



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 296575 Report

This analysis was run 04/25/26 on database version 644.

Pham number 296575 has 63 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Gina\_46, Teamocil\_46
- Track 2 : Shrubaron\_46
- Track 3 : KaiHaiDragon\_45, BrazzalePHS\_44, Hermeonysus\_44, EarickHC\_45, Germa\_46, PhedwardCullen\_44, CrazyRich\_44, Lucretia\_45, Rockwell\_44, PierreOrion\_45, Savannah\_44, ClearAsMud\_47, Ganandorf\_44, Phorgeous\_44, Scumberland\_46, Onika\_44, Pulchra\_46, Jollipop\_45, Cranjis\_46, Phrancesco\_45, SirFrank\_44, LittleFortune\_46, Antares\_45, Shotgun\_44, BeagleBug\_44, PiperSansNom\_45
- Track 4 : Glorp\_46, Selwyn23\_46
- Track 5 : NoodlelyBoi\_45
- Track 6 : Jayden\_46
- Track 7 : Busephilis\_44, Crisis\_46, Quhwah\_48
- Track 8 : Merry\_, Sunny\_
- Track 9 : Paschalis\_44
- Track 10 : Jefe\_45, Yeti\_45, Piperis\_45
- Track 11 : Megan\_39
- Track 12 : Nicole72\_40
- Track 13 : Tyumbra\_44
- Track 14 : Zapato\_44
- Track 15 : RobsFeet\_47
- Track 16 : Kowalski\_44, Ramiel05\_44
- Track 17 : Ariadne\_53, Smarties\_53
- Track 18 : Skugga\_43
- Track 19 : Metamorphoo\_46
- Track 20 : Fireman\_46
- Track 21 : Honeyfin\_46
- Track 22 : Matzah\_42, Cinna\_41, MementoMori\_42
- Track 23 : Kozie\_40
- Track 24 : Margaery\_39
- Track 25 : Cressida\_43
- Track 26 : Terij\_40
- Track 27 : Jace\_21

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

The start number called the most often in the published annotations is 8, it was called in 46 of the 56 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Antares\_45, Ariadne\_53, BeagleBug\_44, BrazzalePHS\_44, Busephilis\_44, ClearAsMud\_47, Cranjjs\_46, CrazyRich\_44, Cressida\_43, Crisis\_46, EarickHC\_45, Fireman\_46, Ganandorf\_44, Germa\_46, Gina\_46, Glorp\_46, Hermeonysus\_44, Honeyfin\_46, Jayden\_46, Jefe\_45, Jollipop\_45, KaiHaiDragon\_45, Kowalski\_44, Kozi\_40, LittleFortune\_46, Lucretia\_45, Margaery\_39, Metamorphoo\_46, NoodlelyBoi\_45, Onika\_44, Paschalis\_44, PhedwardCullen\_44, Phorgeous\_44, Phrancesco\_45, PierreOrion\_45, PiperSansNom\_45, Piperis\_45, Pulchra\_46, Quhwah\_48, Ramiel05\_44, Rockwell\_44, Savannah\_44, Scumberland\_46, Selwyn23\_46, Shotgun\_44, Shrubaron\_46, SirFrank\_44, Skugga\_43, Smarties\_53, Teamocil\_46, Terij\_40, Yeti\_45, Zapato\_44,

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

- RobsFeet\_47, Tyumbra\_44,

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

- Cinna\_41, Jace\_21, Matzah\_42, Megan\_39, MementoMori\_42, Merry\_, Nicole72\_40, Sunny\_,

### Summary by start number:

Start 6:

- Found in 1 of 63 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jace\_21 (singleton),

Start 7:

- Found in 3 of 63 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 3 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cinna\_41 (EI), Matzah\_42 (EI), MementoMori\_42 (EI),

Start 8:

- Found in 55 of 63 ( 87.3% ) of genes in pham
- Manual Annotations of this start: 46 of 56
- Called 96.4% of time when present
- Phage (with cluster) where this start called: Antares\_45 (EC), Ariadne\_53 (EC), BeagleBug\_44 (EC), BrazzalePHS\_44 (EC), Busephilis\_44 (EC), ClearAsMud\_47 (EC), Cranjjs\_46 (EC), CrazyRich\_44 (EC), Cressida\_43 (EI), Crisis\_46 (EC), EarickHC\_45 (EC), Fireman\_46 (EC), Ganandorf\_44 (EC), Germa\_46 (EC), Gina\_46 (EC), Glorp\_46 (EC), Hermeonysus\_44 (EC), Honeyfin\_46 (EC), Jayden\_46 (EC), Jefe\_45 (EC), Jollipop\_45 (EC), KaiHaiDragon\_45 (EC), Kowalski\_44 (EC), Kozi\_40 (EI), LittleFortune\_46 (EC), Lucretia\_45 (EC), Margaery\_39 (EI), Metamorphoo\_46 (EC), NoodlelyBoi\_45 (EC), Onika\_44 (EC), Paschalis\_44 (EC), PhedwardCullen\_44 (EC), Phorgeous\_44 (EC), Phrancesco\_45 (EC), PierreOrion\_45 (EC), PiperSansNom\_45 (EC), Piperis\_45 (EC), Pulchra\_46 (EC), Quhwah\_48 (EC), Ramiel05\_44 (EC), Rockwell\_44 (EC), Savannah\_44 (EC), Scumberland\_46 (EC),

Selwyn23\_46 (EC), Shotgun\_44 (EC), Shrubaron\_46 (EC), SirFrank\_44 (EC), Skugga\_43 (EC), Smarties\_53 (EC), Teamocil\_46 (EC), Terij\_40 (EI), Yeti\_45 (EC), Zapato\_44 (EC),

Start 9:

- Found in 8 of 63 ( 12.7% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 12.5% of time when present
- Phage (with cluster) where this start called: RobsFeet\_47 (EC),

Start 10:

- Found in 8 of 63 ( 12.7% ) of genes in pham
- Manual Annotations of this start: 3 of 56
- Called 37.5% of time when present
- Phage (with cluster) where this start called: Megan\_39 (EC), Merry\_ (EC), Sunny\_ (EC),

Start 11:

- Found in 50 of 63 ( 79.4% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 2.0% of time when present
- Phage (with cluster) where this start called: Nicole72\_40 (EC),

Start 17:

- Found in 58 of 63 ( 92.1% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 1.7% of time when present
- Phage (with cluster) where this start called: Tyrumbra\_44 (EC),

### **Summary by clusters:**

There are 3 clusters represented in this pham: singleton, EI, EC,

Info for manual annotations of cluster EC:

- Start number 8 was manually annotated 42 times for cluster EC.
- Start number 9 was manually annotated 1 time for cluster EC.
- Start number 10 was manually annotated 3 times for cluster EC.
- Start number 11 was manually annotated 1 time for cluster EC.
- Start number 17 was manually annotated 1 time for cluster EC.

Info for manual annotations of cluster EI:

- Start number 7 was manually annotated 3 times for cluster EI.
- Start number 8 was manually annotated 4 times for cluster EI.

### **Gene Information:**

Gene: Antares\_45 Start: 31580, Stop: 32002, Start Num: 8

Candidate Starts for Antares\_45:

(Start: 8 @31580 has 46 MA's), (Start: 11 @31589 has 1 MA's), (Start: 17 @31625 has 1 MA's), (26, 31799), (27, 31814), (31, 31847), (33, 31856), (34, 31862), (36, 31901), (40, 31964),

Gene: Ariadne\_53 Start: 33197, Stop: 33622, Start Num: 8

Candidate Starts for Ariadne\_53:

(2, 33095), (4, 33149), (Start: 8 @33197 has 46 MA's), (Start: 11 @33206 has 1 MA's), (13, 33215), (Start: 17 @33245 has 1 MA's), (26, 33419), (27, 33434), (31, 33467), (33, 33476), (34, 33482), (36, 33521),

Gene: BeagleBug\_44 Start: 31361, Stop: 31783, Start Num: 8

Candidate Starts for BeagleBug\_44:

(Start: 8 @31361 has 46 MA's), (Start: 11 @31370 has 1 MA's), (Start: 17 @31406 has 1 MA's), (26, 31580), (27, 31595), (31, 31628), (33, 31637), (34, 31643), (36, 31682), (40, 31745),

Gene: BrazzalePHS\_44 Start: 31375, Stop: 31797, Start Num: 8

Candidate Starts for BrazzalePHS\_44:

(Start: 8 @31375 has 46 MA's), (Start: 11 @31384 has 1 MA's), (Start: 17 @31420 has 1 MA's), (26, 31594), (27, 31609), (31, 31642), (33, 31651), (34, 31657), (36, 31696), (40, 31759),

Gene: Busephilis\_44 Start: 31316, Stop: 31738, Start Num: 8

Candidate Starts for Busephilis\_44:

(Start: 8 @31316 has 46 MA's), (Start: 11 @31325 has 1 MA's), (Start: 17 @31361 has 1 MA's), (26, 31535), (27, 31550), (31, 31583), (33, 31592), (34, 31598), (40, 31700),

Gene: Cinna\_41 Start: 31628, Stop: 32053, Start Num: 7

Candidate Starts for Cinna\_41:

(Start: 7 @31628 has 3 MA's), (Start: 10 @31640 has 3 MA's), (27, 31865), (35, 31919),

Gene: ClearAsMud\_47 Start: 31456, Stop: 31878, Start Num: 8

Candidate Starts for ClearAsMud\_47:

(Start: 8 @31456 has 46 MA's), (Start: 11 @31465 has 1 MA's), (Start: 17 @31501 has 1 MA's), (26, 31675), (27, 31690), (31, 31723), (33, 31732), (34, 31738), (36, 31777), (40, 31840),

Gene: Cranjis\_46 Start: 31535, Stop: 31957, Start Num: 8

Candidate Starts for Cranjis\_46:

(Start: 8 @31535 has 46 MA's), (Start: 11 @31544 has 1 MA's), (Start: 17 @31580 has 1 MA's), (26, 31754), (27, 31769), (31, 31802), (33, 31811), (34, 31817), (36, 31856), (40, 31919),

Gene: CrazyRich\_44 Start: 31344, Stop: 31766, Start Num: 8

Candidate Starts for CrazyRich\_44:

(Start: 8 @31344 has 46 MA's), (Start: 11 @31353 has 1 MA's), (Start: 17 @31389 has 1 MA's), (26, 31563), (27, 31578), (31, 31611), (33, 31620), (34, 31626), (36, 31665), (40, 31728),

Gene: Cressida\_43 Start: 31098, Stop: 31520, Start Num: 8

Candidate Starts for Cressida\_43:

(Start: 8 @31098 has 46 MA's), (Start: 9 @31101 has 1 MA's), (Start: 10 @31104 has 3 MA's), (Start: 11 @31107 has 1 MA's), (Start: 17 @31143 has 1 MA's), (19, 31173), (25, 31314), (27, 31332), (35, 31386), (39, 31473), (40, 31482),

Gene: Crisis\_46 Start: 31335, Stop: 31757, Start Num: 8

Candidate Starts for Crisis\_46:

(Start: 8 @31335 has 46 MA's), (Start: 11 @31344 has 1 MA's), (Start: 17 @31380 has 1 MA's), (26, 31554), (27, 31569), (31, 31602), (33, 31611), (34, 31617), (40, 31719),

Gene: EarickHC\_45 Start: 31258, Stop: 31680, Start Num: 8

Candidate Starts for EarickHC\_45:

(Start: 8 @31258 has 46 MA's), (Start: 11 @31267 has 1 MA's), (Start: 17 @31303 has 1 MA's), (26, 31477), (27, 31492), (31, 31525), (33, 31534), (34, 31540), (36, 31579), (40, 31642),

Gene: Fireman\_46 Start: 32867, Stop: 33289, Start Num: 8

Candidate Starts for Fireman\_46:

(Start: 8 @32867 has 46 MA's), (Start: 9 @32870 has 1 MA's), (Start: 17 @32912 has 1 MA's), (27, 33101), (29, 33122),

Gene: Ganandorf\_44 Start: 31397, Stop: 31819, Start Num: 8

Candidate Starts for Ganandorf\_44:

(Start: 8 @31397 has 46 MA's), (Start: 11 @31406 has 1 MA's), (Start: 17 @31442 has 1 MA's), (26, 31616), (27, 31631), (31, 31664), (33, 31673), (34, 31679), (36, 31718), (40, 31781),

Gene: Germa\_46 Start: 31226, Stop: 31648, Start Num: 8

Candidate Starts for Germa\_46:

(Start: 8 @31226 has 46 MA's), (Start: 11 @31235 has 1 MA's), (Start: 17 @31271 has 1 MA's), (26, 31445), (27, 31460), (31, 31493), (33, 31502), (34, 31508), (36, 31547), (40, 31610),

Gene: Gina\_46 Start: 30994, Stop: 31422, Start Num: 8

Candidate Starts for Gina\_46:

(2, 30892), (5, 30967), (Start: 8 @30994 has 46 MA's), (Start: 11 @31003 has 1 MA's), (Start: 17 @31042 has 1 MA's), (26, 31216), (27, 31231), (33, 31273),

Gene: Glorp\_46 Start: 31398, Stop: 31820, Start Num: 8

Candidate Starts for Glorp\_46:

(Start: 8 @31398 has 46 MA's), (Start: 11 @31407 has 1 MA's), (Start: 17 @31443 has 1 MA's), (26, 31617), (27, 31632), (31, 31665), (33, 31674), (34, 31680), (36, 31719), (40, 31782),

Gene: Hermeonysus\_44 Start: 31264, Stop: 31686, Start Num: 8

Candidate Starts for Hermeonysus\_44:

(Start: 8 @31264 has 46 MA's), (Start: 11 @31273 has 1 MA's), (Start: 17 @31309 has 1 MA's), (26, 31483), (27, 31498), (31, 31531), (33, 31540), (34, 31546), (36, 31585), (40, 31648),

Gene: Honeyfin\_46 Start: 31585, Stop: 32007, Start Num: 8

Candidate Starts for Honeyfin\_46:

(3, 31504), (Start: 8 @31585 has 46 MA's), (Start: 11 @31594 has 1 MA's), (Start: 17 @31630 has 1 MA's), (26, 31804), (27, 31819), (31, 31852), (33, 31861), (34, 31867), (40, 31969),

Gene: Jace\_21 Start: 17774, Stop: 18232, Start Num: 6

Candidate Starts for Jace\_21:

(1, 17681), (Start: 6 @17774 has 1 MA's), (Start: 11 @17798 has 1 MA's), (15, 17813), (21, 17915), (24, 17990), (27, 18035), (32, 18074), (33, 18077), (37, 18149),

Gene: Jayden\_46 Start: 31710, Stop: 32129, Start Num: 8

Candidate Starts for Jayden\_46:

(Start: 8 @31710 has 46 MA's), (Start: 11 @31719 has 1 MA's), (Start: 17 @31752 has 1 MA's), (18, 31779), (22, 31845), (26, 31926), (27, 31941), (30, 31968), (31, 31974), (33, 31983), (35, 31995),

Gene: Jefe\_45 Start: 31322, Stop: 31744, Start Num: 8

Candidate Starts for Jefe\_45:

(Start: 8 @31322 has 46 MA's), (Start: 11 @31331 has 1 MA's), (Start: 17 @31367 has 1 MA's), (26, 31541), (27, 31556), (31, 31589), (33, 31598), (34, 31604), (36, 31643),

Gene: Jollipop\_45 Start: 31661, Stop: 32083, Start Num: 8

Candidate Starts for Jollipop\_45:

(Start: 8 @31661 has 46 MA's), (Start: 11 @31670 has 1 MA's), (Start: 17 @31706 has 1 MA's), (26, 31880), (27, 31895), (31, 31928), (33, 31937), (34, 31943), (36, 31982), (40, 32045),

Gene: KaiHaiDragon\_45 Start: 31258, Stop: 31680, Start Num: 8

Candidate Starts for KaiHaiDragon\_45:

(Start: 8 @31258 has 46 MA's), (Start: 11 @31267 has 1 MA's), (Start: 17 @31303 has 1 MA's), (26, 31477), (27, 31492), (31, 31525), (33, 31534), (34, 31540), (36, 31579), (40, 31642),

Gene: Kowalski\_44 Start: 31371, Stop: 31793, Start Num: 8

Candidate Starts for Kowalski\_44:

(4, 31323), (Start: 8 @31371 has 46 MA's), (Start: 11 @31380 has 1 MA's), (Start: 17 @31416 has 1 MA's), (26, 31590), (27, 31605), (31, 31638), (33, 31647), (34, 31653), (36, 31692), (40, 31755),

Gene: Kozie\_40 Start: 30705, Stop: 31127, Start Num: 8

Candidate Starts for Kozie\_40:

(Start: 8 @30705 has 46 MA's), (23, 30849), (26, 30924), (28, 30951), (35, 30993),

Gene: LittleFortune\_46 Start: 31627, Stop: 32049, Start Num: 8

Candidate Starts for LittleFortune\_46:

(Start: 8 @31627 has 46 MA's), (Start: 11 @31636 has 1 MA's), (Start: 17 @31672 has 1 MA's), (26, 31846), (27, 31861), (31, 31894), (33, 31903), (34, 31909), (36, 31948), (40, 32011),

Gene: Lucretia\_45 Start: 31314, Stop: 31736, Start Num: 8

Candidate Starts for Lucretia\_45:

(Start: 8 @31314 has 46 MA's), (Start: 11 @31323 has 1 MA's), (Start: 17 @31359 has 1 MA's), (26, 31533), (27, 31548), (31, 31581), (33, 31590), (34, 31596), (36, 31635), (40, 31698),

Gene: Margaery\_39 Start: 30479, Stop: 30901, Start Num: 8

Candidate Starts for Margaery\_39:

(Start: 8 @30479 has 46 MA's), (Start: 11 @30488 has 1 MA's), (Start: 17 @30524 has 1 MA's), (20, 30581), (26, 30698), (27, 30713), (29, 30734), (35, 30767),

Gene: Matzah\_42 Start: 31568, Stop: 31993, Start Num: 7

Candidate Starts for Matzah\_42:

(Start: 7 @31568 has 3 MA's), (Start: 10 @31580 has 3 MA's), (27, 31805), (35, 31859),

Gene: Megan\_39 Start: 32143, Stop: 32565, Start Num: 10

Candidate Starts for Megan\_39:

(3, 32056), (Start: 10 @32143 has 3 MA's), (16, 32164), (Start: 17 @32182 has 1 MA's), (23, 32281), (26, 32356), (27, 32371), (38, 32500),

Gene: MementoMori\_42 Start: 31316, Stop: 31741, Start Num: 7

Candidate Starts for MementoMori\_42:

(Start: 7 @31316 has 3 MA's), (Start: 10 @31328 has 3 MA's), (27, 31553), (35, 31607),

Gene: Merry\_ Start: 32911, Stop: 33336, Start Num: 10

Candidate Starts for Merry\_:

(Start: 10 @32911 has 3 MA's), (Start: 17 @32953 has 1 MA's), (27, 33142), (41, 33319),

Gene: Metamorphoo\_46 Start: 32129, Stop: 32551, Start Num: 8

Candidate Starts for Metamorphoo\_46:

(Start: 8 @32129 has 46 MA's), (Start: 9 @32132 has 1 MA's), (Start: 17 @32174 has 1 MA's), (27, 32363), (29, 32384), (33, 32405),

Gene: Nicole72\_40 Start: 32990, Stop: 33412, Start Num: 11

Candidate Starts for Nicole72\_40:

(3, 32900), (Start: 9 @32984 has 1 MA's), (Start: 10 @32987 has 3 MA's), (Start: 11 @32990 has 1 MA's), (Start: 17 @33029 has 1 MA's), (26, 33203), (27, 33218), (33, 33260), (38, 33347),

Gene: NoodlelyBoi\_45 Start: 31666, Stop: 32091, Start Num: 8

Candidate Starts for NoodlelyBoi\_45:

(Start: 8 @31666 has 46 MA's), (Start: 11 @31675 has 1 MA's), (Start: 17 @31714 has 1 MA's), (26, 31888), (27, 31903), (31, 31936), (33, 31945), (36, 31990),

Gene: Onika\_44 Start: 31346, Stop: 31768, Start Num: 8

Candidate Starts for Onika\_44:

(Start: 8 @31346 has 46 MA's), (Start: 11 @31355 has 1 MA's), (Start: 17 @31391 has 1 MA's), (26, 31565), (27, 31580), (31, 31613), (33, 31622), (34, 31628), (36, 31667), (40, 31730),

Gene: Paschalis\_44 Start: 31353, Stop: 31775, Start Num: 8

Candidate Starts for Paschalis\_44:

(5, 31326), (Start: 8 @31353 has 46 MA's), (Start: 11 @31362 has 1 MA's), (12, 31368), (Start: 17 @31398 has 1 MA's), (26, 31572), (27, 31587), (31, 31620), (33, 31629), (34, 31635), (40, 31737),

Gene: PhedwardCullen\_44 Start: 31104, Stop: 31526, Start Num: 8

Candidate Starts for PhedwardCullen\_44:

(Start: 8 @31104 has 46 MA's), (Start: 11 @31113 has 1 MA's), (Start: 17 @31149 has 1 MA's), (26, 31323), (27, 31338), (31, 31371), (33, 31380), (34, 31386), (36, 31425), (40, 31488),

Gene: Phorgeous\_44 Start: 31216, Stop: 31638, Start Num: 8

Candidate Starts for Phorgeous\_44:

(Start: 8 @31216 has 46 MA's), (Start: 11 @31225 has 1 MA's), (Start: 17 @31261 has 1 MA's), (26, 31435), (27, 31450), (31, 31483), (33, 31492), (34, 31498), (36, 31537), (40, 31600),

Gene: Phrancesco\_45 Start: 31506, Stop: 31928, Start Num: 8

Candidate Starts for Phrancesco\_45:

(Start: 8 @31506 has 46 MA's), (Start: 11 @31515 has 1 MA's), (Start: 17 @31551 has 1 MA's), (26, 31725), (27, 31740), (31, 31773), (33, 31782), (34, 31788), (36, 31827), (40, 31890),

Gene: PierreOrion\_45 Start: 31520, Stop: 31942, Start Num: 8

Candidate Starts for PierreOrion\_45:

(Start: 8 @31520 has 46 MA's), (Start: 11 @31529 has 1 MA's), (Start: 17 @31565 has 1 MA's), (26, 31739), (27, 31754), (31, 31787), (33, 31796), (34, 31802), (36, 31841), (40, 31904),

Gene: PiperSansNom\_45 Start: 31660, Stop: 32082, Start Num: 8

Candidate Starts for PiperSansNom\_45:

(Start: 8 @31660 has 46 MA's), (Start: 11 @31669 has 1 MA's), (Start: 17 @31705 has 1 MA's), (26, 31879), (27, 31894), (31, 31927), (33, 31936), (34, 31942), (36, 31981), (40, 32044),

Gene: Piperis\_45 Start: 31339, Stop: 31761, Start Num: 8

Candidate Starts for Piperis\_45:

(Start: 8 @31339 has 46 MA's), (Start: 11 @31348 has 1 MA's), (Start: 17 @31384 has 1 MA's), (26, 31558), (27, 31573), (31, 31606), (33, 31615), (34, 31621), (36, 31660),

Gene: Pulchra\_46 Start: 31736, Stop: 32158, Start Num: 8  
Candidate Starts for Pulchra\_46:  
(Start: 8 @31736 has 46 MA's), (Start: 11 @31745 has 1 MA's), (Start: 17 @31781 has 1 MA's), (26, 31955), (27, 31970), (31, 32003), (33, 32012), (34, 32018), (36, 32057), (40, 32120),

Gene: Quhwah\_48 Start: 31968, Stop: 32390, Start Num: 8  
Candidate Starts for Quhwah\_48:  
(Start: 8 @31968 has 46 MA's), (Start: 11 @31977 has 1 MA's), (Start: 17 @32013 has 1 MA's), (26, 32187), (27, 32202), (31, 32235), (33, 32244), (34, 32250), (40, 32352),

Gene: Ramiel05\_44 Start: 31371, Stop: 31793, Start Num: 8  
Candidate Starts for Ramiel05\_44:  
(4, 31323), (Start: 8 @31371 has 46 MA's), (Start: 11 @31380 has 1 MA's), (Start: 17 @31416 has 1 MA's), (26, 31590), (27, 31605), (31, 31638), (33, 31647), (34, 31653), (36, 31692), (40, 31755),

Gene: RobsFeet\_47 Start: 32413, Stop: 32832, Start Num: 9  
Candidate Starts for RobsFeet\_47:  
(Start: 8 @32410 has 46 MA's), (Start: 9 @32413 has 1 MA's), (Start: 17 @32455 has 1 MA's), (27, 32644), (29, 32665),

Gene: Rockwell\_44 Start: 31371, Stop: 31793, Start Num: 8  
Candidate Starts for Rockwell\_44:  
(Start: 8 @31371 has 46 MA's), (Start: 11 @31380 has 1 MA's), (Start: 17 @31416 has 1 MA's), (26, 31590), (27, 31605), (31, 31638), (33, 31647), (34, 31653), (36, 31692), (40, 31755),

Gene: Savannah\_44 Start: 31398, Stop: 31820, Start Num: 8  
Candidate Starts for Savannah\_44:  
(Start: 8 @31398 has 46 MA's), (Start: 11 @31407 has 1 MA's), (Start: 17 @31443 has 1 MA's), (26, 31617), (27, 31632), (31, 31665), (33, 31674), (34, 31680), (36, 31719), (40, 31782),

Gene: Scumberland\_46 Start: 31593, Stop: 32015, Start Num: 8  
Candidate Starts for Scumberland\_46:  
(Start: 8 @31593 has 46 MA's), (Start: 11 @31602 has 1 MA's), (Start: 17 @31638 has 1 MA's), (26, 31812), (27, 31827), (31, 31860), (33, 31869), (34, 31875), (36, 31914), (40, 31977),

Gene: Selwyn23\_46 Start: 31570, Stop: 31992, Start Num: 8  
Candidate Starts for Selwyn23\_46:  
(Start: 8 @31570 has 46 MA's), (Start: 11 @31579 has 1 MA's), (Start: 17 @31615 has 1 MA's), (26, 31789), (27, 31804), (31, 31837), (33, 31846), (34, 31852), (36, 31891), (40, 31954),

Gene: Shotgun\_44 Start: 31197, Stop: 31619, Start Num: 8  
Candidate Starts for Shotgun\_44:  
(Start: 8 @31197 has 46 MA's), (Start: 11 @31206 has 1 MA's), (Start: 17 @31242 has 1 MA's), (26, 31416), (27, 31431), (31, 31464), (33, 31473), (34, 31479), (36, 31518), (40, 31581),

Gene: Shrubaron\_46 Start: 32044, Stop: 32466, Start Num: 8  
Candidate Starts for Shrubaron\_46:  
(3, 31966), (Start: 8 @32044 has 46 MA's), (Start: 9 @32047 has 1 MA's), (Start: 17 @32089 has 1 MA's), (27, 32278), (29, 32299),

Gene: SirFrank\_44 Start: 31239, Stop: 31661, Start Num: 8  
Candidate Starts for SirFrank\_44:

(Start: 8 @31239 has 46 MA's), (Start: 11 @31248 has 1 MA's), (Start: 17 @31284 has 1 MA's), (26, 31458), (27, 31473), (31, 31506), (33, 31515), (34, 31521), (36, 31560), (40, 31623),

Gene: Skugga\_43 Start: 31010, Stop: 31438, Start Num: 8

Candidate Starts for Skugga\_43:

(2, 30908), (Start: 8 @31010 has 46 MA's), (Start: 11 @31019 has 1 MA's), (Start: 17 @31058 has 1 MA's), (26, 31232), (27, 31247), (33, 31289),

Gene: Smarties\_53 Start: 33197, Stop: 33622, Start Num: 8

Candidate Starts for Smarties\_53:

(2, 33095), (4, 33149), (Start: 8 @33197 has 46 MA's), (Start: 11 @33206 has 1 MA's), (13, 33215), (Start: 17 @33245 has 1 MA's), (26, 33419), (27, 33434), (31, 33467), (33, 33476), (34, 33482), (36, 33521),

Gene: Sunny\_ Start: 32913, Stop: 33338, Start Num: 10

Candidate Starts for Sunny\_:

(Start: 10 @32913 has 3 MA's), (Start: 17 @32955 has 1 MA's), (27, 33144), (41, 33321),

Gene: Teamocil\_46 Start: 31093, Stop: 31521, Start Num: 8

Candidate Starts for Teamocil\_46:

(2, 30991), (5, 31066), (Start: 8 @31093 has 46 MA's), (Start: 11 @31102 has 1 MA's), (Start: 17 @31141 has 1 MA's), (26, 31315), (27, 31330), (33, 31372),

Gene: Terij\_40 Start: 29923, Stop: 30348, Start Num: 8

Candidate Starts for Terij\_40:

(Start: 8 @29923 has 46 MA's), (Start: 11 @29932 has 1 MA's), (13, 29941), (14, 29944), (Start: 17 @29971 has 1 MA's), (26, 30145), (27, 30160), (33, 30202), (34, 30208),

Gene: Tyrumbra\_44 Start: 32255, Stop: 32632, Start Num: 17

Candidate Starts for Tyrumbra\_44:

(Start: 8 @32210 has 46 MA's), (Start: 9 @32213 has 1 MA's), (Start: 17 @32255 has 1 MA's), (27, 32444), (29, 32465),

Gene: Yeti\_45 Start: 31372, Stop: 31794, Start Num: 8

Candidate Starts for Yeti\_45:

(Start: 8 @31372 has 46 MA's), (Start: 11 @31381 has 1 MA's), (Start: 17 @31417 has 1 MA's), (26, 31591), (27, 31606), (31, 31639), (33, 31648), (34, 31654), (36, 31693),

Gene: Zapato\_44 Start: 31522, Stop: 31941, Start Num: 8

Candidate Starts for Zapato\_44:

(Start: 8 @31522 has 46 MA's), (Start: 9 @31525 has 1 MA's), (Start: 17 @31564 has 1 MA's), (26, 31738), (27, 31753), (29, 31774), (33, 31795),