974), (31, 33977), (33, 34061), (35, 34106), (36, 34112), (38, 34142), (39, 34169), (40, 34187), (42, 34208), (44, 34241), (46, 34301), (47, 34328), (48, 34367), (49, 34385), (50, 34406), (51, 34415), (53, 34451), (55, 34460),

Gene: Mantra\_44 Start: 34639, Stop: 35643, Start Num: 10

Candidate Starts for Mantra\_44:

(Start: 10 @34639 has 70 MA's), (12, 34828), (13, 34840), (16, 34906), (17, 34915), (18, 34951), (20, 35017), (22, 35029), (23, 35056), (25, 35080), (27, 35095), (28, 35116), (29, 35137), (30, 35149), (31, 35152), (33, 35236), (35, 35281), (36, 35287), (38, 35317), (39, 35344), (40, 35362), (42, 35383), (44, 35416), (46, 35476), (47, 35503), (48, 35542), (49, 35560), (50, 35581), (51, 35590), (53, 35626), (55, 35635),

Gene: Marker\_48 Start: 35024, Stop: 36025, Start Num: 10

Candidate Starts for Marker\_48:

(Start: 10 @35024 has 70 MA's), (11, 35192), (12, 35213), (13, 35225), (16, 35291), (17, 35300), (18, 35336), (20, 35402), (23, 35441), (24, 35444), (26, 35477), (27, 35480), (28, 35501), (29, 35522), (30, 35534), (31, 35537), (33, 35618), (35, 35663), (36, 35669), (38, 35699), (39, 35726), (40, 35744), (41, 35747), (42, 35765), (44, 35798), (45, 35816), (46, 35858), (47, 35885), (48, 35924), (49, 35942), (50, 35963), (51, 35972), (53, 36008), (55, 36017),

Gene: MisterCuddles\_47 Start: 35732, Stop: 36736, Start Num: 10

Candidate Starts for MisterCuddles\_47:

(Start: 10 @35732 has 70 MA's), (12, 35921), (13, 35933), (16, 35999), (17, 36008), (18, 36044), (20, 36110), (22, 36122), (23, 36149), (25, 36173), (27, 36188), (28, 36209), (29, 36230), (30, 36242), (31, 36245), (33, 36329), (35, 36374), (36, 36380), (38, 36410), (39, 36437), (40, 36455), (42, 36476), (44,

36509), (46, 36569), (47, 36596), (48, 36635), (49, 36653), (50, 36674), (51, 36683), (53, 36719), (55, 36728),

Gene: Mwanjiwa\_53 Start: 36107, Stop: 37108, Start Num: 10

Candidate Starts for Mwanjiwa\_53:

(Start: 10 @36107 has 70 MA's), (11, 36275), (12, 36296), (13, 36308), (16, 36374), (17, 36383), (18, 36419), (20, 36485), (21, 36491), (22, 36497), (23, 36524), (26, 36560), (27, 36563), (28, 36584), (29, 36605), (30, 36617), (31, 36620), (33, 36701), (35, 36746), (36, 36752), (38, 36782), (39, 36809), (40, 36827), (42, 36848), (44, 36881), (45, 36899), (46, 36941), (48, 37007), (49, 37025), (50, 37046), (53, 37091),

Gene: Nivrat\_45 Start: 34995, Stop: 35999, Start Num: 10

Candidate Starts for Nivrat\_45:

(9, 34839), (Start: 10 @34995 has 70 MA's), (13, 35196), (16, 35262), (17, 35271), (18, 35307), (20, 35373), (21, 35379), (22, 35385), (23, 35412), (26, 35448), (27, 35451), (28, 35472), (29, 35493), (30, 35505), (31, 35508), (33, 35592), (35, 35637), (36, 35643), (37, 35649), (38, 35673), (39, 35700), (40, 35718), (42, 35739), (44, 35772), (46, 35832), (47, 35859), (48, 35898), (49, 35916), (50, 35937), (53, 35982), (55, 35991),

Gene: Ogopogo\_48 Start: 34646, Stop: 35650, Start Num: 10

Candidate Starts for Ogopogo\_48:

(Start: 10 @34646 has 70 MA's), (11, 34814), (12, 34835), (13, 34847), (16, 34913), (17, 34922), (18, 34958), (20, 35024), (23, 35063), (24, 35066), (25, 35087), (27, 35102), (28, 35123), (29, 35144), (30, 35156), (31, 35159), (33, 35243), (36, 35294), (37, 35300), (39, 35351), (40, 35369), (42, 35390), (44, 35423), (45, 35441), (46, 35483), (47, 35510), (49, 35567), (51, 35597), (53, 35633), (54, 35636),

Gene: Okabe\_43 Start: 30988, Stop: 31992, Start Num: 10

Candidate Starts for Okabe\_43:

(Start: 10 @30988 has 70 MA's), (11, 31156), (12, 31177), (13, 31189), (14, 31222), (15, 31237), (16, 31255), (17, 31264), (18, 31300), (19, 31348), (20, 31366), (22, 31378), (23, 31405), (25, 31429), (26, 31441), (27, 31444), (28, 31465), (29, 31486), (30, 31498), (31, 31501), (32, 31573), (33, 31585), (36, 31636), (39, 31693), (40, 31711), (42, 31732), (44, 31765), (45, 31783), (46, 31825), (48, 31891), (49, 31909), (50, 31930), (53, 31975), (55, 31984),

Gene: PMC\_42 Start: 34542, Stop: 35546, Start Num: 10

Candidate Starts for PMC\_42:

(Start: 10 @34542 has 70 MA's), (12, 34731), (13, 34743), (16, 34809), (17, 34818), (18, 34854), (20, 34920), (22, 34932), (23, 34959), (25, 34983), (27, 34998), (28, 35019), (29, 35040), (30, 35052), (31, 35055), (33, 35139), (35, 35184), (36, 35190), (38, 35220), (39, 35247), (40, 35265), (42, 35286), (44, 35319), (46, 35379), (48, 35445), (49, 35463), (50, 35484), (51, 35493), (53, 35529), (55, 35538),

Gene: Phalconet\_46 Start: 34873, Stop: 35877, Start Num: 10

Candidate Starts for Phalconet\_46:

(Start: 10 @34873 has 70 MA's), (11, 35041), (12, 35062), (13, 35074), (14, 35107), (15, 35122), (16, 35140), (17, 35149), (18, 35185), (19, 35233), (20, 35251), (22, 35263), (23, 35290), (25, 35314), (26, 35326), (27, 35329), (28, 35350), (29, 35371), (30, 35383), (31, 35386), (32, 35458), (33, 35470), (36, 35521), (39, 35578), (40, 35596), (42, 35617), (44, 35650), (45, 35668), (46, 35710), (48, 35776), (49, 35794), (50, 35815), (53, 35860), (55, 35869),

Gene: Phasih\_45 Start: 35085, Stop: 36089, Start Num: 10

Candidate Starts for Phasih\_45:

(9, 34929), (Start: 10 @35085 has 70 MA's), (13, 35286), (16, 35352), (17, 35361), (18, 35397), (20, 35463), (22, 35475), (23, 35502), (25, 35526), (27, 35541), (28, 35562), (29, 35583), (30, 35595), (31,

35598), (33, 35682), (35, 35727), (36, 35733), (38, 35763), (39, 35790), (40, 35808), (42, 35829), (44, 35862), (46, 35922), (48, 35988), (49, 36006), (50, 36027), (51, 36036), (53, 36072), (55, 36081),

Gene: PhesterPhotato\_49 Start: 35828, Stop: 36832, Start Num: 10

Candidate Starts for PhesterPhotato\_49:

(Start: 10 @35828 has 70 MA's), (11, 35996), (12, 36017), (13, 36029), (14, 36062), (15, 36077), (16, 36095), (17, 36104), (18, 36140), (19, 36188), (20, 36206), (22, 36218), (23, 36245), (25, 36269), (26, 36281), (27, 36284), (28, 36305), (29, 36326), (30, 36338), (31, 36341), (32, 36413), (33, 36425), (36, 36476), (39, 36533), (40, 36551), (42, 36572), (44, 36605), (45, 36623), (46, 36665), (48, 36731), (49, 36749), (50, 36770), (53, 36815), (55, 36824),

Gene: Poenanya\_47 Start: 36071, Stop: 37075, Start Num: 10

Candidate Starts for Poenanya\_47:

(Start: 10 @36071 has 70 MA's), (12, 36260), (13, 36272), (16, 36338), (17, 36347), (18, 36383), (20, 36449), (22, 36461), (23, 36488), (25, 36512), (27, 36527), (28, 36548), (29, 36569), (30, 36581), (31, 36584), (33, 36668), (35, 36713), (36, 36719), (38, 36749), (39, 36776), (40, 36794), (42, 36815), (44, 36848), (46, 36908), (47, 36935), (48, 36974), (49, 36992), (50, 37013), (51, 37022), (53, 37058), (55, 37067),

Gene: Pollywog\_46 Start: 35249, Stop: 36253, Start Num: 10

Candidate Starts for Pollywog\_46:

(Start: 10 @35249 has 70 MA's), (12, 35438), (13, 35450), (16, 35516), (17, 35525), (18, 35561), (20, 35627), (22, 35639), (23, 35666), (25, 35690), (27, 35705), (28, 35726), (29, 35747), (30, 35759), (31, 35762), (33, 35846), (35, 35891), (36, 35897), (38, 35927), (39, 35954), (40, 35972), (42, 35993), (44, 36026), (46, 36086), (48, 36152), (49, 36170), (50, 36191), (51, 36200), (53, 36236), (55, 36245),

Gene: PopTart\_43 Start: 34554, Stop: 35558, Start Num: 10

Candidate Starts for PopTart\_43:

(Start: 10 @34554 has 70 MA's), (11, 34722), (12, 34743), (13, 34755), (14, 34788), (15, 34803), (16, 34821), (17, 34830), (18, 34866), (19, 34914), (20, 34932), (22, 34944), (23, 34971), (25, 34995), (26, 35007), (27, 35010), (28, 35031), (29, 35052), (30, 35064), (31, 35067), (32, 35139), (33, 35151), (35, 35196), (36, 35202), (38, 35232), (39, 35259), (40, 35277), (41, 35280), (42, 35298), (44, 35331), (45, 35349), (46, 35391), (48, 35457), (49, 35475), (50, 35496), (53, 35541),

Gene: RedBird\_44 Start: 34882, Stop: 35886, Start Num: 10

Candidate Starts for RedBird\_44:

(Start: 10 @34882 has 70 MA's), (12, 35071), (13, 35083), (16, 35149), (17, 35158), (18, 35194), (20, 35260), (22, 35272), (23, 35299), (25, 35323), (27, 35338), (28, 35359), (29, 35380), (30, 35392), (31, 35395), (33, 35479), (35, 35524), (36, 35530), (38, 35560), (39, 35587), (40, 35605), (42, 35626), (44, 35659), (46, 35719), (47, 35746), (48, 35785), (49, 35803), (50, 35824), (51, 35833), (53, 35869), (55, 35878),

Gene: Rockne\_45 Start: 34542, Stop: 35546, Start Num: 10

Candidate Starts for Rockne\_45:

(Start: 10 @34542 has 70 MA's), (12, 34731), (13, 34743), (16, 34809), (17, 34818), (18, 34854), (20, 34920), (22, 34932), (23, 34959), (25, 34983), (27, 34998), (28, 35019), (29, 35040), (30, 35052), (31, 35055), (33, 35139), (35, 35184), (36, 35190), (38, 35220), (39, 35247), (40, 35265), (42, 35286), (44, 35319), (46, 35379), (48, 35445), (49, 35463), (50, 35484), (51, 35493), (53, 35529), (55, 35538),

Gene: RockyHorror\_48 Start: 34943, Stop: 35947, Start Num: 10

Candidate Starts for RockyHorror\_48:

(9, 34787), (Start: 10 @34943 has 70 MA's), (13, 35144), (16, 35210), (17, 35219), (18, 35255), (20, 35321), (22, 35333), (23, 35360), (25, 35384), (27, 35399), (28, 35420), (29, 35441), (30, 35453), (31,

35456), (33, 35540), (35, 35585), (36, 35591), (38, 35621), (39, 35648), (40, 35666), (42, 35687), (44, 35720), (46, 35780), (48, 35846), (49, 35864), (50, 35885), (51, 35894), (53, 35930), (55, 35939),

Gene: Ruby\_46 Start: 35733, Stop: 36737, Start Num: 10

Candidate Starts for Ruby\_46:

(Start: 10 @35733 has 70 MA's), (12, 35922), (13, 35934), (16, 36000), (17, 36009), (18, 36045), (20, 36111), (22, 36123), (23, 36150), (25, 36174), (27, 36189), (28, 36210), (29, 36231), (30, 36243), (31, 36246), (33, 36330), (35, 36375), (36, 36381), (38, 36411), (39, 36438), (40, 36456), (42, 36477), (44, 36510), (46, 36570), (47, 36597), (48, 36636), (49, 36654), (50, 36675), (51, 36684), (53, 36720), (55, 36729),

Gene: SassyB\_43 Start: 34554, Stop: 35558, Start Num: 10

Candidate Starts for SassyB\_43:

(Start: 10 @34554 has 70 MA's), (11, 34722), (12, 34743), (13, 34755), (14, 34788), (15, 34803), (16, 34821), (17, 34830), (18, 34866), (19, 34914), (20, 34932), (22, 34944), (23, 34971), (25, 34995), (26, 35007), (27, 35010), (28, 35031), (29, 35052), (30, 35064), (31, 35067), (32, 35139), (33, 35151), (35, 35196), (36, 35202), (38, 35232), (39, 35259), (40, 35277), (41, 35280), (42, 35298), (44, 35331), (45, 35349), (46, 35391), (48, 35457), (49, 35475), (50, 35496), (53, 35541),

Gene: Seagreen\_48 Start: 35285, Stop: 36286, Start Num: 10

Candidate Starts for Seagreen\_48:

(Start: 10 @35285 has 70 MA's), (11, 35453), (12, 35474), (13, 35486), (14, 35519), (16, 35552), (17, 35561), (18, 35597), (20, 35663), (23, 35702), (24, 35705), (26, 35738), (27, 35741), (28, 35762), (29, 35783), (30, 35795), (31, 35798), (33, 35879), (35, 35924), (36, 35930), (38, 35960), (39, 35987), (40, 36005), (41, 36008), (42, 36026), (44, 36059), (45, 36077), (46, 36119), (48, 36185), (49, 36203), (50, 36224), (53, 36269),

Gene: ShroomBoi\_47 Start: 35208, Stop: 36212, Start Num: 10

Candidate Starts for ShroomBoi\_47:

(Start: 10 @35208 has 70 MA's), (11, 35376), (12, 35397), (13, 35409), (14, 35442), (15, 35457), (16, 35475), (17, 35484), (18, 35520), (19, 35568), (20, 35586), (22, 35598), (23, 35625), (25, 35649), (26, 35661), (27, 35664), (28, 35685), (29, 35706), (30, 35718), (31, 35721), (33, 35805), (35, 35850), (36, 35856), (38, 35886), (39, 35913), (40, 35931), (42, 35952), (44, 35985), (46, 36045), (49, 36129), (50, 36150), (51, 36159), (53, 36195), (55, 36204),

Gene: SiSi\_47 Start: 35103, Stop: 36107, Start Num: 10

Candidate Starts for SiSi\_47:

(Start: 10 @35103 has 70 MA's), (12, 35292), (13, 35304), (16, 35370), (17, 35379), (18, 35415), (20, 35481), (22, 35493), (23, 35520), (25, 35544), (27, 35559), (28, 35580), (29, 35601), (30, 35613), (31, 35616), (33, 35700), (35, 35745), (36, 35751), (38, 35781), (39, 35808), (40, 35826), (42, 35847), (44, 35880), (46, 35940), (47, 35967), (48, 36006), (49, 36024), (50, 36045), (51, 36054), (53, 36090), (55, 36099),

Gene: SimranZ1\_47 Start: 34553, Stop: 35554, Start Num: 10

Candidate Starts for SimranZ1\_47:

(Start: 10 @34553 has 70 MA's), (12, 34742), (13, 34754), (16, 34820), (17, 34829), (18, 34865), (20, 34931), (22, 34943), (23, 34970), (25, 34994), (27, 35009), (28, 35030), (29, 35051), (30, 35063), (31, 35066), (33, 35147), (35, 35192), (36, 35198), (37, 35204), (38, 35228), (39, 35255), (42, 35294), (44, 35327), (45, 35345), (46, 35387), (47, 35414), (48, 35453), (49, 35471), (50, 35492), (51, 35501), (53, 35537), (55, 35546),

Gene: Slim\_48 Start: 36252, Stop: 37256, Start Num: 10

Candidate Starts for Slim\_48:

(Start: 10 @36252 has 70 MA's), (12, 36441), (13, 36453), (16, 36519), (17, 36528), (18, 36564), (20, 36630), (22, 36642), (23, 36669), (25, 36693), (27, 36708), (28, 36729), (29, 36750), (30, 36762), (31, 36765), (33, 36849), (35, 36894), (36, 36900), (38, 36930), (39, 36957), (40, 36975), (42, 36996), (44, 37029), (45, 37047), (46, 37089), (47, 37116), (48, 37155), (49, 37173), (50, 37194), (51, 37203), (53, 37239), (55, 37248),

Gene: Stap\_46 Start: 34844, Stop: 35848, Start Num: 10

Candidate Starts for Stap\_46:

(Start: 10 @34844 has 70 MA's), (12, 35033), (13, 35045), (16, 35111), (17, 35120), (18, 35156), (20, 35222), (22, 35234), (23, 35261), (25, 35285), (27, 35300), (28, 35321), (29, 35342), (30, 35354), (31, 35357), (33, 35441), (35, 35486), (36, 35492), (38, 35522), (39, 35549), (40, 35567), (42, 35588), (44, 35621), (46, 35681), (47, 35708), (48, 35747), (49, 35765), (50, 35786), (51, 35795), (53, 35831), (55, 35840),

Gene: Starcevich\_47 Start: 35737, Stop: 36741, Start Num: 10

Candidate Starts for Starcevich\_47:

(Start: 10 @35737 has 70 MA's), (12, 35926), (13, 35938), (16, 36004), (17, 36013), (18, 36049), (20, 36115), (22, 36127), (23, 36154), (25, 36178), (27, 36193), (28, 36214), (29, 36235), (30, 36247), (31, 36250), (33, 36334), (35, 36379), (36, 36385), (38, 36415), (39, 36442), (40, 36460), (42, 36481), (44, 36514), (46, 36574), (47, 36601), (48, 36640), (49, 36658), (50, 36679), (51, 36688), (53, 36724), (55, 36733),

Gene: SuperGrey\_48 Start: 36177, Stop: 37181, Start Num: 10

Candidate Starts for SuperGrey\_48:

(Start: 10 @36177 has 70 MA's), (11, 36345), (12, 36366), (13, 36378), (14, 36411), (15, 36426), (16, 36444), (17, 36453), (18, 36489), (19, 36537), (20, 36555), (22, 36567), (23, 36594), (25, 36618), (26, 36630), (27, 36633), (28, 36654), (29, 36675), (30, 36687), (31, 36690), (32, 36762), (33, 36774), (36, 36825), (37, 36831), (39, 36882), (40, 36900), (42, 36921), (44, 36954), (45, 36972), (46, 37014), (47, 37041), (49, 37098), (51, 37128), (53, 37164), (54, 37167),

Gene: Topiatin\_52 Start: 36612, Stop: 37616, Start Num: 10

Candidate Starts for Topiatin\_52:

(Start: 10 @36612 has 70 MA's), (12, 36801), (13, 36813), (16, 36879), (17, 36888), (18, 36924), (20, 36990), (22, 37002), (23, 37029), (25, 37053), (27, 37068), (28, 37089), (29, 37110), (30, 37122), (31, 37125), (33, 37209), (35, 37254), (36, 37260), (38, 37290), (39, 37317), (40, 37335), (42, 37356), (44, 37389), (46, 37449), (48, 37515), (49, 37533), (50, 37554), (51, 37563), (53, 37599), (55, 37608),

Gene: Totinger\_47 Start: 34879, Stop: 35883, Start Num: 10

Candidate Starts for Totinger\_47:

(Start: 10 @34879 has 70 MA's), (12, 35068), (13, 35080), (16, 35146), (17, 35155), (18, 35191), (20, 35257), (22, 35269), (23, 35296), (25, 35320), (27, 35335), (28, 35356), (29, 35377), (30, 35389), (31, 35392), (33, 35476), (35, 35521), (36, 35527), (38, 35557), (39, 35584), (40, 35602), (42, 35623), (44, 35656), (45, 35674), (46, 35716), (47, 35743), (48, 35782), (49, 35800), (50, 35821), (51, 35830), (53, 35866), (55, 35875),

Gene: Tweety\_47 Start: 35615, Stop: 36619, Start Num: 10

Candidate Starts for Tweety\_47:

(Start: 10 @35615 has 70 MA's), (12, 35804), (13, 35816), (16, 35882), (17, 35891), (18, 35927), (20, 35993), (22, 36005), (23, 36032), (25, 36056), (27, 36071), (28, 36092), (29, 36113), (30, 36125), (31, 36128), (33, 36212), (35, 36257), (36, 36263), (38, 36293), (39, 36320), (40, 36338), (42, 36359), (44, 36392), (46, 36452), (47, 36479), (48, 36518), (49, 36536), (50, 36557), (51, 36566), (53, 36602), (55, 36611),

Gene: Veteran\_45 Start: 34747, Stop: 35751, Start Num: 10

Candidate Starts for Veteran\_45:

(Start: 10 @34747 has 70 MA's), (12, 34936), (13, 34948), (16, 35014), (17, 35023), (18, 35059), (20, 35125), (22, 35137), (23, 35164), (25, 35188), (27, 35203), (28, 35224), (29, 35245), (30, 35257), (31, 35260), (33, 35344), (35, 35389), (36, 35395), (38, 35425), (39, 35452), (40, 35470), (42, 35491), (44, 35524), (46, 35584), (47, 35611), (48, 35650), (49, 35668), (50, 35689), (51, 35698), (53, 35734), (55, 35743),

Gene: Vivum\_50 Start: 35865, Stop: 36869, Start Num: 10

Candidate Starts for Vivum\_50:

(Start: 10 @35865 has 70 MA's), (12, 36054), (13, 36066), (16, 36132), (17, 36141), (18, 36177), (20, 36243), (22, 36255), (23, 36282), (25, 36306), (27, 36321), (28, 36342), (29, 36363), (30, 36375), (31, 36378), (33, 36462), (35, 36507), (36, 36513), (38, 36543), (39, 36570), (40, 36588), (42, 36609), (44, 36642), (46, 36702), (47, 36729), (48, 36768), (49, 36786), (50, 36807), (51, 36816), (53, 36852), (55, 36861),

Gene: Wee\_50 Start: 36114, Stop: 37118, Start Num: 10

Candidate Starts for Wee\_50:

(Start: 10 @36114 has 70 MA's), (12, 36303), (13, 36315), (16, 36381), (17, 36390), (18, 36426), (20, 36492), (22, 36504), (23, 36531), (25, 36555), (27, 36570), (28, 36591), (29, 36612), (30, 36624), (31, 36627), (33, 36711), (35, 36756), (36, 36762), (38, 36792), (39, 36819), (40, 36837), (42, 36858), (44, 36891), (46, 36951), (47, 36978), (48, 37017), (49, 37035), (50, 37056), (51, 37065), (53, 37101), (55, 37110),

Gene: Yoshi\_60 Start: 36844, Stop: 38034, Start Num: 10

Candidate Starts for Yoshi\_60:

(Start: 10 @36844 has 70 MA's), (12, 37033), (13, 37045), (14, 37078), (15, 37093), (16, 37111), (17, 37120), (18, 37156), (19, 37204), (20, 37222), (22, 37234), (23, 37261), (25, 37285), (26, 37297), (27, 37300), (28, 37321), (29, 37342), (30, 37354), (31, 37357), (32, 37426), (33, 37438), (35, 37483), (36, 37489), (37, 37495), (38, 37519), (39, 37546), (40, 37564), (42, 37585), (44, 37618), (45, 37636), (46, 37678), (47, 37705), (48, 37744), (49, 37762), (50, 37783), (51, 37792), (52, 37819), (56, 37876), (57, 38017),

Gene: Zerg\_46 Start: 35052, Stop: 36056, Start Num: 10

Candidate Starts for Zerg\_46:

(9, 34896), (Start: 10 @35052 has 70 MA's), (13, 35253), (16, 35319), (17, 35328), (18, 35364), (20, 35430), (22, 35442), (23, 35469), (25, 35493), (27, 35508), (28, 35529), (29, 35550), (30, 35562), (31, 35565), (33, 35649), (35, 35694), (36, 35700), (38, 35730), (39, 35757), (40, 35775), (42, 35796), (44, 35829), (46, 35889), (48, 35955), (49, 35973), (50, 35994), (51, 36003), (53, 36039), (55, 36048),