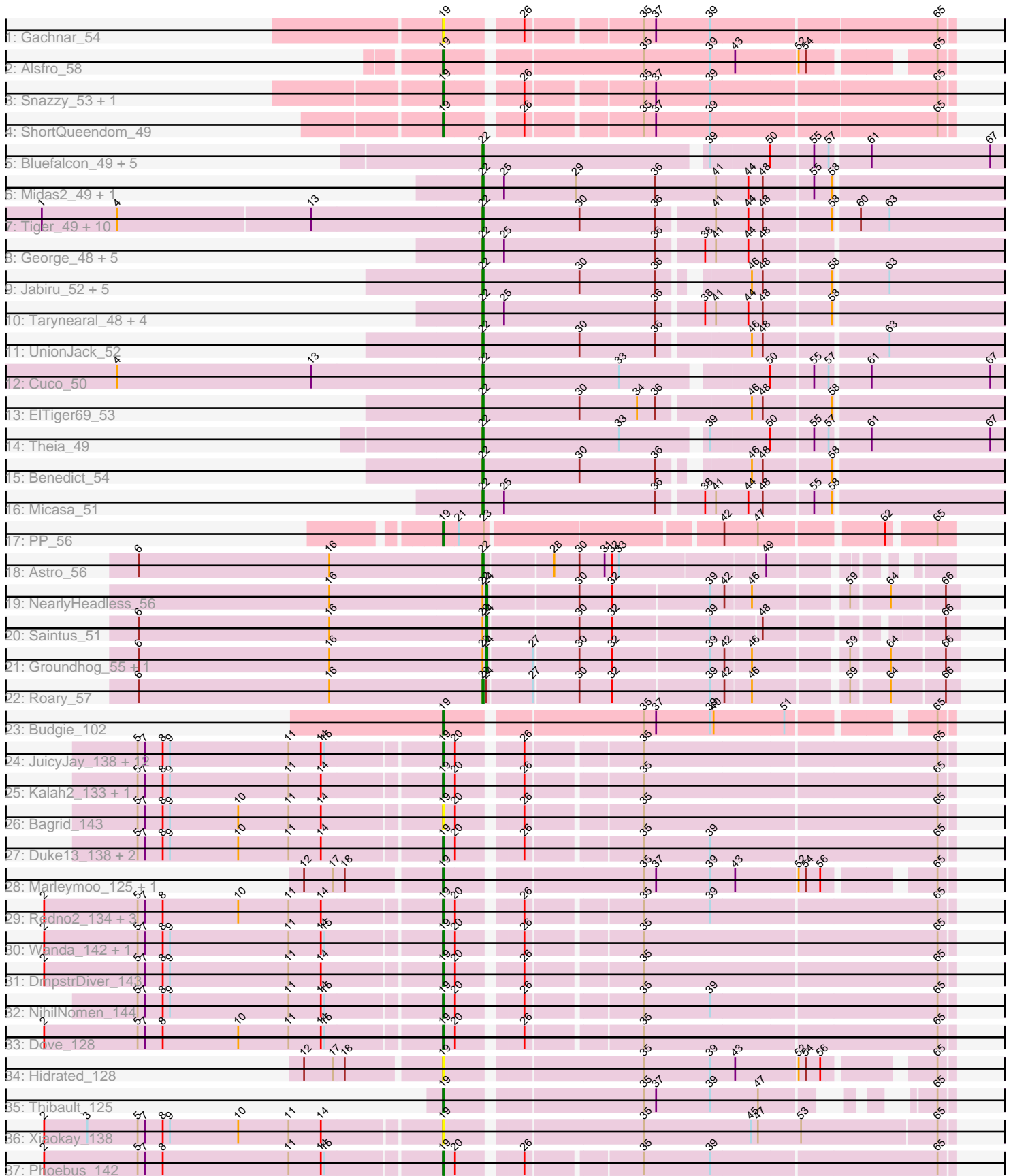


Pham 311469



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 311469 Report

This analysis was run 06/27/26 on database version 652.

Pham number 311469 has 89 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Gachnar\_54
- Track 2 : Alsfro\_58
- Track 3 : Snazzy\_53, GMonster\_51
- Track 4 : ShortQueendom\_49
- Track 5 : Bluefalcon\_49, SydNat\_53, Dublin\_50, MarysWell\_50, Ghoulboy\_53, Zolita\_52
- Track 6 : Midas2\_49, Coog\_49
- Track 7 : Tiger\_49, Jovo\_50, AgentM\_49, Aragog\_49, Phlorence\_48, Conspiracy\_50, PickleBack\_50, Lev2\_50, Archetta\_49, Discoknowium\_48, ForGetIt\_50
- Track 8 : George\_48, LittleCherry\_50, HuhtaEnerson15\_50, Prinasha11\_50, Bonamassa\_50, Twigg\_50
- Track 9 : Jabiru\_52, PetterN\_55, Scorpia\_55, Naca\_51, Airmid\_51, Chadwick\_54
- Track 10 : Tarynearal\_48, Florence4\_50, Milcery\_50, Swirley\_52, Florence1\_48
- Track 11 : UnionJack\_52
- Track 12 : Cuco\_50
- Track 13 : EITiger69\_53
- Track 14 : Theia\_49
- Track 15 : Benedict\_54
- Track 16 : Micasa\_51
- Track 17 : PP\_56
- Track 18 : Astro\_56
- Track 19 : NearlyHeadless\_56
- Track 20 : Saintus\_51
- Track 21 : Groundhog\_55, Danforth\_56
- Track 22 : Roary\_57
- Track 23 : Budgie\_102
- Track 24 : JuicyJay\_138, Optimus\_133, Dallas\_143, Beem\_144, Halley\_144, Ejimix\_135, Minerva\_142, Pound\_130, Hughesyang\_141, Klein\_140, Constella\_136, Zelink\_137, Bombitas\_130
- Track 25 : Kalah2\_133, Schatzie\_138
- Track 26 : Bagrid\_143
- Track 27 : Duke13\_138, BAKA\_142, EricMillard\_134
- Track 28 : Marleymoo\_125, Bobby\_132
- Track 29 : Redno2\_134, ThreeRngTarjay\_137, Yeet\_135, HokkenD\_134
- Track 30 : Wanda\_142, Odette\_146
- Track 31 : DmpstrDiver\_143

- Track 32 : NihilNomen\_144
- Track 33 : Dove\_128
- Track 34 : Hidrated\_128
- Track 35 : Thibault\_125
- Track 36 : Xiaokay\_138
- Track 37 : Phoebus\_142

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

The start number called the most often in the published annotations is 22, it was called in 41 of the 80 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AgentM\_49, Airmid\_51, Aragog\_49, Archetta\_49, Astro\_56, Benedict\_54, Bluefalcon\_49, Bonamassa\_50, Chadwick\_54, Conspiracy\_50, Coog\_49, Cuco\_50, Discoknowium\_48, Dublin\_50, ElTiger69\_53, Florence1\_48, Florence4\_50, ForGetIt\_50, George\_48, Ghoulboy\_53, HuhtaEnerson15\_50, Jabiru\_52, Jovo\_50, Lev2\_50, LittleCherry\_50, MarysWell\_50, Micasa\_51, Midas2\_49, Milcery\_50, Naca\_51, PetterN\_55, Phlorence\_48, PickleBack\_50, Prinashe11\_50, Roary\_57, Scorpia\_55, Swirley\_52, SydNat\_53, Tarynearal\_48, Theia\_49, Tiger\_49, Twigg\_50, UnionJack\_52, Zolita\_52,

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

- Danforth\_56, Groundhog\_55, NearlyHeadless\_56, Saintus\_51,

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

- Alsfro\_58, BAKA\_142, Bagrid\_143, Beem\_144, Bobby\_132, Bombitas\_130, Budgie\_102, Constella\_136, Dallas\_143, DmpstrDiver\_143, Dove\_128, Duke13\_138, Ejimix\_135, EricMillard\_134, GMonster\_51, Gachnar\_54, Halley\_144, Hidrated\_128, HokkenD\_134, Hughesyang\_141, JuicyJay\_138, Kalah2\_133, Klein\_140, Marleymoo\_125, Minerva\_142, NihilNomen\_144, Odette\_146, Optimus\_133, PP\_56, Phoebus\_142, Pound\_130, Redno2\_134, Schatzie\_138, ShortQueendom\_49, Snazzy\_53, Thibault\_125, ThreeRngTarjay\_137, Wanda\_142, Xiaokay\_138, Yeet\_135, Zelink\_137,

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

Start 19:

- Found in 41 of 89 ( 46.1% ) of genes in pham
- Manual Annotations of this start: 35 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alsfro\_58 (A1), BAKA\_142 (J), Bagrid\_143 (J), Beem\_144 (J), Bobby\_132 (J), Bombitas\_130 (J), Budgie\_102 (E), Constella\_136 (J), Dallas\_143 (J), DmpstrDiver\_143 (J), Dove\_128 (J), Duke13\_138 (J), Ejimix\_135 (J), EricMillard\_134 (J), GMonster\_51 (A1), Gachnar\_54 (A1), Halley\_144 (J), Hidrated\_128 (J), HokkenD\_134 (J), Hughesyang\_141 (J), JuicyJay\_138 (J), Kalah2\_133 (J), Klein\_140 (J), Marleymoo\_125 (J), Minerva\_142 (J), NihilNomen\_144 (J), Odette\_146 (J), Optimus\_133 (J), PP\_56 (A7), Phoebus\_142 (J), Pound\_130 (J), Redno2\_134 (J), Schatzie\_138 (J), ShortQueendom\_49 (A1), Snazzy\_53 (A1), Thibault\_125 (J), ThreeRngTarjay\_137

(J), Wanda\_142 (J), Xiaokay\_138 (J), Yeet\_135 (J), Zelink\_137 (J),

Start 22:

- Found in 48 of 89 ( 53.9% ) of genes in pham
- Manual Annotations of this start: 41 of 80
- Called 91.7% of time when present
- Phage (with cluster) where this start called: AgentM\_49 (A5), Airmid\_51 (A5), Aragog\_49 (A5), Archetta\_49 (A5), Astro\_56 (A8), Benedict\_54 (A5), Bluefalcon\_49 (A5), Bonamassa\_50 (A5), Chadwick\_54 (A5), Conspiracy\_50 (A5), Coog\_49 (A5), Cuco\_50 (A5), Discoknowium\_48 (A5), Dublin\_50 (A5), ElTiger69\_53 (A5), Florence1\_48 (A5), Florence4\_50 (A5), ForGetIt\_50 (A5), George\_48 (A5), Ghoulboy\_53 (A5), HuhtaEnerson15\_50 (A5), Jabiru\_52 (A5), Jovo\_50 (A5), Lev2\_50 (A5), LittleCherry\_50 (A5), MarysWell\_50 (A5), Micasa\_51 (A5), Midas2\_49 (A5), Milcery\_50 (A5), Naca\_51 (A5), PetterN\_55 (A5), Phlorence\_48 (A5), PickleBack\_50 (A5), Prinashe11\_50 (A5), Roary\_57 (A8), Scorpia\_55 (A5), Swirley\_52 (A5), SydNat\_53 (A5), Tarynearal\_48 (A5), Theia\_49 (A5), Tiger\_49 (A5), Twigg\_50 (A5), UnionJack\_52 (A5), Zolita\_52 (A5),

Start 24:

- Found in 5 of 89 ( 5.6% ) of genes in pham
- Manual Annotations of this start: 4 of 80
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Danforth\_56 (A8), Groundhog\_55 (A8), NearlyHeadless\_56 (A8), Saintus\_51 (A8),

### **Summary by clusters:**

There are 6 clusters represented in this pham: E, J, A1, A5, A7, A8,

Info for manual annotations of cluster A1:

- Start number 19 was manually annotated 4 times for cluster A1.

Info for manual annotations of cluster A5:

- Start number 22 was manually annotated 39 times for cluster A5.

Info for manual annotations of cluster A7:

- Start number 19 was manually annotated 1 time for cluster A7.

Info for manual annotations of cluster A8:

- Start number 22 was manually annotated 2 times for cluster A8.
- Start number 24 was manually annotated 4 times for cluster A8.

Info for manual annotations of cluster E:

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

Info for manual annotations of cluster J:

- Start number 19 was manually annotated 29 times for cluster J.

### **Gene Information:**

Gene: AgentM\_49 Start: 36924, Stop: 36505, Start Num: 22

Candidate Starts for AgentM\_49:

(1, 37287), (4, 37224), (13, 37065), (Start: 22 @36924 has 41 MA's), (30, 36843), (36, 36780), (41, 36735), (44, 36708), (48, 36696), (58, 36642), (60, 36624), (63, 36600),

Gene: Airmid\_51 Start: 37065, Stop: 36664, Start Num: 22

Candidate Starts for Airmid\_51:

(Start: 22 @37065 has 41 MA's), (30, 36984), (36, 36921), (46, 36864), (48, 36855), (58, 36801), (63, 36759),

Gene: Alsfro\_58 Start: 38822, Stop: 38445, Start Num: 19

Candidate Starts for Alsfro\_58:

(Start: 19 @38822 has 35 MA's), (35, 38672), (39, 38618), (43, 38597), (52, 38549), (54, 38543), (65, 38456),

Gene: Aragog\_49 Start: 36944, Stop: 36525, Start Num: 22

Candidate Starts for Aragog\_49:

(1, 37307), (4, 37244), (13, 37085), (Start: 22 @36944 has 41 MA's), (30, 36863), (36, 36800), (41, 36755), (44, 36728), (48, 36716), (58, 36662), (60, 36644), (63, 36620),

Gene: Archetta\_49 Start: 37354, Stop: 36935, Start Num: 22

Candidate Starts for Archetta\_49:

(1, 37717), (4, 37654), (13, 37495), (Start: 22 @37354 has 41 MA's), (30, 37273), (36, 37210), (41, 37165), (44, 37138), (48, 37126), (58, 37072), (60, 37054), (63, 37030),

Gene: Astro\_56 Start: 36909, Stop: 36574, Start Num: 22

Candidate Starts for Astro\_56:

(6, 37194), (16, 37035), (Start: 22 @36909 has 41 MA's), (28, 36855), (30, 36834), (31, 36813), (32, 36807), (33, 36801), (49, 36687),

Gene: BAKA\_142 Start: 75397, Stop: 75786, Start Num: 19

Candidate Starts for BAKA\_142:

(5, 75151), (7, 75157), (8, 75172), (9, 75178), (10, 75235), (11, 75277), (14, 75304), (Start: 19 @75397 has 35 MA's), (20, 75406), (26, 75451), (35, 75538), (39, 75592), (65, 75775),

Gene: Bagrid\_143 Start: 76092, Stop: 76481, Start Num: 19

Candidate Starts for Bagrid\_143:

(5, 75846), (7, 75852), (8, 75867), (9, 75873), (10, 75930), (11, 75972), (14, 75999), (Start: 19 @76092 has 35 MA's), (20, 76101), (26, 76146), (35, 76233), (65, 76470),

Gene: Beem\_144 Start: 76995, Stop: 77384, Start Num: 19

Candidate Starts for Beem\_144:

(5, 76749), (7, 76755), (8, 76770), (9, 76776), (11, 76875), (14, 76902), (15, 76905), (Start: 19 @76995 has 35 MA's), (20, 77004), (26, 77049), (35, 77136), (65, 77373),

Gene: Benedict\_54 Start: 37313, Stop: 36912, Start Num: 22

Candidate Starts for Benedict\_54:

(Start: 22 @37313 has 41 MA's), (30, 37232), (36, 37169), (46, 37112), (48, 37103), (58, 37049),

Gene: Bluefalcon\_49 Start: 37490, Stop: 37080, Start Num: 22

Candidate Starts for Bluefalcon\_49:

(Start: 22 @37490 has 41 MA's), (39, 37313), (50, 37265), (55, 37232), (57, 37220), (61, 37190), (67, 37091),

Gene: Bobby\_132 Start: 76850, Stop: 77227, Start Num: 19

Candidate Starts for Bobby\_132:

(12, 76742), (17, 76766), (18, 76775), (Start: 19 @76850 has 35 MA's), (35, 77000), (37, 77009), (39, 77054), (43, 77075), (52, 77123), (54, 77129), (56, 77141), (65, 77216),

Gene: Bombitas\_130 Start: 74406, Stop: 74795, Start Num: 19

Candidate Starts for Bombitas\_130:

(5, 74160), (7, 74166), (8, 74181), (9, 74187), (11, 74286), (14, 74313), (15, 74316), (Start: 19 @74406 has 35 MA's), (20, 74415), (26, 74460), (35, 74547), (65, 74784),

Gene: Bonamassa\_50 Start: 37367, Stop: 36948, Start Num: 22

Candidate Starts for Bonamassa\_50:

(Start: 22 @37367 has 41 MA's), (25, 37349), (36, 37223), (38, 37187), (41, 37178), (44, 37151), (48, 37139),

Gene: Budgie\_102 Start: 57281, Stop: 57658, Start Num: 19

Candidate Starts for Budgie\_102:

(Start: 19 @57281 has 35 MA's), (35, 57431), (37, 57440), (39, 57485), (40, 57488), (51, 57545), (65, 57647),

Gene: Chadwick\_54 Start: 37154, Stop: 36753, Start Num: 22

Candidate Starts for Chadwick\_54:

(Start: 22 @37154 has 41 MA's), (30, 37073), (36, 37010), (46, 36953), (48, 36944), (58, 36890), (63, 36848),

Gene: Conspiracy\_50 Start: 37166, Stop: 36747, Start Num: 22

Candidate Starts for Conspiracy\_50:

(1, 37529), (4, 37466), (13, 37307), (Start: 22 @37166 has 41 MA's), (30, 37085), (36, 37022), (41, 36977), (44, 36950), (48, 36938), (58, 36884), (60, 36866), (63, 36842),

Gene: Constella\_136 Start: 75648, Stop: 76037, Start Num: 19

Candidate Starts for Constella\_136:

(5, 75402), (7, 75408), (8, 75423), (9, 75429), (11, 75528), (14, 75555), (15, 75558), (Start: 19 @75648 has 35 MA's), (20, 75657), (26, 75702), (35, 75789), (65, 76026),

Gene: Coog\_49 Start: 37357, Stop: 36932, Start Num: 22

Candidate Starts for Coog\_49:

(Start: 22 @37357 has 41 MA's), (25, 37339), (29, 37279), (36, 37213), (41, 37162), (44, 37135), (48, 37123), (55, 37084), (58, 37069),

Gene: Cuco\_50 Start: 37214, Stop: 36804, Start Num: 22

Candidate Starts for Cuco\_50:

(4, 37517), (13, 37355), (Start: 22 @37214 has 41 MA's), (33, 37100), (50, 36989), (55, 36956), (57, 36944), (61, 36914), (67, 36815),

Gene: Dallas\_143 Start: 76462, Stop: 76851, Start Num: 19

Candidate Starts for Dallas\_143:

(5, 76216), (7, 76222), (8, 76237), (9, 76243), (11, 76342), (14, 76369), (15, 76372), (Start: 19 @76462 has 35 MA's), (20, 76471), (26, 76516), (35, 76603), (65, 76840),

Gene: Danforth\_56 Start: 36969, Stop: 36607, Start Num: 24

Candidate Starts for Danforth\_56:

(6, 37257), (16, 37098), (Start: 22 @36972 has 41 MA's), (Start: 24 @36969 has 4 MA's), (27, 36933), (30, 36897), (32, 36870), (39, 36792), (42, 36780), (46, 36759), (59, 36690), (64, 36660), (66, 36618),

Gene: Discoknowium\_48 Start: 36833, Stop: 36414, Start Num: 22

Candidate Starts for Discoknowium\_48:

(1, 37196), (4, 37133), (13, 36974), (Start: 22 @36833 has 41 MA's), (30, 36752), (36, 36689), (41, 36644), (44, 36617), (48, 36605), (58, 36551), (60, 36533), (63, 36509),

Gene: DmpstrDiver\_143 Start: 76381, Stop: 76770, Start Num: 19

Candidate Starts for DmpstrDiver\_143:

(2, 76057), (5, 76135), (7, 76141), (8, 76156), (9, 76162), (11, 76261), (14, 76288), (Start: 19 @76381 has 35 MA's), (20, 76390), (26, 76435), (35, 76522), (65, 76759),

Gene: Dove\_128 Start: 71980, Stop: 72369, Start Num: 19

Candidate Starts for Dove\_128:

(2, 71656), (5, 71734), (7, 71740), (8, 71755), (10, 71818), (11, 71860), (14, 71887), (15, 71890), (Start: 19 @71980 has 35 MA's), (20, 71989), (26, 72034), (35, 72121), (65, 72358),

Gene: Dublin\_50 Start: 37326, Stop: 36916, Start Num: 22

Candidate Starts for Dublin\_50:

(Start: 22 @37326 has 41 MA's), (39, 37149), (50, 37101), (55, 37068), (57, 37056), (61, 37026), (67, 36927),

Gene: Duke13\_138 Start: 73682, Stop: 74071, Start Num: 19

Candidate Starts for Duke13\_138:

(5, 73436), (7, 73442), (8, 73457), (9, 73463), (10, 73520), (11, 73562), (14, 73589), (Start: 19 @73682 has 35 MA's), (20, 73691), (26, 73736), (35, 73823), (39, 73877), (65, 74060),

Gene: Ejimix\_135 Start: 76530, Stop: 76919, Start Num: 19

Candidate Starts for Ejimix\_135:

(5, 76284), (7, 76290), (8, 76305), (9, 76311), (11, 76410), (14, 76437), (15, 76440), (Start: 19 @76530 has 35 MA's), (20, 76539), (26, 76584), (35, 76671), (65, 76908),

Gene: EITiger69\_53 Start: 37289, Stop: 36873, Start Num: 22

Candidate Starts for EITiger69\_53:

(Start: 22 @37289 has 41 MA's), (30, 37208), (34, 37160), (36, 37145), (46, 37073), (48, 37064), (58, 37010),

Gene: EricMillard\_134 Start: 75034, Stop: 75423, Start Num: 19

Candidate Starts for EricMillard\_134:

(5, 74788), (7, 74794), (8, 74809), (9, 74815), (10, 74872), (11, 74914), (14, 74941), (Start: 19 @75034 has 35 MA's), (20, 75043), (26, 75088), (35, 75175), (39, 75229), (65, 75412),

Gene: Florence1\_48 Start: 36696, Stop: 36277, Start Num: 22

Candidate Starts for Florence1\_48:

(Start: 22 @36696 has 41 MA's), (25, 36678), (36, 36552), (38, 36516), (41, 36507), (44, 36480), (48, 36468), (58, 36414),

Gene: Florence4\_50 Start: 36696, Stop: 36277, Start Num: 22

Candidate Starts for Florence4\_50:

(Start: 22 @36696 has 41 MA's), (25, 36678), (36, 36552), (38, 36516), (41, 36507), (44, 36480), (48, 36468), (58, 36414),

Gene: ForGetIt\_50 Start: 37191, Stop: 36772, Start Num: 22  
Candidate Starts for ForGetIt\_50:  
(1, 37554), (4, 37491), (13, 37332), (Start: 22 @37191 has 41 MA's), (30, 37110), (36, 37047), (41, 37002), (44, 36975), (48, 36963), (58, 36909), (60, 36891), (63, 36867),

Gene: GMonster\_51 Start: 37212, Stop: 36826, Start Num: 19  
Candidate Starts for GMonster\_51:  
(Start: 19 @37212 has 35 MA's), (26, 37158), (35, 37071), (37, 37062), (39, 37017), (65, 36837),

Gene: Gachnar\_54 Start: 37980, Stop: 37594, Start Num: 19  
Candidate Starts for Gachnar\_54:  
(Start: 19 @37980 has 35 MA's), (26, 37926), (35, 37839), (37, 37830), (39, 37785), (65, 37605),

Gene: George\_48 Start: 37264, Stop: 36845, Start Num: 22  
Candidate Starts for George\_48:  
(Start: 22 @37264 has 41 MA's), (25, 37246), (36, 37120), (38, 37084), (41, 37075), (44, 37048), (48, 37036),

Gene: Ghoulboy\_53 Start: 38061, Stop: 37651, Start Num: 22  
Candidate Starts for Ghoulboy\_53:  
(Start: 22 @38061 has 41 MA's), (39, 37884), (50, 37836), (55, 37803), (57, 37791), (61, 37761), (67, 37662),

Gene: Groundhog\_55 Start: 36884, Stop: 36522, Start Num: 24  
Candidate Starts for Groundhog\_55:  
(6, 37172), (16, 37013), (Start: 22 @36887 has 41 MA's), (Start: 24 @36884 has 4 MA's), (27, 36848), (30, 36812), (32, 36785), (39, 36707), (42, 36695), (46, 36674), (59, 36605), (64, 36575), (66, 36533),

Gene: Halley\_144 Start: 76846, Stop: 77235, Start Num: 19  
Candidate Starts for Halley\_144:  
(5, 76600), (7, 76606), (8, 76621), (9, 76627), (11, 76726), (14, 76753), (15, 76756), (Start: 19 @76846 has 35 MA's), (20, 76855), (26, 76900), (35, 76987), (65, 77224),

Gene: Hidrated\_128 Start: 75183, Stop: 75560, Start Num: 19  
Candidate Starts for Hidrated\_128:  
(12, 75075), (17, 75099), (18, 75108), (Start: 19 @75183 has 35 MA's), (35, 75333), (39, 75387), (43, 75408), (52, 75456), (54, 75462), (56, 75474), (65, 75549),

Gene: HokkenD\_134 Start: 75730, Stop: 76119, Start Num: 19  
Candidate Starts for HokkenD\_134:  
(2, 75406), (5, 75484), (7, 75490), (8, 75505), (10, 75568), (11, 75610), (14, 75637), (Start: 19 @75730 has 35 MA's), (20, 75739), (26, 75784), (35, 75871), (39, 75925), (65, 76108),

Gene: Hughesyang\_141 Start: 76616, Stop: 77005, Start Num: 19  
Candidate Starts for Hughesyang\_141:  
(5, 76370), (7, 76376), (8, 76391), (9, 76397), (11, 76496), (14, 76523), (15, 76526), (Start: 19 @76616 has 35 MA's), (20, 76625), (26, 76670), (35, 76757), (65, 76994),

Gene: HuhtaEnerson15\_50 Start: 37261, Stop: 36842, Start Num: 22  
Candidate Starts for HuhtaEnerson15\_50:  
(Start: 22 @37261 has 41 MA's), (25, 37243), (36, 37117), (38, 37081), (41, 37072), (44, 37045), (48, 37033),

Gene: Jabiru\_52 Start: 37168, Stop: 36767, Start Num: 22

Candidate Starts for Jabiru\_52:

(Start: 22 @37168 has 41 MA's), (30, 37087), (36, 37024), (46, 36967), (48, 36958), (58, 36904), (63, 36862),

Gene: Jovo\_50 Start: 37447, Stop: 37028, Start Num: 22

Candidate Starts for Jovo\_50:

(1, 37810), (4, 37747), (13, 37588), (Start: 22 @37447 has 41 MA's), (30, 37366), (36, 37303), (41, 37258), (44, 37231), (48, 37219), (58, 37165), (60, 37147), (63, 37123),

Gene: JuicyJay\_138 Start: 78131, Stop: 78520, Start Num: 19

Candidate Starts for JuicyJay\_138:

(5, 77885), (7, 77891), (8, 77906), (9, 77912), (11, 78011), (14, 78038), (15, 78041), (Start: 19 @78131 has 35 MA's), (20, 78140), (26, 78185), (35, 78272), (65, 78509),

Gene: Kalah2\_133 Start: 75737, Stop: 76126, Start Num: 19

Candidate Starts for Kalah2\_133:

(5, 75491), (7, 75497), (8, 75512), (9, 75518), (11, 75617), (14, 75644), (Start: 19 @75737 has 35 MA's), (20, 75746), (26, 75791), (35, 75878), (65, 76115),

Gene: Klein\_140 Start: 74339, Stop: 74728, Start Num: 19

Candidate Starts for Klein\_140:

(5, 74093), (7, 74099), (8, 74114), (9, 74120), (11, 74219), (14, 74246), (15, 74249), (Start: 19 @74339 has 35 MA's), (20, 74348), (26, 74393), (35, 74480), (65, 74717),

Gene: Lev2\_50 Start: 37079, Stop: 36660, Start Num: 22

Candidate Starts for Lev2\_50:

(1, 37442), (4, 37379), (13, 37220), (Start: 22 @37079 has 41 MA's), (30, 36998), (36, 36935), (41, 36890), (44, 36863), (48, 36851), (58, 36797), (60, 36779), (63, 36755),

Gene: LittleCherry\_50 Start: 37281, Stop: 36862, Start Num: 22

Candidate Starts for LittleCherry\_50:

(Start: 22 @37281 has 41 MA's), (25, 37263), (36, 37137), (38, 37101), (41, 37092), (44, 37065), (48, 37053),

Gene: Marleymoo\_125 Start: 72596, Stop: 72973, Start Num: 19

Candidate Starts for Marleymoo\_125:

(12, 72488), (17, 72512), (18, 72521), (Start: 19 @72596 has 35 MA's), (35, 72746), (37, 72755), (39, 72800), (43, 72821), (52, 72869), (54, 72875), (56, 72887), (65, 72962),

Gene: MarysWell\_50 Start: 37569, Stop: 37159, Start Num: 22

Candidate Starts for MarysWell\_50:

(Start: 22 @37569 has 41 MA's), (39, 37392), (50, 37344), (55, 37311), (57, 37299), (61, 37269), (67, 37170),

Gene: Micasa\_51 Start: 37449, Stop: 37030, Start Num: 22

Candidate Starts for Micasa\_51:

(Start: 22 @37449 has 41 MA's), (25, 37431), (36, 37305), (38, 37269), (41, 37260), (44, 37233), (48, 37221), (55, 37182), (58, 37167),

Gene: Midas2\_49 Start: 37357, Stop: 36932, Start Num: 22

Candidate Starts for Midas2\_49:

(Start: 22 @37357 has 41 MA's), (25, 37339), (29, 37279), (36, 37213), (41, 37162), (44, 37135), (48, 37123), (55, 37084), (58, 37069),

Gene: Milcery\_50 Start: 37232, Stop: 36813, Start Num: 22

Candidate Starts for Milcery\_50:

(Start: 22 @37232 has 41 MA's), (25, 37214), (36, 37088), (38, 37052), (41, 37043), (44, 37016), (48, 37004), (58, 36950),

Gene: Minerva\_142 Start: 75788, Stop: 76177, Start Num: 19

Candidate Starts for Minerva\_142:

(5, 75542), (7, 75548), (8, 75563), (9, 75569), (11, 75668), (14, 75695), (15, 75698), (Start: 19 @75788 has 35 MA's), (20, 75797), (26, 75842), (35, 75929), (65, 76166),

Gene: Naca\_51 Start: 37707, Stop: 37306, Start Num: 22

Candidate Starts for Naca\_51:

(Start: 22 @37707 has 41 MA's), (30, 37626), (36, 37563), (46, 37506), (48, 37497), (58, 37443), (63, 37401),

Gene: NearlyHeadless\_56 Start: 36735, Stop: 36373, Start Num: 24

Candidate Starts for NearlyHeadless\_56:

(16, 36864), (Start: 22 @36738 has 41 MA's), (Start: 24 @36735 has 4 MA's), (30, 36663), (32, 36636), (39, 36558), (42, 36546), (46, 36525), (59, 36456), (64, 36426), (66, 36384),

Gene: NihilNomen\_144 Start: 76076, Stop: 76465, Start Num: 19

Candidate Starts for NihilNomen\_144:

(5, 75830), (7, 75836), (8, 75851), (9, 75857), (11, 75956), (14, 75983), (15, 75986), (Start: 19 @76076 has 35 MA's), (20, 76085), (26, 76130), (35, 76217), (39, 76271), (65, 76454),

Gene: Odette\_146 Start: 78219, Stop: 78608, Start Num: 19

Candidate Starts for Odette\_146:

(2, 77895), (5, 77973), (7, 77979), (8, 77994), (9, 78000), (11, 78099), (14, 78126), (15, 78129), (Start: 19 @78219 has 35 MA's), (20, 78228), (26, 78273), (35, 78360), (65, 78597),

Gene: Optimus\_133 Start: 73356, Stop: 73745, Start Num: 19

Candidate Starts for Optimus\_133:

(5, 73110), (7, 73116), (8, 73131), (9, 73137), (11, 73236), (14, 73263), (15, 73266), (Start: 19 @73356 has 35 MA's), (20, 73365), (26, 73410), (35, 73497), (65, 73734),

Gene: PP\_56 Start: 41604, Stop: 41218, Start Num: 19

Candidate Starts for PP\_56:

(Start: 19 @41604 has 35 MA's), (21, 41592), (23, 41571), (42, 41388), (47, 41361), (62, 41268), (65, 41232),

Gene: PetterN\_55 Start: 37322, Stop: 36921, Start Num: 22

Candidate Starts for PetterN\_55:

(Start: 22 @37322 has 41 MA's), (30, 37241), (36, 37178), (46, 37121), (48, 37112), (58, 37058), (63, 37016),

Gene: Phlorence\_48 Start: 36824, Stop: 36405, Start Num: 22

Candidate Starts for Phlorence\_48:

(1, 37187), (4, 37124), (13, 36965), (Start: 22 @36824 has 41 MA's), (30, 36743), (36, 36680), (41, 36635), (44, 36608), (48, 36596), (58, 36542), (60, 36524), (63, 36500),

Gene: Phoebus\_142 Start: 77970, Stop: 78359, Start Num: 19

Candidate Starts for Phoebus\_142:

(2, 77646), (5, 77724), (7, 77730), (8, 77745), (11, 77850), (14, 77877), (15, 77880), (Start: 19 @77970 has 35 MA's), (20, 77979), (26, 78024), (35, 78111), (39, 78165), (65, 78348),

Gene: PickleBack\_50 Start: 37071, Stop: 36652, Start Num: 22

Candidate Starts for PickleBack\_50:

(1, 37434), (4, 37371), (13, 37212), (Start: 22 @37071 has 41 MA's), (30, 36990), (36, 36927), (41, 36882), (44, 36855), (48, 36843), (58, 36789), (60, 36771), (63, 36747),

Gene: Pound\_130 Start: 74668, Stop: 75057, Start Num: 19

Candidate Starts for Pound\_130:

(5, 74422), (7, 74428), (8, 74443), (9, 74449), (11, 74548), (14, 74575), (15, 74578), (Start: 19 @74668 has 35 MA's), (20, 74677), (26, 74722), (35, 74809), (65, 75046),

Gene: Prin Ashe11\_50 Start: 37140, Stop: 36715, Start Num: 22

Candidate Starts for Prin Ashe11\_50:

(Start: 22 @37140 has 41 MA's), (25, 37122), (36, 36996), (38, 36954), (41, 36945), (44, 36918), (48, 36906),

Gene: Redno2\_134 Start: 73358, Stop: 73747, Start Num: 19

Candidate Starts for Redno2\_134:

(2, 73034), (5, 73112), (7, 73118), (8, 73133), (10, 73196), (11, 73238), (14, 73265), (Start: 19 @73358 has 35 MA's), (20, 73367), (26, 73412), (35, 73499), (39, 73553), (65, 73736),

Gene: Roary\_57 Start: 36957, Stop: 36592, Start Num: 22

Candidate Starts for Roary\_57:

(6, 37242), (16, 37083), (Start: 22 @36957 has 41 MA's), (Start: 24 @36954 has 4 MA's), (27, 36918), (30, 36882), (32, 36855), (39, 36777), (42, 36765), (46, 36744), (59, 36675), (64, 36645), (66, 36603),

Gene: Saintus\_51 Start: 33622, Stop: 33272, Start Num: 24

Candidate Starts for Saintus\_51:

(6, 33910), (16, 33751), (Start: 22 @33625 has 41 MA's), (Start: 24 @33622 has 4 MA's), (30, 33550), (32, 33523), (39, 33445), (48, 33406), (66, 33283),

Gene: Schatzie\_138 Start: 76638, Stop: 77027, Start Num: 19

Candidate Starts for Schatzie\_138:

(5, 76392), (7, 76398), (8, 76413), (9, 76419), (11, 76518), (14, 76545), (Start: 19 @76638 has 35 MA's), (20, 76647), (26, 76692), (35, 76779), (65, 77016),

Gene: Scorpia\_55 Start: 37381, Stop: 36980, Start Num: 22

Candidate Starts for Scorpia\_55:

(Start: 22 @37381 has 41 MA's), (30, 37300), (36, 37237), (46, 37180), (48, 37171), (58, 37117), (63, 37075),

Gene: ShortQueendom\_49 Start: 35685, Stop: 35299, Start Num: 19

Candidate Starts for ShortQueendom\_49:

(Start: 19 @35685 has 35 MA's), (26, 35631), (35, 35544), (37, 35535), (39, 35490), (65, 35310),

Gene: Snazzy\_53 Start: 38294, Stop: 37908, Start Num: 19

Candidate Starts for Snazzy\_53:

(Start: 19 @38294 has 35 MA's), (26, 38240), (35, 38153), (37, 38144), (39, 38099), (65, 37919),

Gene: Swirley\_52 Start: 37437, Stop: 37018, Start Num: 22

Candidate Starts for Swirley\_52:

(Start: 22 @37437 has 41 MA's), (25, 37419), (36, 37293), (38, 37257), (41, 37248), (44, 37221), (48, 37209), (58, 37155),

Gene: SydNat\_53 Start: 38070, Stop: 37660, Start Num: 22

Candidate Starts for SydNat\_53:

(Start: 22 @38070 has 41 MA's), (39, 37893), (50, 37845), (55, 37812), (57, 37800), (61, 37770), (67, 37671),

Gene: Tarynearal\_48 Start: 36879, Stop: 36460, Start Num: 22

Candidate Starts for Tarynearal\_48:

(Start: 22 @36879 has 41 MA's), (25, 36861), (36, 36735), (38, 36699), (41, 36690), (44, 36663), (48, 36651), (58, 36597),

Gene: Theia\_49 Start: 37547, Stop: 37137, Start Num: 22

Candidate Starts for Theia\_49:

(Start: 22 @37547 has 41 MA's), (33, 37433), (39, 37370), (50, 37322), (55, 37289), (57, 37277), (61, 37247), (67, 37148),

Gene: Thibault\_125 Start: 73030, Stop: 73368, Start Num: 19

Candidate Starts for Thibault\_125:

(Start: 19 @73030 has 35 MA's), (35, 73180), (37, 73189), (39, 73234), (47, 73273), (65, 73357),

Gene: ThreeRngTarjay\_137 Start: 76561, Stop: 76950, Start Num: 19

Candidate Starts for ThreeRngTarjay\_137:

(2, 76237), (5, 76315), (7, 76321), (8, 76336), (10, 76399), (11, 76441), (14, 76468), (Start: 19 @76561 has 35 MA's), (20, 76570), (26, 76615), (35, 76702), (39, 76756), (65, 76939),

Gene: Tiger\_49 Start: 36745, Stop: 36326, Start Num: 22

Candidate Starts for Tiger\_49:

(1, 37108), (4, 37045), (13, 36886), (Start: 22 @36745 has 41 MA's), (30, 36664), (36, 36601), (41, 36556), (44, 36529), (48, 36517), (58, 36463), (60, 36445), (63, 36421),

Gene: Twigg\_50 Start: 37082, Stop: 36657, Start Num: 22

Candidate Starts for Twigg\_50:

(Start: 22 @37082 has 41 MA's), (25, 37064), (36, 36938), (38, 36896), (41, 36887), (44, 36860), (48, 36848),

Gene: UnionJack\_52 Start: 36886, Stop: 36470, Start Num: 22

Candidate Starts for UnionJack\_52:

(Start: 22 @36886 has 41 MA's), (30, 36805), (36, 36742), (46, 36670), (48, 36661), (63, 36565),

Gene: Wanda\_142 Start: 74268, Stop: 74657, Start Num: 19

Candidate Starts for Wanda\_142:

(2, 73944), (5, 74022), (7, 74028), (8, 74043), (9, 74049), (11, 74148), (14, 74175), (15, 74178), (Start: 19 @74268 has 35 MA's), (20, 74277), (26, 74322), (35, 74409), (65, 74646),

Gene: Xiaokay\_138 Start: 76094, Stop: 76495, Start Num: 19

Candidate Starts for Xiaokay\_138:

(2, 75770), (3, 75806), (5, 75848), (7, 75854), (8, 75869), (9, 75875), (10, 75932), (11, 75974), (14, 76001), (Start: 19 @76094 has 35 MA's), (35, 76244), (45, 76331), (47, 76337), (53, 76373), (65, 76484),

Gene: Yeet\_135 Start: 75759, Stop: 76148, Start Num: 19

Candidate Starts for Yeet\_135:

(2, 75435), (5, 75513), (7, 75519), (8, 75534), (10, 75597), (11, 75639), (14, 75666), (Start: 19 @75759 has 35 MA's), (20, 75768), (26, 75813), (35, 75900), (39, 75954), (65, 76137),

Gene: Zelink\_137 Start: 77080, Stop: 77469, Start Num: 19

Candidate Starts for Zelink\_137:

(5, 76834), (7, 76840), (8, 76855), (9, 76861), (11, 76960), (14, 76987), (15, 76990), (Start: 19 @77080 has 35 MA's), (20, 77089), (26, 77134), (35, 77221), (65, 77458),

Gene: Zolita\_52 Start: 38074, Stop: 37664, Start Num: 22

Candidate Starts for Zolita\_52:

(Start: 22 @38074 has 41 MA's), (39, 37897), (50, 37849), (55, 37816), (57, 37804), (61, 37774), (67, 37675),