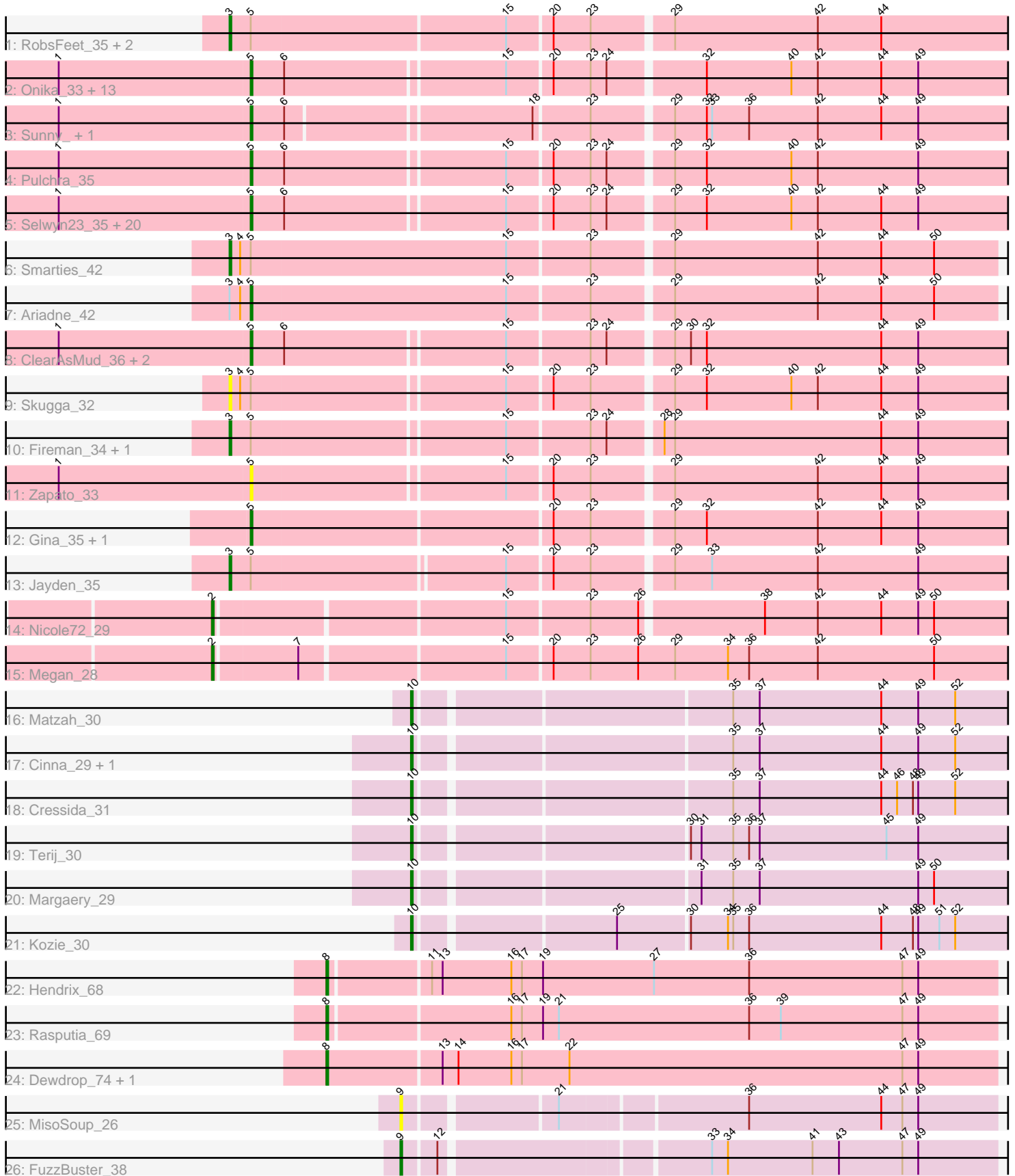


Pham 311567



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 311567 Report

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

Pham number 311567 has 68 members, 7 are drafts.

Phages represented in each track:

- Track 1 : RobsFeet\_35, Shrubaron\_34, Metamorphoo\_34
- Track 2 : Onika\_33, Scumberland\_35, Ramiel05\_33, Lucretia\_34, Antares\_34, Kowalski\_33, Phrancesco\_34, Ganandorf\_33, CrazyRich\_33, PhedwardCullen\_33, Savannah\_33, BeagleBug\_33, Busephilis\_33, Hermeonysus\_33
- Track 3 : Sunny\_, Merry\_
- Track 4 : Pulchra\_35
- Track 5 : Selwyn23\_35, Yeti\_34, Piperis\_34, Cranjis\_35, Glorp\_35, Honeyfin\_35, Jollipop\_34, PiperSansNom\_34, EarickHC\_34, Germa\_35, KaiHaiDragon\_34, Paschalis\_33, PierreOrion\_34, Rockwell\_33, Shotgun\_33, LittleFortune\_35, Jefe\_34, Quhwah\_37, Phorgeous\_33, BrazzalePHS\_33, Crisis\_35
- Track 6 : Smarties\_42
- Track 7 : Ariadne\_42
- Track 8 : ClearAsMud\_36, NoodlelyBoi\_34, SirFrank\_33
- Track 9 : Skugga\_32
- Track 10 : Fireman\_34, Tyrumbra\_32
- Track 11 : Zapato\_33
- Track 12 : Gina\_35, Teamocil\_35
- Track 13 : Jayden\_35
- Track 14 : Nicole72\_29
- Track 15 : Megan\_28
- Track 16 : Matzah\_30
- Track 17 : Cinna\_29, MementoMori\_30
- Track 18 : Cressida\_31
- Track 19 : Terij\_30
- Track 20 : Margaery\_29
- Track 21 : Kozie\_30
- Track 22 : Hendrix\_68
- Track 23 : Rasputia\_69
- Track 24 : Dewdrop\_74, Leaf\_74
- Track 25 : MisoSoup\_26
- Track 26 : FuzzBuster\_38

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

The start number called the most often in the published annotations is 5, it was called in 40 of the 61 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Antares\_34, Ariadne\_42, BeagleBug\_33, BrazzalePHS\_33, Busephilis\_33, ClearAsMud\_36, Cranjis\_35, CrazyRich\_33, Crisis\_35, EarickHC\_34, Ganandorf\_33, Germa\_35, Gina\_35, Glorp\_35, Hermeonysus\_33, Honeyfin\_35, Jefe\_34, Jollipop\_34, KaiHaiDragon\_34, Kowalski\_33, LittleFortune\_35, Lucretia\_34, Merry\_, NoodlelyBoi\_34, Onika\_33, Paschalis\_33, PhedwardCullen\_33, Phorgeous\_33, Phrancesco\_34, PierreOrion\_34, PiperSansNom\_34, Piperis\_34, Pulchra\_35, Quhwah\_37, Ramiel05\_33, Rockwell\_33, Savannah\_33, Scumberland\_35, Selwyn23\_35, Shotgun\_33, SirFrank\_33, Sunny\_, Teamocil\_35, Yeti\_34, Zapato\_33,

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

- Fireman\_34, Jayden\_35, Metamorphoo\_34, RobsFeet\_35, Shrubaron\_34, Skugga\_32, Smarties\_42, Tyumbra\_32,

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

- Cinna\_29, Cressida\_31, Dewdrop\_74, FuzzBuster\_38, Hendrix\_68, Kozi\_30, Leaf\_74, Margaery\_29, Matzah\_30, Megan\_28, MementoMori\_30, MisoSoup\_26, Nicole72\_29, Rasputia\_69, Terij\_30,

### Summary by start number:

Start 2:

- Found in 2 of 68 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 2 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Megan\_28 (EC), Nicole72\_29 (EC),

Start 3:

- Found in 9 of 68 ( 13.2% ) of genes in pham
- Manual Annotations of this start: 7 of 61
- Called 88.9% of time when present
- Phage (with cluster) where this start called: Fireman\_34 (EC), Jayden\_35 (EC), Metamorphoo\_34 (EC), RobsFeet\_35 (EC), Shrubaron\_34 (EC), Skugga\_32 (EC), Smarties\_42 (EC), Tyumbra\_32 (EC),

Start 5:

- Found in 53 of 68 ( 77.9% ) of genes in pham
- Manual Annotations of this start: 40 of 61
- Called 84.9% of time when present
- Phage (with cluster) where this start called: Antares\_34 (EC), Ariadne\_42 (EC), BeagleBug\_33 (EC), BrazzalePHS\_33 (EC), Busephilis\_33 (EC), ClearAsMud\_36 (EC), Cranjis\_35 (EC), CrazyRich\_33 (EC), Crisis\_35 (EC), EarickHC\_34 (EC), Ganandorf\_33 (EC), Germa\_35 (EC), Gina\_35 (EC), Glorp\_35 (EC), Hermeonysus\_33 (EC), Honeyfin\_35 (EC), Jefe\_34 (EC), Jollipop\_34 (EC), KaiHaiDragon\_34 (EC), Kowalski\_33 (EC), LittleFortune\_35 (EC), Lucretia\_34 (EC), Merry\_ (EC), NoodlelyBoi\_34 (EC), Onika\_33 (EC), Paschalis\_33 (EC), PhedwardCullen\_33 (EC), Phorgeous\_33 (EC), Phrancesco\_34 (EC), PierreOrion\_34 (EC), PiperSansNom\_34 (EC), Piperis\_34 (EC), Pulchra\_35 (EC), Quhwah\_37 (EC), Ramiel05\_33 (EC), Rockwell\_33 (EC), Savannah\_33 (EC), Scumberland\_35 (EC), Selwyn23\_35 (EC), Shotgun\_33 (EC), SirFrank\_33 (EC), Sunny\_ (EC), Teamocil\_35

(EC), Yeti\_34 (EC), Zapato\_33 (EC),

Start 8:

- Found in 4 of 68 ( 5.9% ) of genes in pham
- Manual Annotations of this start: 4 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dewdrop\_74 (GC), Hendrix\_68 (GC), Leaf\_74 (GC), Rasputia\_69 (GC),

Start 9:

- Found in 2 of 68 ( 2.9% ) 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: FuzzBuster\_38 (GM), MisoSoup\_26 (GM),

Start 10:

- Found in 7 of 68 ( 10.3% ) of genes in pham
- Manual Annotations of this start: 7 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cinna\_29 (EI), Cressida\_31 (EI), Kozie\_30 (EI), Margaery\_29 (EI), Matzah\_30 (EI), MementoMori\_30 (EI), Terij\_30 (EI),

### **Summary by clusters:**

There are 4 clusters represented in this pham: GC, GM, EI, EC,

Info for manual annotations of cluster EC:

- Start number 2 was manually annotated 2 times for cluster EC.
- Start number 3 was manually annotated 7 times for cluster EC.
- Start number 5 was manually annotated 40 times for cluster EC.

Info for manual annotations of cluster EI:

- Start number 10 was manually annotated 7 times for cluster EI.

Info for manual annotations of cluster GC:

- Start number 8 was manually annotated 4 times for cluster GC.

Info for manual annotations of cluster GM:

- Start number 9 was manually annotated 1 time for cluster GM.

### **Gene Information:**

Gene: Antares\_34 Start: 20033, Stop: 20461, Start Num: 5

Candidate Starts for Antares\_34:

(1, 19925), (Start: 5 @20033 has 40 MA's), (6, 20051), (15, 20171), (20, 20195), (23, 20216), (24, 20225), (32, 20276), (40, 20324), (42, 20339), (44, 20375), (49, 20396),

Gene: Ariadne\_42 Start: 21727, Stop: 22140, Start Num: 5

Candidate Starts for Ariadne\_42:

(Start: 3 @21715 has 7 MA's), (4, 21721), (Start: 5 @21727 has 40 MA's), (15, 21871), (23, 21916), (29, 21958), (42, 22039), (44, 22075), (50, 22105),

Gene: BeagleBug\_33 Start: 19814, Stop: 20242, Start Num: 5

Candidate Starts for BeagleBug\_33:

(1, 19706), (Start: 5 @19814 has 40 MA's), (6, 19832), (15, 19952), (20, 19976), (23, 19997), (24, 20006), (32, 20057), (40, 20105), (42, 20120), (44, 20156), (49, 20177),

Gene: BrazzalePHS\_33 Start: 19828, Stop: 20256, Start Num: 5

Candidate Starts for BrazzalePHS\_33:

(1, 19720), (Start: 5 @19828 has 40 MA's), (6, 19846), (15, 19966), (20, 19990), (23, 20011), (24, 20020), (29, 20053), (32, 20071), (40, 20119), (42, 20134), (44, 20170), (49, 20191),

Gene: Busephilis\_33 Start: 19763, Stop: 20191, Start Num: 5

Candidate Starts for Busephilis\_33:

(1, 19655), (Start: 5 @19763 has 40 MA's), (6, 19781), (15, 19901), (20, 19925), (23, 19946), (24, 19955), (32, 20006), (40, 20054), (42, 20069), (44, 20105), (49, 20126),

Gene: Cinna\_29 Start: 19234, Stop: 19563, Start Num: 10

Candidate Starts for Cinna\_29:

(Start: 10 @19234 has 7 MA's), (35, 19402), (37, 19417), (44, 19486), (49, 19507), (52, 19528),

Gene: ClearAsMud\_36 Start: 20542, Stop: 20970, Start Num: 5

Candidate Starts for ClearAsMud\_36:

(1, 20434), (Start: 5 @20542 has 40 MA's), (6, 20560), (15, 20680), (23, 20725), (24, 20734), (29, 20767), (30, 20776), (32, 20785), (44, 20884), (49, 20905),

Gene: Cranjis\_35 Start: 19988, Stop: 20416, Start Num: 5

Candidate Starts for Cranjis\_35:

(1, 19880), (Start: 5 @19988 has 40 MA's), (6, 20006), (15, 20126), (20, 20150), (23, 20171), (24, 20180), (29, 20213), (32, 20231), (40, 20279), (42, 20294), (44, 20330), (49, 20351),

Gene: CrazyRich\_33 Start: 19797, Stop: 20225, Start Num: 5

Candidate Starts for CrazyRich\_33:

(1, 19689), (Start: 5 @19797 has 40 MA's), (6, 19815), (15, 19935), (20, 19959), (23, 19980), (24, 19989), (32, 20040), (40, 20088), (42, 20103), (44, 20139), (49, 20160),

Gene: Cressida\_31 Start: 19293, Stop: 19622, Start Num: 10

Candidate Starts for Cressida\_31:

(Start: 10 @19293 has 7 MA's), (35, 19461), (37, 19476), (44, 19545), (46, 19554), (48, 19563), (49, 19566), (52, 19587),

Gene: Crisis\_35 Start: 19782, Stop: 20210, Start Num: 5

Candidate Starts for Crisis\_35:

(1, 19674), (Start: 5 @19782 has 40 MA's), (6, 19800), (15, 19920), (20, 19944), (23, 19965), (24, 19974), (29, 20007), (32, 20025), (40, 20073), (42, 20088), (44, 20124), (49, 20145),

Gene: Dewdrop\_74 Start: 40299, Stop: 40676, Start Num: 8

Candidate Starts for Dewdrop\_74:

(Start: 8 @40299 has 4 MA's), (13, 40362), (14, 40371), (16, 40401), (17, 40407), (22, 40434), (47, 40623), (49, 40632),

Gene: EarickHC\_34 Start: 19708, Stop: 20136, Start Num: 5

Candidate Starts for EarickHC\_34:

(1, 19600), (Start: 5 @19708 has 40 MA's), (6, 19726), (15, 19846), (20, 19870), (23, 19891), (24, 19900), (29, 19933), (32, 19951), (40, 19999), (42, 20014), (44, 20050), (49, 20071),

Gene: Fireman\_34 Start: 19587, Stop: 20027, Start Num: 3

Candidate Starts for Fireman\_34:

(Start: 3 @19587 has 7 MA's), (Start: 5 @19599 has 40 MA's), (15, 19737), (23, 19782), (24, 19791), (28, 19818), (29, 19824), (44, 19941), (49, 19962),

Gene: FuzzBuster\_38 Start: 19953, Stop: 20273, Start Num: 9

Candidate Starts for FuzzBuster\_38:

(Start: 9 @19953 has 1 MA's), (12, 19971), (33, 20112), (34, 20121), (41, 20169), (43, 20184), (47, 20220), (49, 20229),

Gene: Ganandorf\_33 Start: 19844, Stop: 20272, Start Num: 5

Candidate Starts for Ganandorf\_33:

(1, 19736), (Start: 5 @19844 has 40 MA's), (6, 19862), (15, 19982), (20, 20006), (23, 20027), (24, 20036), (32, 20087), (40, 20135), (42, 20150), (44, 20186), (49, 20207),

Gene: Germa\_35 Start: 19673, Stop: 20101, Start Num: 5

Candidate Starts for Germa\_35:

(1, 19565), (Start: 5 @19673 has 40 MA's), (6, 19691), (15, 19811), (20, 19835), (23, 19856), (24, 19865), (29, 19898), (32, 19916), (40, 19964), (42, 19979), (44, 20015), (49, 20036),

Gene: Gina\_35 Start: 19622, Stop: 20053, Start Num: 5

Candidate Starts for Gina\_35:

(Start: 5 @19622 has 40 MA's), (20, 19787), (23, 19808), (29, 19850), (32, 19868), (42, 19931), (44, 19967), (49, 19988),

Gene: Glorp\_35 Start: 19845, Stop: 20273, Start Num: 5

Candidate Starts for Glorp\_35:

(1, 19737), (Start: 5 @19845 has 40 MA's), (6, 19863), (15, 19983), (20, 20007), (23, 20028), (24, 20037), (29, 20070), (32, 20088), (40, 20136), (42, 20151), (44, 20187), (49, 20208),

Gene: Hendrix\_68 Start: 39565, Stop: 39939, Start Num: 8

Candidate Starts for Hendrix\_68:

(Start: 8 @39565 has 4 MA's), (11, 39619), (13, 39625), (16, 39664), (17, 39670), (19, 39682), (27, 39745), (36, 39799), (47, 39886), (49, 39895),

Gene: Hermeonysus\_33 Start: 19717, Stop: 20145, Start Num: 5

Candidate Starts for Hermeonysus\_33:

(1, 19609), (Start: 5 @19717 has 40 MA's), (6, 19735), (15, 19855), (20, 19879), (23, 19900), (24, 19909), (32, 19960), (40, 20008), (42, 20023), (44, 20059), (49, 20080),

Gene: Honeyfin\_35 Start: 20032, Stop: 20460, Start Num: 5

Candidate Starts for Honeyfin\_35:

(1, 19924), (Start: 5 @20032 has 40 MA's), (6, 20050), (15, 20170), (20, 20194), (23, 20215), (24, 20224), (29, 20257), (32, 20275), (40, 20323), (42, 20338), (44, 20374), (49, 20395),

Gene: Jayden\_35 Start: 19763, Stop: 20203, Start Num: 3

Candidate Starts for Jayden\_35:

(Start: 3 @19763 has 7 MA's), (Start: 5 @19775 has 40 MA's), (15, 19913), (20, 19937), (23, 19958), (29, 20000), (33, 20021), (42, 20081), (49, 20138),

Gene: Jefe\_34 Start: 19769, Stop: 20197, Start Num: 5

Candidate Starts for Jefe\_34:

(1, 19661), (Start: 5 @19769 has 40 MA's), (6, 19787), (15, 19907), (20, 19931), (23, 19952), (24, 19961), (29, 19994), (32, 20012), (40, 20060), (42, 20075), (44, 20111), (49, 20132),

Gene: Jollipop\_34 Start: 20114, Stop: 20542, Start Num: 5

Candidate Starts for Jollipop\_34:

(1, 20006), (Start: 5 @20114 has 40 MA's), (6, 20132), (15, 20252), (20, 20276), (23, 20297), (24, 20306), (29, 20339), (32, 20357), (40, 20405), (42, 20420), (44, 20456), (49, 20477),

Gene: KaiHaiDragon\_34 Start: 19708, Stop: 20136, Start Num: 5

Candidate Starts for KaiHaiDragon\_34:

(1, 19600), (Start: 5 @19708 has 40 MA's), (6, 19726), (15, 19846), (20, 19870), (23, 19891), (24, 19900), (29, 19933), (32, 19951), (40, 19999), (42, 20014), (44, 20050), (49, 20071),

Gene: Kowalski\_33 Start: 19824, Stop: 20252, Start Num: 5

Candidate Starts for Kowalski\_33:

(1, 19716), (Start: 5 @19824 has 40 MA's), (6, 19842), (15, 19962), (20, 19986), (23, 20007), (24, 20016), (32, 20067), (40, 20115), (42, 20130), (44, 20166), (49, 20187),

Gene: Kozie\_30 Start: 19523, Stop: 19852, Start Num: 10

Candidate Starts for Kozie\_30:

(Start: 10 @19523 has 7 MA's), (25, 19628), (30, 19667), (34, 19688), (35, 19691), (36, 19700), (44, 19775), (48, 19793), (49, 19796), (51, 19808), (52, 19817),

Gene: Leaf\_74 Start: 40299, Stop: 40676, Start Num: 8

Candidate Starts for Leaf\_74:

(Start: 8 @40299 has 4 MA's), (13, 40362), (14, 40371), (16, 40401), (17, 40407), (22, 40434), (47, 40623), (49, 40632),

Gene: LittleFortune\_35 Start: 20074, Stop: 20502, Start Num: 5

Candidate Starts for LittleFortune\_35:

(1, 19966), (Start: 5 @20074 has 40 MA's), (6, 20092), (15, 20212), (20, 20236), (23, 20257), (24, 20266), (29, 20299), (32, 20317), (40, 20365), (42, 20380), (44, 20416), (49, 20437),

Gene: Lucretia\_34 Start: 19761, Stop: 20189, Start Num: 5

Candidate Starts for Lucretia\_34:

(1, 19653), (Start: 5 @19761 has 40 MA's), (6, 19779), (15, 19899), (20, 19923), (23, 19944), (24, 19953), (32, 20004), (40, 20052), (42, 20067), (44, 20103), (49, 20124),

Gene: Margaery\_29 Start: 19175, Stop: 19504, Start Num: 10

Candidate Starts for Margaery\_29:

(Start: 10 @19175 has 7 MA's), (31, 19325), (35, 19343), (37, 19358), (49, 19448), (50, 19457),

Gene: Matzah\_30 Start: 19210, Stop: 19539, Start Num: 10

Candidate Starts for Matzah\_30:

(Start: 10 @19210 has 7 MA's), (35, 19378), (37, 19393), (44, 19462), (49, 19483), (52, 19504),

Gene: Megan\_28 Start: 21122, Stop: 21574, Start Num: 2

Candidate Starts for Megan\_28:

(Start: 2 @21122 has 2 MA's), (7, 21167), (15, 21278), (20, 21302), (23, 21323), (26, 21350), (29, 21371), (34, 21401), (36, 21413), (42, 21452), (50, 21518),

Gene: MementoMori\_30 Start: 18940, Stop: 19269, Start Num: 10  
Candidate Starts for MementoMori\_30:  
(Start: 10 @18940 has 7 MA's), (35, 19108), (37, 19123), (44, 19192), (49, 19213), (52, 19234),

Gene: Merry\_ Start: 21887, Stop: 22312, Start Num: 5  
Candidate Starts for Merry\_:  
(1, 21779), (Start: 5 @21887 has 40 MA's), (6, 21905), (18, 22037), (23, 22067), (29, 22109), (32, 22127), (33, 22130), (36, 22151), (42, 22190), (44, 22226), (49, 22247),

Gene: Metamorphoo\_34 Start: 19612, Stop: 20055, Start Num: 3  
Candidate Starts for Metamorphoo\_34:  
(Start: 3 @19612 has 7 MA's), (Start: 5 @19624 has 40 MA's), (15, 19765), (20, 19789), (23, 19810), (29, 19852), (42, 19933), (44, 19969),

Gene: MisoSoup\_26 Start: 16315, Stop: 16632, Start Num: 9  
Candidate Starts for MisoSoup\_26:  
(Start: 9 @16315 has 1 MA's), (21, 16393), (36, 16492), (44, 16567), (47, 16579), (49, 16588),

Gene: Nicole72\_29 Start: 21490, Stop: 21936, Start Num: 2  
Candidate Starts for Nicole72\_29:  
(Start: 2 @21490 has 2 MA's), (15, 21646), (23, 21691), (26, 21718), (38, 21784), (42, 21814), (44, 21850), (49, 21871), (50, 21880),

Gene: NoodlelyBoi\_34 Start: 20152, Stop: 20580, Start Num: 5  
Candidate Starts for NoodlelyBoi\_34:  
(1, 20044), (Start: 5 @20152 has 40 MA's), (6, 20170), (15, 20290), (23, 20335), (24, 20344), (29, 20377), (30, 20386), (32, 20395), (44, 20494), (49, 20515),

Gene: Onika\_33 Start: 19799, Stop: 20227, Start Num: 5  
Candidate Starts for Onika\_33:  
(1, 19691), (Start: 5 @19799 has 40 MA's), (6, 19817), (15, 19937), (20, 19961), (23, 19982), (24, 19991), (32, 20042), (40, 20090), (42, 20105), (44, 20141), (49, 20162),

Gene: Paschalis\_33 Start: 19812, Stop: 20240, Start Num: 5  
Candidate Starts for Paschalis\_33:  
(1, 19704), (Start: 5 @19812 has 40 MA's), (6, 19830), (15, 19950), (20, 19974), (23, 19995), (24, 20004), (29, 20037), (32, 20055), (40, 20103), (42, 20118), (44, 20154), (49, 20175),

Gene: PhedwardCullen\_33 Start: 19557, Stop: 19985, Start Num: 5  
Candidate Starts for PhedwardCullen\_33:  
(1, 19449), (Start: 5 @19557 has 40 MA's), (6, 19575), (15, 19695), (20, 19719), (23, 19740), (24, 19749), (32, 19800), (40, 19848), (42, 19863), (44, 19899), (49, 19920),

Gene: Phorgeous\_33 Start: 19666, Stop: 20094, Start Num: 5  
Candidate Starts for Phorgeous\_33:  
(1, 19558), (Start: 5 @19666 has 40 MA's), (6, 19684), (15, 19804), (20, 19828), (23, 19849), (24, 19858), (29, 19891), (32, 19909), (40, 19957), (42, 19972), (44, 20008), (49, 20029),

Gene: Phrancesco\_34 Start: 19944, Stop: 20372, Start Num: 5  
Candidate Starts for Phrancesco\_34:  
(1, 19836), (Start: 5 @19944 has 40 MA's), (6, 19962), (15, 20082), (20, 20106), (23, 20127), (24, 20136), (32, 20187), (40, 20235), (42, 20250), (44, 20286), (49, 20307),

Gene: PierreOrion\_34 Start: 19967, Stop: 20395, Start Num: 5

Candidate Starts for PierreOrion\_34:

(1, 19859), (Start: 5 @19967 has 40 MA's), (6, 19985), (15, 20105), (20, 20129), (23, 20150), (24, 20159), (29, 20192), (32, 20210), (40, 20258), (42, 20273), (44, 20309), (49, 20330),

Gene: PiperSansNom\_34 Start: 20119, Stop: 20547, Start Num: 5

Candidate Starts for PiperSansNom\_34:

(1, 20011), (Start: 5 @20119 has 40 MA's), (6, 20137), (15, 20257), (20, 20281), (23, 20302), (24, 20311), (29, 20344), (32, 20362), (40, 20410), (42, 20425), (44, 20461), (49, 20482),

Gene: Piperis\_34 Start: 19789, Stop: 20217, Start Num: 5

Candidate Starts for Piperis\_34:

(1, 19681), (Start: 5 @19789 has 40 MA's), (6, 19807), (15, 19927), (20, 19951), (23, 19972), (24, 19981), (29, 20014), (32, 20032), (40, 20080), (42, 20095), (44, 20131), (49, 20152),

Gene: Pulchra\_35 Start: 20189, Stop: 20617, Start Num: 5

Candidate Starts for Pulchra\_35:

(1, 20081), (Start: 5 @20189 has 40 MA's), (6, 20207), (15, 20327), (20, 20351), (23, 20372), (24, 20381), (29, 20414), (32, 20432), (40, 20480), (42, 20495), (49, 20552),

Gene: Quhwah\_37 Start: 20415, Stop: 20843, Start Num: 5

Candidate Starts for Quhwah\_37:

(1, 20307), (Start: 5 @20415 has 40 MA's), (6, 20433), (15, 20553), (20, 20577), (23, 20598), (24, 20607), (29, 20640), (32, 20658), (40, 20706), (42, 20721), (44, 20757), (49, 20778),

Gene: Ramiel05\_33 Start: 19824, Stop: 20252, Start Num: 5

Candidate Starts for Ramiel05\_33:

(1, 19716), (Start: 5 @19824 has 40 MA's), (6, 19842), (15, 19962), (20, 19986), (23, 20007), (24, 20016), (32, 20067), (40, 20115), (42, 20130), (44, 20166), (49, 20187),

Gene: Rasputia\_69 Start: 39531, Stop: 39905, Start Num: 8

Candidate Starts for Rasputia\_69:

(Start: 8 @39531 has 4 MA's), (16, 39630), (17, 39636), (19, 39648), (21, 39657), (36, 39765), (39, 39783), (47, 39852), (49, 39861),

Gene: RobsFeet\_35 Start: 19893, Stop: 20336, Start Num: 3

Candidate Starts for RobsFeet\_35:

(Start: 3 @19893 has 7 MA's), (Start: 5 @19905 has 40 MA's), (15, 20046), (20, 20070), (23, 20091), (29, 20133), (42, 20214), (44, 20250),

Gene: Rockwell\_33 Start: 19824, Stop: 20252, Start Num: 5

Candidate Starts for Rockwell\_33:

(1, 19716), (Start: 5 @19824 has 40 MA's), (6, 19842), (15, 19962), (20, 19986), (23, 20007), (24, 20016), (29, 20049), (32, 20067), (40, 20115), (42, 20130), (44, 20166), (49, 20187),

Gene: Savannah\_33 Start: 19851, Stop: 20279, Start Num: 5

Candidate Starts for Savannah\_33:

(1, 19743), (Start: 5 @19851 has 40 MA's), (6, 19869), (15, 19989), (20, 20013), (23, 20034), (24, 20043), (32, 20094), (40, 20142), (42, 20157), (44, 20193), (49, 20214),

Gene: Scumberland\_35 Start: 20040, Stop: 20468, Start Num: 5

Candidate Starts for Scumberland\_35:

(1, 19932), (Start: 5 @20040 has 40 MA's), (6, 20058), (15, 20178), (20, 20202), (23, 20223), (24, 20232), (32, 20283), (40, 20331), (42, 20346), (44, 20382), (49, 20403),

Gene: Selwyn23\_35 Start: 20017, Stop: 20445, Start Num: 5

Candidate Starts for Selwyn23\_35:

(1, 19909), (Start: 5 @20017 has 40 MA's), (6, 20035), (15, 20155), (20, 20179), (23, 20200), (24, 20209), (29, 20242), (32, 20260), (40, 20308), (42, 20323), (44, 20359), (49, 20380),

Gene: Shotgun\_33 Start: 19650, Stop: 20078, Start Num: 5

Candidate Starts for Shotgun\_33:

(1, 19542), (Start: 5 @19650 has 40 MA's), (6, 19668), (15, 19788), (20, 19812), (23, 19833), (24, 19842), (29, 19875), (32, 19893), (40, 19941), (42, 19956), (44, 19992), (49, 20013),

Gene: Shrubaron\_34 Start: 19527, Stop: 19970, Start Num: 3

Candidate Starts for Shrubaron\_34:

(Start: 3 @19527 has 7 MA's), (Start: 5 @19539 has 40 MA's), (15, 19680), (20, 19704), (23, 19725), (29, 19767), (42, 19848), (44, 19884),

Gene: SirFrank\_33 Start: 19752, Stop: 20180, Start Num: 5

Candidate Starts for SirFrank\_33:

(1, 19644), (Start: 5 @19752 has 40 MA's), (6, 19770), (15, 19890), (23, 19935), (24, 19944), (29, 19977), (30, 19986), (32, 19995), (44, 20094), (49, 20115),

Gene: Skugga\_32 Start: 19629, Stop: 20069, Start Num: 3

Candidate Starts for Skugga\_32:

(Start: 3 @19629 has 7 MA's), (4, 19635), (Start: 5 @19641 has 40 MA's), (15, 19779), (20, 19803), (23, 19824), (29, 19866), (32, 19884), (40, 19932), (42, 19947), (44, 19983), (49, 20004),

Gene: Smarties\_42 Start: 21715, Stop: 22140, Start Num: 3

Candidate Starts for Smarties\_42:

(Start: 3 @21715 has 7 MA's), (4, 21721), (Start: 5 @21727 has 40 MA's), (15, 21871), (23, 21916), (29, 21958), (42, 22039), (44, 22075), (50, 22105),

Gene: Sunny\_ Start: 21889, Stop: 22314, Start Num: 5

Candidate Starts for Sunny\_:

(1, 21781), (Start: 5 @21889 has 40 MA's), (6, 21907), (18, 22039), (23, 22069), (29, 22111), (32, 22129), (33, 22132), (36, 22153), (42, 22192), (44, 22228), (49, 22249),

Gene: Teamocil\_35 Start: 19721, Stop: 20152, Start Num: 5

Candidate Starts for Teamocil\_35:

(Start: 5 @19721 has 40 MA's), (20, 19886), (23, 19907), (29, 19949), (32, 19967), (42, 20030), (44, 20066), (49, 20087),

Gene: Terij\_30 Start: 19256, Stop: 19585, Start Num: 10

Candidate Starts for Terij\_30:

(Start: 10 @19256 has 7 MA's), (30, 19400), (31, 19406), (35, 19424), (36, 19433), (37, 19439), (45, 19511), (49, 19529),

Gene: Tyrumbra\_32 Start: 18930, Stop: 19370, Start Num: 3

Candidate Starts for Tyrumbra\_32:

(Start: 3 @18930 has 7 MA's), (Start: 5 @18942 has 40 MA's), (15, 19080), (23, 19125), (24, 19134), (28, 19161), (29, 19167), (44, 19284), (49, 19305),

Gene: Yeti\_34 Start: 19819, Stop: 20247, Start Num: 5

Candidate Starts for Yeti\_34:

(1, 19711), (Start: 5 @19819 has 40 MA's), (6, 19837), (15, 19957), (20, 19981), (23, 20002), (24, 20011), (29, 20044), (32, 20062), (40, 20110), (42, 20125), (44, 20161), (49, 20182),

Gene: Zapato\_33 Start: 19664, Stop: 20092, Start Num: 5

Candidate Starts for Zapato\_33:

(1, 19556), (Start: 5 @19664 has 40 MA's), (15, 19802), (20, 19826), (23, 19847), (29, 19889), (42, 19970), (44, 20006), (49, 20027),