



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 304955 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304955 has 79 members, 18 are drafts.

Phages represented in each track:

- Track 1 : LuckySocke\_65, Alone3\_66, Fudan\_63
- Track 2 : Garnacho\_58
- Track 3 : Park1214\_69
- Track 4 : Talos\_65
- Track 5 : GiJojo\_56
- Track 6 : BRock\_57
- Track 7 : Beleetus\_63
- Track 8 : ModicumRichard\_91, Aleemily\_90, Cafasso\_91, ObLaDi\_91
- Track 9 : Morgana\_98
- Track 10 : Carostasia\_42, Quartz\_43
- Track 11 : Juanyo\_42, MiniVolent\_41
- Track 12 : Nucci\_42, Mandalorian\_42
- Track 13 : YuuY\_43
- Track 14 : ChikPic\_43
- Track 15 : Zenitsu\_43, Sansa\_42, MCubed\_43
- Track 16 : ColaCorta\_43, Finny\_44, Phanita\_44, PSirce\_43, Andromedas\_43, Glamour\_43, Shamu\_44, Eleri\_43, Saratos\_43
- Track 17 : Xebius\_43
- Track 18 : Morrigan\_44
- Track 19 : Luna18\_44, KatChan\_44
- Track 20 : Juicer\_44, Jemerald\_44
- Track 21 : Chepli\_44
- Track 22 : WilliamStrong\_43
- Track 23 : JingleBells\_55, DannyDe\_55, FreddieHg\_55
- Track 24 : Chivey\_55, Hiddenleaf\_55, SilentWarrior\_55
- Track 25 : Tongui\_55
- Track 26 : Rie18\_55
- Track 27 : Annapurna\_55
- Track 28 : Snakehole\_55
- Track 29 : Crestdrop\_55
- Track 30 : Honk\_28
- Track 31 : Chilliams\_105
- Track 32 : BooTeria\_102
- Track 33 : SJReid\_110
- Track 34 : FrostedClock\_109, Bloom\_110
- Track 35 : Racecar\_107
- Track 36 : Emmetator\_98, WaddleDee\_93, DunneganBoMo\_95

- Track 37 : GoldenEssence\_92
- Track 38 : Mimi\_106
- Track 39 : LeoJr\_105, ReginaGlobina\_105, Atuin\_100
- Track 40 : Rockabye\_111
- Track 41 : Stewart25555\_97
- Track 42 : FloraSnap32\_106
- Track 43 : KSunshine22\_100
- Track 44 : Talia1610\_106
- Track 45 : Phrampa\_99
- Track 46 : Panchaali\_97
- Track 47 : Artu\_98
- Track 48 : Ellewin\_94
- Track 49 : Patbob\_105
- Track 50 : Laure\_110

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

The start number called the most often in the published annotations is 26, it was called in 36 of the 61 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Andromedas\_43, Annapurna\_55, Carostasia\_42, Chepli\_44, ChikPic\_43, Chivey\_55, ColaCorta\_43, Crestdrop\_55, DannyDe\_55, Eleri\_43, Finny\_44, FreddieHg\_55, Glamour\_43, Hiddenleaf\_55, Jemerald\_44, JingleBells\_55, Juanyo\_42, Juicer\_44, KatChan\_44, Luna18\_44, MCubed\_43, Mandalorian\_42, MiniVolent\_41, Morrigan\_44, Nucci\_42, PSirce\_43, Phanita\_44, Quartz\_43, Rie18\_55, Sansa\_42, Saratos\_43, Shamu\_44, SilentWarrior\_55, Snakehole\_55, Tongui\_55, WilliamStrong\_43, Xebius\_43, YuuY\_43, Zenitsu\_43,

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

- 

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

- Aleemily\_90, Alone3\_66, Artu\_98, Atuin\_100, BRock\_57, Beleetus\_63, Bloom\_110, BooTeria\_102, Cafasso\_91, Chilliams\_105, DunneganBoMo\_95, Ellewin\_94, Emmetator\_98, FloraSnap32\_106, FrostedClock\_109, Fudan\_63, Garnacho\_58, GiJojo\_56, GoldenEssence\_92, Honk\_28, KSunshine22\_100, Laure\_110, LeoJr\_105, LuckySocke\_65, Mimi\_106, ModicumRichard\_91, Morgana\_98, ObLaDi\_91, Panchaali\_97, Park1214\_69, Patbob\_105, Phrampa\_99, Racecar\_107, ReginaGlobina\_105, Rockabye\_111, SJReid\_110, Stewart25555\_97, Talia1610\_106, Talos\_65, WaddleDee\_93,

**Summary by start number:**

Start 4:

- Found in 7 of 79 ( 8.9% ) of genes in pham
- Manual Annotations of this start: 3 of 61
- Called 42.9% of time when present
- Phage (with cluster) where this start called: Mimi\_106 (FC), Patbob\_105 (FC), Racecar\_107 (FC),

Start 7:

- Found in 25 of 79 ( 31.6% ) of genes in pham
- Manual Annotations of this start: 9 of 61
- Called 88.0% of time when present
- Phage (with cluster) where this start called: Artu\_98 (FC), Atuin\_100 (FC), Bloom\_110 (FC), BooTeria\_102 (FC), Chilliama\_105 (FC), DunneganBoMo\_95 (FC), Ellewin\_94 (FC), Emmetator\_98 (FC), FloraSnap32\_106 (FC), FrostedClock\_109 (FC), GoldenEssence\_92 (FC), KSunshine22\_100 (FC), Laure\_110 (UNK), LeoJr\_105 (FC), Panchaali\_97 (FC), Phrampa\_99 (FC), ReginaGlobina\_105 (FC), Rockabye\_111 (FC), SJReid\_110 (FC), Stewart25555\_97 (FC), Talia1610\_106 (FC), WaddleDee\_93 (FC),

Start 8:

- Found in 5 of 79 ( 6.3% ) of genes in pham
- Manual Annotations of this start: 5 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aleemily\_90 (DZ), Cafasso\_91 (DZ), ModicumRichard\_91 (DZ), Morgana\_98 (DZ), ObLaDi\_91 (DZ),

Start 16:

- Found in 1 of 79 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GiJojo\_56 (BS),

Start 19:

- Found in 7 of 79 ( 8.9% ) of genes in pham
- Manual Annotations of this start: 5 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alone3\_66 (BS), BRock\_57 (BS), Beleetus\_63 (BS), Fudan\_63 (BS), Garnacho\_58 (BS), LuckySocke\_65 (BS), Park1214\_69 (BS),

Start 20:

- Found in 1 of 79 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Honk\_28 (EH),

Start 25:

- Found in 1 of 79 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Talos\_65 (BS),

Start 26:

- Found in 39 of 79 ( 49.4% ) of genes in pham
- Manual Annotations of this start: 36 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Andromedas\_43 (EA2), Annapurna\_55 (EF), Carostasia\_42 (EA10), Chepli\_44 (EA6), ChikPic\_43 (EA2), Chivey\_55 (EF), ColaCorta\_43 (EA2), Crestdrop\_55 (EF), DannyDe\_55 (EF), Eleri\_43 (EA2),

Finny\_44 (EA2), FreddieHg\_55 (EF), Glamour\_43 (EA2), Hiddenleaf\_55 (EF), Jemerald\_44 (EA6), JingleBells\_55 (EF), Juanyo\_42 (EA10), Juicer\_44 (EA6), KatChan\_44 (EA6), Luna18\_44 (EA6), MCubed\_43 (EA2), Mandalorian\_42 (EA10), MiniVolent\_41 (EA10), Morrigan\_44 (EA6), Nucci\_42 (EA10), PSirce\_43 (EA2), Phanita\_44 (EA2), Quartz\_43 (EA10), Rie18\_55 (EF), Sansa\_42 (EA2), Saratos\_43 (EA2), Shamu\_44 (EA2), SilentWarrior\_55 (EF), Snakehole\_55 (EF), Tongui\_55 (EF), WilliamStrong\_43 (EA6), Xebius\_43 (EA2), YuuY\_43 (EA10), Zenitsu\_43 (EA2),

### **Summary by clusters:**

There are 9 clusters represented in this pham: UNK, EA10, EF, EH, FC, DZ, BS, EA2, EA6,

Info for manual annotations of cluster BS:

- Start number 16 was manually annotated 1 time for cluster BS.
- Start number 19 was manually annotated 5 times for cluster BS.
- Start number 25 was manually annotated 1 time for cluster BS.

Info for manual annotations of cluster DZ:

- Start number 8 was manually annotated 5 times for cluster DZ.

Info for manual annotations of cluster EA10:

- Start number 26 was manually annotated 6 times for cluster EA10.

Info for manual annotations of cluster EA2:

- Start number 26 was manually annotated 13 times for cluster EA2.

Info for manual annotations of cluster EA6:

- Start number 26 was manually annotated 7 times for cluster EA6.

Info for manual annotations of cluster EF:

- Start number 26 was manually annotated 10 times for cluster EF.

Info for manual annotations of cluster EH:

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

Info for manual annotations of cluster FC:

- Start number 4 was manually annotated 3 times for cluster FC.
- Start number 7 was manually annotated 9 times for cluster FC.

### **Gene Information:**

Gene: Aleemily\_90 Start: 53699, Stop: 54325, Start Num: 8

Candidate Starts for Aleemily\_90:

(Start: 8 @53699 has 5 MA's), (12, 53726), (31, 53900), (46, 53984), (64, 54104), (75, 54149), (80, 54185), (87, 54257),

Gene: Alone3\_66 Start: 23782, Stop: 24288, Start Num: 19

Candidate Starts for Alone3\_66:

(Start: 19 @23782 has 5 MA's), (24, 23812), (28, 23830), (43, 23911), (49, 23941), (50, 23944), (57, 24010), (58, 24013), (62, 24031), (67, 24049), (68, 24052), (80, 24121), (81, 24130), (84, 24172), (92, 24214), (102, 24277),

Gene: Andromedas\_43 Start: 31962, Stop: 31519, Start Num: 26

Candidate Starts for Andromedas\_43:

(Start: 26 @31962 has 36 MA's), (27, 31953), (29, 31941), (30, 31938), (34, 31920), (36, 31908), (39, 31887), (57, 31803), (67, 31764), (71, 31746), (73, 31740), (76, 31722), (78, 31707), (80, 31692), (96, 31560),

Gene: Annapurna\_55 Start: 39067, Stop: 39576, Start Num: 26

Candidate Starts for Annapurna\_55:

(Start: 26 @39067 has 36 MA's), (27, 39076), (35, 39115), (66, 39265), (68, 39271), (70, 39283), (79, 39328), (86, 39418), (92, 39460), (106, 39550),

Gene: Artu\_98 Start: 82489, Stop: 83100, Start Num: 7

Candidate Starts for Artu\_98:

(6, 82441), (Start: 7 @82489 has 9 MA's), (59, 82864),

Gene: Atuin\_100 Start: 85986, Stop: 86594, Start Num: 7

Candidate Starts for Atuin\_100:

(6, 85941), (Start: 7 @85986 has 9 MA's), (64, 86382), (80, 86463),

Gene: BRock\_57 Start: 20332, Stop: 20787, Start Num: 19

Candidate Starts for BRock\_57:

(Start: 19 @20332 has 5 MA's), (22, 20353), (24, 20362), (45, 20470), (57, 20560), (58, 20563), (59, 20569), (68, 20602), (80, 20671), (85, 20725),

Gene: Beleetus\_63 Start: 22462, Stop: 22968, Start Num: 19

Candidate Starts for Beleetus\_63:

(Start: 19 @22462 has 5 MA's), (22, 22483), (24, 22492), (28, 22510), (40, 22567), (50, 22624), (57, 22690), (58, 22693), (65, 22723), (67, 22729), (80, 22801), (84, 22852), (92, 22894), (102, 22957),

Gene: Bloom\_110 Start: 86089, Stop: 86679, Start Num: 7

Candidate Starts for Bloom\_110:

(Start: 4 @86026 has 3 MA's), (Start: 7 @86089 has 9 MA's), (59, 86443), (61, 86452), (63, 86461), (75, 86509), (80, 86545),

Gene: BooTeria\_102 Start: 82602, Stop: 83213, Start Num: 7

Candidate Starts for BooTeria\_102:

(6, 82554), (Start: 7 @82602 has 9 MA's), (58, 82971),

Gene: Cafasso\_91 Start: 53851, Stop: 54477, Start Num: 8

Candidate Starts for Cafasso\_91:

(Start: 8 @53851 has 5 MA's), (12, 53878), (31, 54052), (46, 54136), (64, 54256), (75, 54301), (80, 54337), (87, 54409),

Gene: Carostasia\_42 Start: 31495, Stop: 31064, Start Num: 26

Candidate Starts for Carostasia\_42:

(Start: 26 @31495 has 36 MA's), (27, 31486), (34, 31453), (36, 31441), (51, 31357), (57, 31336), (58, 31333), (67, 31297), (71, 31279), (73, 31273), (76, 31255), (80, 31225), (96, 31093),

Gene: Chepli\_44 Start: 31401, Stop: 30856, Start Num: 26

Candidate Starts for Chepli\_44:

(Start: 26 @31401 has 36 MA's), (27, 31392), (43, 31299), (58, 31236), (60, 31227), (74, 31170), (75, 31164), (78, 31143), (80, 31128), (89, 31029), (98, 30975), (101, 30966),

Gene: ChikPic\_43 Start: 31816, Stop: 31373, Start Num: 26

Candidate Starts for ChikPic\_43:

(Start: 26 @31816 has 36 MA's), (27, 31807), (29, 31795), (30, 31792), (36, 31762), (39, 31741), (57, 31657), (67, 31618), (71, 31600), (73, 31594), (76, 31576), (78, 31561), (80, 31546), (96, 31414),

Gene: Chilliams\_105 Start: 78852, Stop: 79442, Start Num: 7

Candidate Starts for Chilliams\_105:

(6, 78807), (Start: 7 @78852 has 9 MA's), (55, 79158), (59, 79203), (60, 79206), (65, 79227), (77, 79281), (80, 79305), (82, 79332), (88, 79380),

Gene: Chivey\_55 Start: 39021, Stop: 39530, Start Num: 26

Candidate Starts for Chivey\_55:

(9, 38862), (Start: 26 @39021 has 36 MA's), (27, 39030), (66, 39219), (68, 39225), (70, 39237), (79, 39282), (86, 39372), (92, 39414), (106, 39504),

Gene: ColaCorta\_43 Start: 31962, Stop: 31519, Start Num: 26

Candidate Starts for ColaCorta\_43:

(Start: 26 @31962 has 36 MA's), (27, 31953), (29, 31941), (30, 31938), (34, 31920), (36, 31908), (39, 31887), (57, 31803), (67, 31764), (71, 31746), (73, 31740), (76, 31722), (78, 31707), (80, 31692), (96, 31560),

Gene: Crestdrop\_55 Start: 39188, Stop: 39706, Start Num: 26

Candidate Starts for Crestdrop\_55:

(Start: 26 @39188 has 36 MA's), (27, 39197), (29, 39209), (73, 39413), (80, 39461), (83, 39506), (86, 39536),

Gene: DannyDe\_55 Start: 39022, Stop: 39531, Start Num: 26

Candidate Starts for DannyDe\_55:

(15, 38941), (Start: 26 @39022 has 36 MA's), (27, 39031), (66, 39220), (68, 39226), (79, 39283), (86, 39373), (92, 39415), (104, 39481), (106, 39505),

Gene: DunneganBoMo\_95 Start: 81871, Stop: 82482, Start Num: 7

Candidate Starts for DunneganBoMo\_95:

(6, 81823), (Start: 7 @81871 has 9 MA's), (59, 82246),

Gene: Eleri\_43 Start: 31806, Stop: 31363, Start Num: 26

Candidate Starts for Eleri\_43:

(Start: 26 @31806 has 36 MA's), (27, 31797), (29, 31785), (30, 31782), (34, 31764), (36, 31752), (39, 31731), (57, 31647), (67, 31608), (71, 31590), (73, 31584), (76, 31566), (78, 31551), (80, 31536), (96, 31404),

Gene: Ellewin\_94 Start: 81282, Stop: 81893, Start Num: 7

Candidate Starts for Ellewin\_94:

(6, 81234), (Start: 7 @81282 has 9 MA's), (58, 81651), (59, 81657), (76, 81729), (80, 81759),

Gene: Emmetator\_98 Start: 81826, Stop: 82437, Start Num: 7

Candidate Starts for Emmetator\_98:

(6, 81778), (Start: 7 @81826 has 9 MA's), (59, 82201),

Gene: Finny\_44 Start: 31800, Stop: 31357, Start Num: 26

Candidate Starts for Finny\_44:

(Start: 26 @31800 has 36 MA's), (27, 31791), (29, 31779), (30, 31776), (34, 31758), (36, 31746), (39, 31725), (57, 31641), (67, 31602), (71, 31584), (73, 31578), (76, 31560), (78, 31545), (80, 31530), (96, 31398),

Gene: FloraSnap32\_106 Start: 84986, Stop: 85579, Start Num: 7

Candidate Starts for FloraSnap32\_106:

(Start: 4 @84923 has 3 MA's), (Start: 7 @84986 has 9 MA's), (59, 85340), (68, 85373), (72, 85391), (80, 85442),

Gene: FreddieHg\_55 Start: 39038, Stop: 39547, Start Num: 26

Candidate Starts for FreddieHg\_55:

(15, 38957), (Start: 26 @39038 has 36 MA's), (27, 39047), (66, 39236), (68, 39242), (79, 39299), (86, 39389), (92, 39431), (104, 39497), (106, 39521),

Gene: FrostedClock\_109 Start: 86286, Stop: 86876, Start Num: 7

Candidate Starts for FrostedClock\_109:

(Start: 4 @86223 has 3 MA's), (Start: 7 @86286 has 9 MA's), (59, 86640), (61, 86649), (63, 86658), (75, 86706), (80, 86742),

Gene: Fudan\_63 Start: 23143, Stop: 23649, Start Num: 19

Candidate Starts for Fudan\_63:

(Start: 19 @23143 has 5 MA's), (24, 23173), (28, 23191), (43, 23272), (49, 23302), (50, 23305), (57, 23371), (58, 23374), (62, 23392), (67, 23410), (68, 23413), (80, 23482), (81, 23491), (84, 23533), (92, 23575), (102, 23638),

Gene: Garnacho\_58 Start: 22022, Stop: 22483, Start Num: 19

Candidate Starts for Garnacho\_58:

(Start: 19 @22022 has 5 MA's), (22, 22043), (24, 22052), (28, 22070), (57, 22250), (58, 22253), (67, 22289), (80, 22361), (88, 22433), (92, 22454),

Gene: GiJojo\_56 Start: 22495, Stop: 22989, Start Num: 16

Candidate Starts for GiJojo\_56:

(Start: 16 @22495 has 1 MA's), (18, 22513), (28, 22567), (38, 22612), (43, 22648), (50, 22681), (53, 22699), (57, 22747), (58, 22750), (68, 22789), (80, 22858), (81, 22867), (88, 22930), (92, 22951),

Gene: Glamour\_43 Start: 31954, Stop: 31511, Start Num: 26

Candidate Starts for Glamour\_43:

(Start: 26 @31954 has 36 MA's), (27, 31945), (29, 31933), (30, 31930), (34, 31912), (36, 31900), (39, 31879), (57, 31795), (67, 31756), (71, 31738), (73, 31732), (76, 31714), (78, 31699), (80, 31684), (96, 31552),

Gene: GoldenEssence\_92 Start: 79881, Stop: 80471, Start Num: 7

Candidate Starts for GoldenEssence\_92:

(Start: 4 @79818 has 3 MA's), (Start: 7 @79881 has 9 MA's), (61, 80244), (63, 80253), (75, 80301), (80, 80337),

Gene: Hiddenleaf\_55 Start: 39021, Stop: 39530, Start Num: 26

Candidate Starts for Hiddenleaf\_55:

(9, 38862), (Start: 26 @39021 has 36 MA's), (27, 39030), (66, 39219), (68, 39225), (70, 39237), (79, 39282), (86, 39372), (92, 39414), (106, 39504),

Gene: Honk\_28 Start: 20768, Stop: 21193, Start Num: 20

Candidate Starts for Honk\_28:

(Start: 20 @20768 has 1 MA's), (59, 20966), (67, 20996), (78, 21053), (80, 21068), (86, 21119), (93, 21164), (96, 21179),

Gene: Jemerald\_44 Start: 32468, Stop: 31968, Start Num: 26

Candidate Starts for Jemerald\_44:

(Start: 26 @32468 has 36 MA's), (34, 32426), (42, 32372), (57, 32306), (71, 32249), (73, 32243), (80, 32195), (96, 32063), (103, 32015), (105, 32006),

Gene: JingleBells\_55 Start: 39130, Stop: 39639, Start Num: 26

Candidate Starts for JingleBells\_55:

(15, 39049), (Start: 26 @39130 has 36 MA's), (27, 39139), (66, 39328), (68, 39334), (79, 39391), (86, 39481), (92, 39523), (104, 39589), (106, 39613),

Gene: Juanyo\_42 Start: 31426, Stop: 30995, Start Num: 26

Candidate Starts for Juanyo\_42:

(Start: 26 @31426 has 36 MA's), (27, 31417), (34, 31384), (36, 31372), (39, 31351), (51, 31288), (57, 31267), (58, 31264), (67, 31228), (71, 31210), (73, 31204), (76, 31186), (80, 31156), (86, 31081), (96, 31024), (99, 31000),

Gene: Juicer\_44 Start: 32468, Stop: 31968, Start Num: 26

Candidate Starts for Juicer\_44:

(Start: 26 @32468 has 36 MA's), (34, 32426), (42, 32372), (57, 32306), (71, 32249), (73, 32243), (80, 32195), (96, 32063), (103, 32015), (105, 32006),

Gene: KSunshine22\_100 Start: 82883, Stop: 83494, Start Num: 7

Candidate Starts for KSunshine22\_100:

(6, 82835), (Start: 7 @82883 has 9 MA's), (58, 83252), (59, 83258), (80, 83360),

Gene: KatChan\_44 Start: 31413, Stop: 30868, Start Num: 26

Candidate Starts for KatChan\_44:

(Start: 26 @31413 has 36 MA's), (27, 31404), (43, 31311), (58, 31248), (60, 31239), (74, 31182), (75, 31176), (80, 31140), (89, 31041), (98, 30987), (101, 30978),

Gene: Laure\_110 Start: 78788, Stop: 79390, Start Num: 7

Candidate Starts for Laure\_110:

(5, 78734), (Start: 7 @78788 has 9 MA's), (33, 78977), (44, 79046), (68, 79181), (85, 79307), (94, 79367),

Gene: LeoJr\_105 Start: 86221, Stop: 86829, Start Num: 7

Candidate Starts for LeoJr\_105:

(6, 86176), (Start: 7 @86221 has 9 MA's), (64, 86617), (80, 86698),

Gene: LuckySocke\_65 Start: 23092, Stop: 23598, Start Num: 19

Candidate Starts for LuckySocke\_65:

(Start: 19 @23092 has 5 MA's), (24, 23122), (28, 23140), (43, 23221), (49, 23251), (50, 23254), (57, 23320), (58, 23323), (62, 23341), (67, 23359), (68, 23362), (80, 23431), (81, 23440), (84, 23482), (92, 23524), (102, 23587),

Gene: Luna18\_44 Start: 31413, Stop: 30868, Start Num: 26

Candidate Starts for Luna18\_44:

(Start: 26 @31413 has 36 MA's), (27, 31404), (43, 31311), (58, 31248), (60, 31239), (74, 31182), (75, 31176), (80, 31140), (89, 31041), (98, 30987), (101, 30978),

Gene: MCubed\_43 Start: 31831, Stop: 31388, Start Num: 26

Candidate Starts for MCubed\_43:

(Start: 26 @31831 has 36 MA's), (27, 31822), (29, 31810), (30, 31807), (34, 31789), (36, 31777), (39, 31756), (57, 31672), (67, 31633), (71, 31615), (73, 31609), (78, 31576), (80, 31561), (96, 31429),

Gene: Mandalorian\_42 Start: 31505, Stop: 31074, Start Num: 26

Candidate Starts for Mandalorian\_42:

(Start: 26 @31505 has 36 MA's), (27, 31496), (34, 31463), (36, 31451), (51, 31367), (57, 31346), (58, 31343), (67, 31307), (71, 31289), (73, 31283), (76, 31265), (80, 31235), (96, 31103), (99, 31079),

Gene: Mimi\_106 Start: 85373, Stop: 86026, Start Num: 4

Candidate Starts for Mimi\_106:

(Start: 4 @85373 has 3 MA's), (Start: 7 @85436 has 9 MA's), (59, 85790), (61, 85799), (63, 85808), (80, 85892),

Gene: MiniVolent\_41 Start: 31388, Stop: 30957, Start Num: 26

Candidate Starts for MiniVolent\_41:

(Start: 26 @31388 has 36 MA's), (27, 31379), (34, 31346), (36, 31334), (39, 31313), (51, 31250), (57, 31229), (58, 31226), (67, 31190), (71, 31172), (73, 31166), (76, 31148), (80, 31118), (86, 31043), (96, 30986), (99, 30962),

Gene: ModicumRichard\_91 Start: 53919, Stop: 54545, Start Num: 8

Candidate Starts for ModicumRichard\_91:

(Start: 8 @53919 has 5 MA's), (12, 53946), (31, 54120), (46, 54204), (64, 54324), (75, 54369), (80, 54405), (87, 54477),

Gene: Morgana\_98 Start: 56101, Stop: 56727, Start Num: 8

Candidate Starts for Morgana\_98:

(1, 55819), (2, 55831), (Start: 8 @56101 has 5 MA's), (11, 56113), (12, 56128), (31, 56302), (46, 56386), (64, 56506), (68, 56518), (75, 56551), (80, 56587), (86, 56656),

Gene: Morrigan\_44 Start: 31356, Stop: 30871, Start Num: 26

Candidate Starts for Morrigan\_44:

(Start: 26 @31356 has 36 MA's), (34, 31314), (36, 31302), (48, 31230), (54, 31197), (57, 31146), (59, 31137), (68, 31104), (71, 31089), (80, 31035), (96, 30903), (97, 30894), (99, 30879), (100, 30876),

Gene: Nucci\_42 Start: 31488, Stop: 31057, Start Num: 26

Candidate Starts for Nucci\_42:

(Start: 26 @31488 has 36 MA's), (27, 31479), (34, 31446), (36, 31434), (51, 31350), (57, 31329), (58, 31326), (67, 31290), (71, 31272), (73, 31266), (76, 31248), (80, 31218), (96, 31086), (99, 31062),

Gene: ObLaDi\_91 Start: 53945, Stop: 54571, Start Num: 8

Candidate Starts for ObLaDi\_91:

(Start: 8 @53945 has 5 MA's), (12, 53972), (31, 54146), (46, 54230), (64, 54350), (75, 54395), (80, 54431), (87, 54503),

Gene: PSirce\_43 Start: 31961, Stop: 31518, Start Num: 26

Candidate Starts for PSirce\_43:

(Start: 26 @31961 has 36 MA's), (27, 31952), (29, 31940), (30, 31937), (34, 31919), (36, 31907), (39, 31886), (57, 31802), (67, 31763), (71, 31745), (73, 31739), (76, 31721), (78, 31706), (80, 31691), (96,

31559),

Gene: Panchaali\_97 Start: 82860, Stop: 83471, Start Num: 7

Candidate Starts for Panchaali\_97:

(Start: 7 @82860 has 9 MA's), (68, 83268), (80, 83337),

Gene: Park1214\_69 Start: 23564, Stop: 24034, Start Num: 19

Candidate Starts for Park1214\_69:

(Start: 19 @23564 has 5 MA's), (22, 23585), (23, 23588), (24, 23594), (28, 23612), (50, 23726), (58, 23795), (67, 23831), (75, 23867), (80, 23903), (81, 23912), (84, 23954), (95, 24014),

Gene: Patbob\_105 Start: 86108, Stop: 86761, Start Num: 4

Candidate Starts for Patbob\_105:

(Start: 4 @86108 has 3 MA's), (Start: 7 @86171 has 9 MA's), (61, 86534), (63, 86543), (75, 86591), (80, 86627),

Gene: Phanita\_44 Start: 31743, Stop: 31300, Start Num: 26

Candidate Starts for Phanita\_44:

(Start: 26 @31743 has 36 MA's), (27, 31734), (29, 31722), (30, 31719), (34, 31701), (36, 31689), (39, 31668), (57, 31584), (67, 31545), (71, 31527), (73, 31521), (76, 31503), (78, 31488), (80, 31473), (96, 31341),

Gene: Phrampa\_99 Start: 87574, Stop: 88167, Start Num: 7

Candidate Starts for Phrampa\_99:

(Start: 7 @87574 has 9 MA's), (13, 87619), (21, 87703), (52, 87865), (55, 87883), (56, 87898), (80, 88030), (91, 88126),

Gene: Quartz\_43 Start: 31618, Stop: 31187, Start Num: 26

Candidate Starts for Quartz\_43:

(Start: 26 @31618 has 36 MA's), (27, 31609), (34, 31576), (36, 31564), (51, 31480), (57, 31459), (58, 31456), (67, 31420), (71, 31402), (73, 31396), (76, 31378), (80, 31348), (96, 31216),

Gene: Racecar\_107 Start: 86026, Stop: 86679, Start Num: 4

Candidate Starts for Racecar\_107:

(Start: 4 @86026 has 3 MA's), (Start: 7 @86089 has 9 MA's), (59, 86443), (61, 86452), (63, 86461), (75, 86509), (80, 86545),

Gene: ReginaGlobina\_105 Start: 85786, Stop: 86394, Start Num: 7

Candidate Starts for ReginaGlobina\_105:

(6, 85741), (Start: 7 @85786 has 9 MA's), (64, 86182), (80, 86263),

Gene: Rie18\_55 Start: 39472, Stop: 39981, Start Num: 26

Candidate Starts for Rie18\_55:

(3, 39205), (9, 39313), (Start: 26 @39472 has 36 MA's), (27, 39481), (79, 39733), (92, 39865), (106, 39955),

Gene: Rockabye\_111 Start: 79290, Stop: 79880, Start Num: 7

Candidate Starts for Rockabye\_111:

(6, 79245), (Start: 7 @79290 has 9 MA's), (77, 79719), (80, 79743), (82, 79770),

Gene: SJReid\_110 Start: 78336, Stop: 78929, Start Num: 7

Candidate Starts for SJReid\_110:

(Start: 7 @78336 has 9 MA's), (13, 78381), (21, 78465), (32, 78522), (38, 78549), (57, 78681), (77, 78768), (80, 78792), (88, 78867),

Gene: Sansa\_42 Start: 32036, Stop: 31593, Start Num: 26

Candidate Starts for Sansa\_42:

(Start: 26 @32036 has 36 MA's), (27, 32027), (29, 32015), (30, 32012), (34, 31994), (36, 31982), (39, 31961), (57, 31877), (67, 31838), (71, 31820), (73, 31814), (78, 31781), (80, 31766), (96, 31634),

Gene: Saratos\_43 Start: 31791, Stop: 31348, Start Num: 26

Candidate Starts for Saratos\_43:

(Start: 26 @31791 has 36 MA's), (27, 31782), (29, 31770), (30, 31767), (34, 31749), (36, 31737), (39, 31716), (57, 31632), (67, 31593), (71, 31575), (73, 31569), (76, 31551), (78, 31536), (80, 31521), (96, 31389),

Gene: Shamu\_44 Start: 31970, Stop: 31527, Start Num: 26

Candidate Starts for Shamu\_44:

(Start: 26 @31970 has 36 MA's), (27, 31961), (29, 31949), (30, 31946), (34, 31928), (36, 31916), (39, 31895), (57, 31811), (67, 31772), (71, 31754), (73, 31748), (76, 31730), (78, 31715), (80, 31700), (96, 31568),

Gene: SilentWarrior\_55 Start: 38991, Stop: 39500, Start Num: 26

Candidate Starts for SilentWarrior\_55:

(9, 38832), (Start: 26 @38991 has 36 MA's), (27, 39000), (66, 39189), (68, 39195), (70, 39207), (79, 39252), (86, 39342), (92, 39384), (106, 39474),

Gene: Snakehole\_55 Start: 38999, Stop: 39508, Start Num: 26

Candidate Starts for Snakehole\_55:

(9, 38840), (Start: 26 @38999 has 36 MA's), (27, 39008), (66, 39197), (68, 39203), (70, 39215), (79, 39260), (86, 39350), (92, 39392), (104, 39458), (106, 39482),

Gene: Stewart25555\_97 Start: 82605, Stop: 83216, Start Num: 7

Candidate Starts for Stewart25555\_97:

(6, 82557), (Start: 7 @82605 has 9 MA's), (14, 82659), (17, 82728), (64, 83001), (80, 83082),

Gene: Talia1610\_106 Start: 85455, Stop: 86045, Start Num: 7

Candidate Starts for Talia1610\_106:

(Start: 7 @85455 has 9 MA's), (59, 85809), (61, 85818), (63, 85827), (75, 85875), (80, 85911),

Gene: Talos\_65 Start: 22927, Stop: 23367, Start Num: 25

Candidate Starts for Talos\_65:

(Start: 25 @22927 has 1 MA's), (28, 22942), (40, 22999), (55, 23086), (67, 23164), (80, 23236), (84, 23287), (92, 23329), (94, 23344),

Gene: Tongui\_55 Start: 39387, Stop: 39896, Start Num: 26

Candidate Starts for Tongui\_55:

(9, 39228), (10, 39234), (Start: 26 @39387 has 36 MA's), (27, 39396), (66, 39585), (68, 39591), (69, 39600), (79, 39648), (86, 39738), (92, 39780), (106, 39870),

Gene: WaddleDee\_93 Start: 81057, Stop: 81668, Start Num: 7

Candidate Starts for WaddleDee\_93:

(6, 81009), (Start: 7 @81057 has 9 MA's), (59, 81432),

Gene: WilliamStrong\_43 Start: 31938, Stop: 31432, Start Num: 26

Candidate Starts for WilliamStrong\_43:

(Start: 26 @31938 has 36 MA's), (34, 31896), (36, 31884), (37, 31881), (39, 31863), (41, 31857), (48, 31812), (57, 31728), (59, 31719), (78, 31632), (80, 31617), (86, 31542), (90, 31509),

Gene: Xebius\_43 Start: 31794, Stop: 31351, Start Num: 26

Candidate Starts for Xebius\_43:

(Start: 26 @31794 has 36 MA's), (27, 31785), (29, 31773), (30, 31770), (34, 31752), (36, 31740), (39, 31719), (47, 31671), (57, 31635), (67, 31596), (71, 31578), (73, 31572), (76, 31554), (78, 31539), (80, 31524), (96, 31392),

Gene: YuuY\_43 Start: 32085, Stop: 31654, Start Num: 26

Candidate Starts for YuuY\_43:

(Start: 26 @32085 has 36 MA's), (27, 32076), (34, 32043), (39, 32010), (57, 31926), (58, 31923), (67, 31887), (71, 31869), (73, 31863), (76, 31845), (80, 31815), (96, 31683), (99, 31659),

Gene: Zenitsu\_43 Start: 31836, Stop: 31393, Start Num: 26

Candidate Starts for Zenitsu\_43:

(Start: 26 @31836 has 36 MA's), (27, 31827), (29, 31815), (30, 31812), (34, 31794), (36, 31782), (39, 31761), (57, 31677), (67, 31638), (71, 31620), (73, 31614), (78, 31581), (80, 31566), (96, 31434),