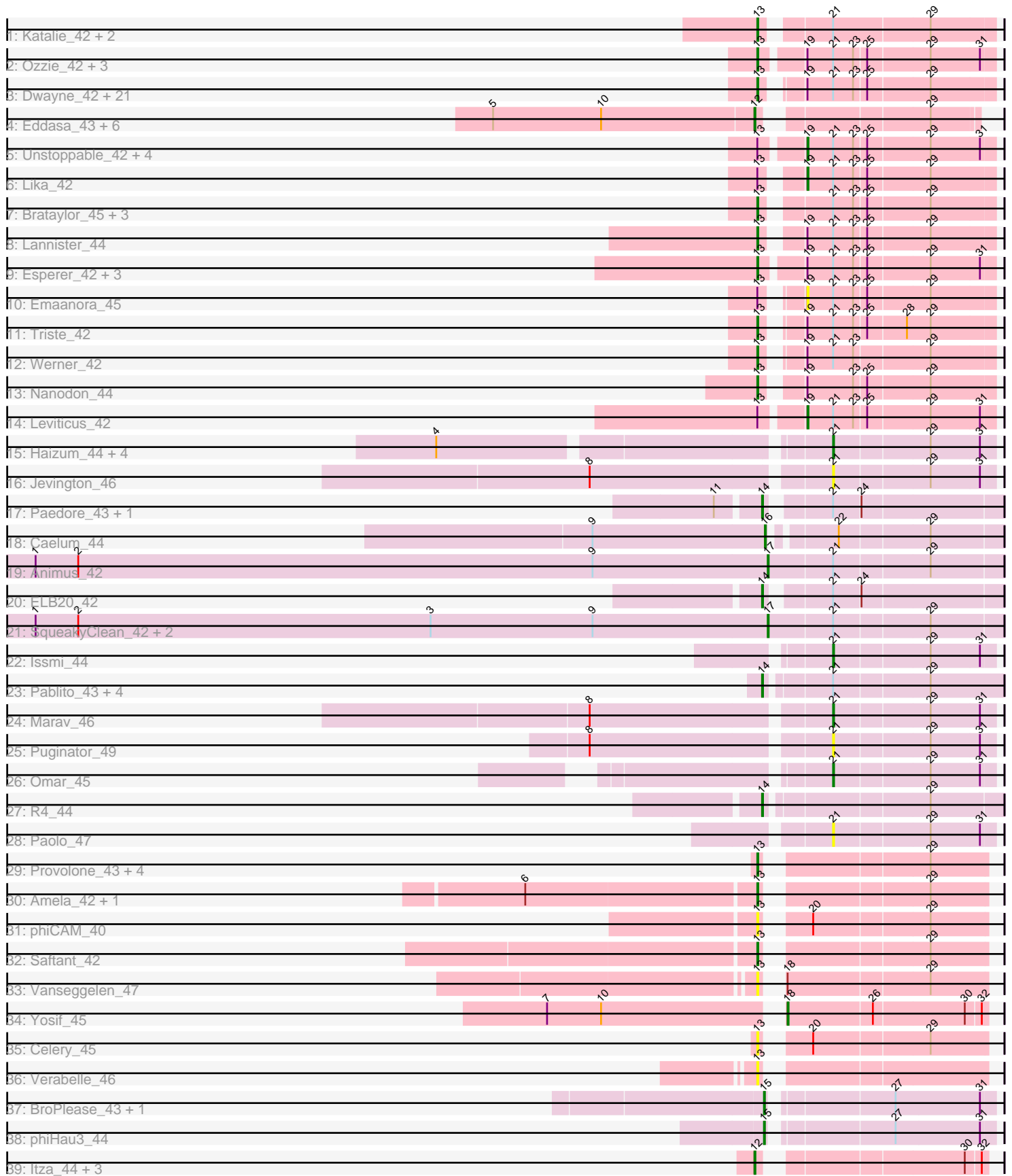


# Pham 85306



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 85306 Report

This analysis was run 04/28/24 on database version 559.

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 85306 has 101 members, 14 are drafts.

Phages represented in each track:

- Track 1 : Katalie\_42, RedBear\_43, South40\_42
- Track 2 : Ozzie\_42, Indigo\_41, BeardedLady\_43, Nerdos\_41
- Track 3 : Dwayne\_42, Rana\_43, Ejemplo\_41, Sujidade\_43, Maneekul\_42, Asten\_42, Yasdnil\_42, Toma\_42, Whatever\_42, Dattran\_44, OzzyJ\_43, Hippo\_42, Goby\_42, Nabi\_43, BarryBee\_45, Chucky\_42, SarahRose\_42, TuanPN\_41, TagePhighter\_44, Godpower\_43, Snorlax\_42, Lorelei\_43
- Track 4 : Eddasa\_43, Jash\_43, Izzy\_43, BryanRecycles\_43, EnochSoames\_45, Rusticus\_43, Oliynyk\_43
- Track 5 : Unstoppable\_42, Legacy\_42, SunsetPointe\_42, Caliburn\_42, Hydra\_44
- Track 6 : Lika\_42
- Track 7 : Brataylor\_45, Danzina\_44, Celeste\_43, Zemlya\_44
- Track 8 : Lannister\_44
- Track 9 : Esperer\_42, Phettuccine\_42, Aaronocolus\_42, Bovely\_42
- Track 10 : Emaanora\_45
- Track 11 : Triste\_42
- Track 12 : Werner\_42
- Track 13 : Nanodon\_44
- Track 14 : Leviticus\_42
- Track 15 : Haizum\_44, Tefunt\_44, Amethyst\_42, Nishikigoi\_44, Diane\_42
- Track 16 : Jevington\_46
- Track 17 : Paedore\_43, Loofah\_44
- Track 18 : Caelum\_44
- Track 19 : Animus\_42
- Track 20 : ELB20\_42
- Track 21 : SqueakyClean\_42, GirlDinner\_44, Janus\_43
- Track 22 : Issmi\_44
- Track 23 : Pablito\_43, Superstar\_47, Andris\_43, Hank144\_45, Triumph\_45
- Track 24 : Marav\_46
- Track 25 : Puginator\_49
- Track 26 : Omar\_45
- Track 27 : R4\_44
- Track 28 : Paolo\_47
- Track 29 : Provolone\_43, Alsaber\_43, Dexers\_41, Conan\_45, ElGato\_43

- Track 30 : Amela\_42, Verse\_42
- Track 31 : phiCAM\_40
- Track 32 : Saftant\_42
- Track 33 : Vanseggelen\_47
- Track 34 : Yosif\_45
- Track 35 : Celery\_45
- Track 36 : Verabelle\_46
- Track 37 : BroPlease\_43, GreenWeasel\_44
- Track 38 : phiHau3\_44
- Track 39 : Itza\_44, Celia\_44, Urza\_44, VieEnRose\_44

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

The start number called the most often in the published annotations is 13, it was called in 47 of the 87 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aaronocolus\_42, Alsaber\_43, Amela\_42, Asten\_42, BarryBee\_45, BeardedLady\_43, Bovely\_42, Brataylor\_45, Celery\_45, Celeste\_43, Chucky\_42, Conan\_45, Danzina\_44, Dattran\_44, Dexers\_41, Dwayne\_42, Ejemplo\_41, ElGato\_43, Esperer\_42, Goby\_42, Godpower\_43, Hippo\_42, Indigo\_41, Katalie\_42, Lannister\_44, Lorelei\_43, Maneekul\_42, Nabi\_43, Nanodon\_44, Nerdos\_41, Ozzie\_42, OzzyJ\_43, Phettuccine\_42, Provolone\_43, Rana\_43, RedBear\_43, Saftant\_42, SarahRose\_42, Snorlax\_42, South40\_42, Sujidade\_43, TagePhigher\_44, Toma\_42, Triste\_42, TuanPN\_41, Vanseggelen\_47, Verabelle\_46, Verse\_42, Werner\_42, Whatever\_42, Yasdnil\_42, Zemlya\_44, phiCAM\_40,

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

- Caliburn\_42, Emaanora\_45, Hydra\_44, Legacy\_42, Leviticus\_42, Lika\_42, SunsetPointe\_42, Unstoppable\_42,

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

- Amethyst\_42, Andris\_43, Animus\_42, BroPlease\_43, BryanRecycles\_43, Caelum\_44, Celia\_44, Diane\_42, ELB20\_42, Eddasa\_43, EnochSoames\_45, GirlDinner\_44, GreenWeasel\_44, Haizum\_44, Hank144\_45, Issmi\_44, Itza\_44, Izzy\_43, Janus\_43, Jash\_43, Jevington\_46, Loofah\_44, Marav\_46, Nishikigoi\_44, Oliynyk\_43, Omar\_45, Pablito\_43, Paedore\_43, Paolo\_47, Puginator\_49, R4\_44, Rusticus\_43, SqueakyClean\_42, Superstar\_47, Tefunt\_44, Triumph\_45, Urza\_44, VieEnRose\_44, Yosif\_45, phiHau3\_44,

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

Start 12:

- Found in 11 of 101 ( 10.9% ) of genes in pham
- Manual Annotations of this start: 10 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BryanRecycles\_43 (BD1), Celia\_44 (BD6), Eddasa\_43 (BD1), EnochSoames\_45 (BD1), Itza\_44 (BD6), Izzy\_43 (BD1), Jash\_43 (BD1), Oliynyk\_43 (BD1), Rusticus\_43 (BD1), Urza\_44 (BD6), VieEnRose\_44 (BD6),

Start 13:

- Found in 61 of 101 ( 60.4% ) of genes in pham
- Manual Annotations of this start: 47 of 87
- Called 86.9% of time when present
- Phage (with cluster) where this start called: Aaronocolus\_42 (BD1), Alsaber\_43 (BD3), Amela\_42 (BD3), Asten\_42 (BD1), BarryBee\_45 (BD1), BeardedLady\_43 (BD1), Bovely\_42 (BD1), Brataylor\_45 (BD1), Celery\_45 (BD3), Celeste\_43 (BD1), Chucky\_42 (BD1), Conan\_45 (BD3), Danzina\_44 (BD1), Dattran\_44 (BD1), Dexters\_41 (BD3), Dwayne\_42 (BD1), Ejemplo\_41 (BD1), ElGato\_43 (BD3), Esperer\_42 (BD1), Goby\_42 (BD1), Godpower\_43 (BD1), Hippo\_42 (BD1), Indigo\_41 (BD1), Katalie\_42 (BD1), Lannister\_44 (BD1), Lorelei\_43 (BD1), Maneekul\_42 (BD1), Nabi\_43 (BD1), Nanodon\_44 (BD1), Nerdos\_41 (BD1), Ozzie\_42 (BD1), OzzyJ\_43 (BD1), Phettuccine\_42 (BD1), Provolone\_43 (BD3), Rana\_43 (BD1), RedBear\_43 (BD1), Saftant\_42 (BD3), SarahRose\_42 (BD1), Snorlax\_42 (BD1), South40\_42 (BD1), Sujidade\_43 (BD1), TagePhighter\_44 (BD1), Toma\_42 (BD1), Triste\_42 (BD1), TuanPN\_41 (BD1), Vanseggelen\_47 (BD3), Verabelle\_46 (BD3), Verse\_42 (BD3), Werner\_42 (BD1), Whatever\_42 (BD1), Yasdnil\_42 (BD1), Zemlya\_44 (BD1), phiCAM\_40 (BD3),

Start 14:

- Found in 9 of 101 ( 8.9% ) of genes in pham
- Manual Annotations of this start: 7 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Andris\_43 (BD2), ELB20\_42 (BD2), Hank144\_45 (BD2), Loofah\_44 (BD2), Pablito\_43 (BD2), Paedore\_43 (BD2), R4\_44 (BD2), Superstar\_47 (BD2), Triumph\_45 (BD2),

Start 15:

- Found in 3 of 101 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 3 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BroPlease\_43 (BD4), GreenWeasel\_44 (BD4), phiHau3\_44 (BD4),

Start 16:

- Found in 1 of 101 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Caelum\_44 (BD2),

Start 17:

- Found in 4 of 101 ( 4.0% ) of genes in pham
- Manual Annotations of this start: 3 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Animus\_42 (BD2), GirlDinner\_44 (BD2), Janus\_43 (BD2), SqueakyClean\_42 (BD2),

Start 18:

- Found in 2 of 101 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 87
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Yosif\_45 (BD3),

Start 19:

- Found in 42 of 101 ( 41.6% ) of genes in pham
- Manual Annotations of this start: 7 of 87
- Called 19.0% of time when present
- Phage (with cluster) where this start called: Caliburn\_42 (BD1), Emaanora\_45 (BD1), Hydra\_44 (BD1), Legacy\_42 (BD1), Leviticus\_42 (BD1), Lika\_42 (BD1), SunsetPointe\_42 (BD1), Unstoppable\_42 (BD1),

Start 21:

- Found in 71 of 101 ( 70.3% ) of genes in pham
- Manual Annotations of this start: 8 of 87
- Called 15.5% of time when present
- Phage (with cluster) where this start called: Amethyst\_42 (BD2), Diane\_42 (BD2), Haizum\_44 (BD2), Issmi\_44 (BD2), Jevington\_46 (BD2), Marav\_46 (BD2), Nishikigoi\_44 (BD2), Omar\_45 (BD2), Paolo\_47 (BD2), Puginator\_49 (BD2), Tefunt\_44 (BD2),

### **Summary by clusters:**

There are 5 clusters represented in this pham: BD4, BD6, BD1, BD3, BD2,

Info for manual annotations of cluster BD1:

- Start number 12 was manually annotated 6 times for cluster BD1.
- Start number 13 was manually annotated 41 times for cluster BD1.
- Start number 19 was manually annotated 7 times for cluster BD1.

Info for manual annotations of cluster BD2:

- Start number 14 was manually annotated 7 times for cluster BD2.
- Start number 16 was manually annotated 1 time for cluster BD2.
- Start number 17 was manually annotated 3 times for cluster BD2.
- Start number 21 was manually annotated 8 times for cluster BD2.

Info for manual annotations of cluster BD3:

- Start number 13 was manually annotated 6 times for cluster BD3.
- Start number 18 was manually annotated 1 time for cluster BD3.

Info for manual annotations of cluster BD4:

- Start number 15 was manually annotated 3 times for cluster BD4.

Info for manual annotations of cluster BD6:

- Start number 12 was manually annotated 4 times for cluster BD6.

### **Gene Information:**

Gene: Aaronocolus\_42 Start: 28993, Stop: 29220, Start Num: 13

Candidate Starts for Aaronocolus\_42:

(Start: 13 @28993 has 47 MA's), (Start: 19 @29032 has 7 MA's), (Start: 21 @29059 has 8 MA's), (23, 29080), (25, 29092), (29, 29155), (31, 29206),

Gene: Alsaber\_43 Start: 30716, Stop: 30925, Start Num: 13

Candidate Starts for Alsaber\_43:  
(Start: 13 @30716 has 47 MA's), (29, 30866),

Gene: Amela\_42 Start: 31517, Stop: 31726, Start Num: 13  
Candidate Starts for Amela\_42:  
(6, 31280), (Start: 13 @31517 has 47 MA's), (29, 31667),

Gene: Amethyst\_42 Start: 29984, Stop: 30145, Start Num: 21  
Candidate Starts for Amethyst\_42:  
(4, 29606), (Start: 21 @29984 has 8 MA's), (29, 30080), (31, 30131),

Gene: Andris\_43 Start: 30186, Stop: 30419, Start Num: 14  
Candidate Starts for Andris\_43:  
(Start: 14 @30186 has 7 MA's), (Start: 21 @30249 has 8 MA's), (29, 30345),

Gene: Animus\_42 Start: 30428, Stop: 30664, Start Num: 17  
Candidate Starts for Animus\_42:  
(1, 29657), (2, 29702), (9, 30245), (Start: 17 @30428 has 3 MA's), (Start: 21 @30494 has 8 MA's),  
(29, 30590),

Gene: Asten\_42 Start: 29340, Stop: 29555, Start Num: 13  
Candidate Starts for Asten\_42:  
(Start: 13 @29340 has 47 MA's), (Start: 19 @29367 has 7 MA's), (Start: 21 @29394 has 8 MA's), (23,  
29415), (25, 29427), (29, 29490),

Gene: BarryBee\_45 Start: 29350, Stop: 29565, Start Num: 13  
Candidate Starts for BarryBee\_45:  
(Start: 13 @29350 has 47 MA's), (Start: 19 @29377 has 7 MA's), (Start: 21 @29404 has 8 MA's), (23,  
29425), (25, 29437), (29, 29500),

Gene: BeardedLady\_43 Start: 29246, Stop: 29473, Start Num: 13  
Candidate Starts for BeardedLady\_43:  
(Start: 13 @29246 has 47 MA's), (Start: 19 @29285 has 7 MA's), (Start: 21 @29312 has 8 MA's), (23,  
29333), (25, 29345), (29, 29408), (31, 29459),

Gene: Bovely\_42 Start: 28999, Stop: 29226, Start Num: 13  
Candidate Starts for Bovely\_42:  
(Start: 13 @28999 has 47 MA's), (Start: 19 @29038 has 7 MA's), (Start: 21 @29065 has 8 MA's), (23,  
29086), (25, 29098), (29, 29161), (31, 29212),

Gene: Brataylor\_45 Start: 30320, Stop: 30538, Start Num: 13  
Candidate Starts for Brataylor\_45:  
(Start: 13 @30320 has 47 MA's), (Start: 21 @30377 has 8 MA's), (23, 30398), (25, 30410), (29,  
30473),

Gene: BroPlease\_43 Start: 29498, Stop: 29713, Start Num: 15  
Candidate Starts for BroPlease\_43:  
(Start: 15 @29498 has 3 MA's), (27, 29612), (31, 29699),

Gene: BryanRecycles\_43 Start: 29344, Stop: 29541, Start Num: 12  
Candidate Starts for BryanRecycles\_43:  
(5, 29071), (10, 29185), (Start: 12 @29344 has 10 MA's), (29, 29494),

Gene: Caelum\_44 Start: 30174, Stop: 30395, Start Num: 16  
Candidate Starts for Caelum\_44:  
(9, 29994), (Start: 16 @30174 has 1 MA's), (22, 30231), (29, 30321),

Gene: Caliburn\_42 Start: 29015, Stop: 29203, Start Num: 19  
Candidate Starts for Caliburn\_42:  
(Start: 13 @28976 has 47 MA's), (Start: 19 @29015 has 7 MA's), (Start: 21 @29042 has 8 MA's), (23, 29063), (25, 29075), (29, 29138), (31, 29189),

Gene: Celery\_45 Start: 30649, Stop: 30858, Start Num: 13  
Candidate Starts for Celery\_45:  
(Start: 13 @30649 has 47 MA's), (20, 30682), (29, 30799),

Gene: Celeste\_43 Start: 29786, Stop: 30004, Start Num: 13  
Candidate Starts for Celeste\_43:  
(Start: 13 @29786 has 47 MA's), (Start: 21 @29843 has 8 MA's), (23, 29864), (25, 29876), (29, 29939),

Gene: Celia\_44 Start: 29974, Stop: 30180, Start Num: 12  
Candidate Starts for Celia\_44:  
(Start: 12 @29974 has 10 MA's), (30, 30160), (32, 30175),

Gene: Chucky\_42 Start: 29354, Stop: 29569, Start Num: 13  
Candidate Starts for Chucky\_42:  
(Start: 13 @29354 has 47 MA's), (Start: 19 @29381 has 7 MA's), (Start: 21 @29408 has 8 MA's), (23, 29429), (25, 29441), (29, 29504),

Gene: Conan\_45 Start: 30610, Stop: 30819, Start Num: 13  
Candidate Starts for Conan\_45:  
(Start: 13 @30610 has 47 MA's), (29, 30760),

Gene: Danzina\_44 Start: 30087, Stop: 30305, Start Num: 13  
Candidate Starts for Danzina\_44:  
(Start: 13 @30087 has 47 MA's), (Start: 21 @30144 has 8 MA's), (23, 30165), (25, 30177), (29, 30240),

Gene: Dattran\_44 Start: 29929, Stop: 30147, Start Num: 13  
Candidate Starts for Dattran\_44:  
(Start: 13 @29929 has 47 MA's), (Start: 19 @29959 has 7 MA's), (Start: 21 @29986 has 8 MA's), (23, 30007), (25, 30019), (29, 30082),

Gene: Dexers\_41 Start: 30634, Stop: 30843, Start Num: 13  
Candidate Starts for Dexers\_41:  
(Start: 13 @30634 has 47 MA's), (29, 30784),

Gene: Diane\_42 Start: 30213, Stop: 30374, Start Num: 21  
Candidate Starts for Diane\_42:  
(4, 29835), (Start: 21 @30213 has 8 MA's), (29, 30309), (31, 30360),

Gene: Dwayne\_42 Start: 29341, Stop: 29556, Start Num: 13  
Candidate Starts for Dwayne\_42:  
(Start: 13 @29341 has 47 MA's), (Start: 19 @29368 has 7 MA's), (Start: 21 @29395 has 8 MA's), (23, 29416), (25, 29428), (29, 29491),

Gene: ELB20\_42 Start: 30794, Stop: 31018, Start Num: 14  
Candidate Starts for ELB20\_42:  
(Start: 14 @30794 has 7 MA's), (Start: 21 @30848 has 8 MA's), (24, 30875),

Gene: Eddasa\_43 Start: 29344, Stop: 29541, Start Num: 12  
Candidate Starts for Eddasa\_43:  
(5, 29071), (10, 29185), (Start: 12 @29344 has 10 MA's), (29, 29494),

Gene: Ejemplo\_41 Start: 29279, Stop: 29497, Start Num: 13  
Candidate Starts for Ejemplo\_41:  
(Start: 13 @29279 has 47 MA's), (Start: 19 @29309 has 7 MA's), (Start: 21 @29336 has 8 MA's), (23, 29357), (25, 29369), (29, 29432),

Gene: ElGato\_43 Start: 30274, Stop: 30483, Start Num: 13  
Candidate Starts for ElGato\_43:  
(Start: 13 @30274 has 47 MA's), (29, 30424),

Gene: Emaanora\_45 Start: 29326, Stop: 29514, Start Num: 19  
Candidate Starts for Emaanora\_45:  
(Start: 13 @29299 has 47 MA's), (Start: 19 @29326 has 7 MA's), (Start: 21 @29353 has 8 MA's), (23, 29374), (25, 29386), (29, 29449),

Gene: EnochSoames\_45 Start: 29339, Stop: 29536, Start Num: 12  
Candidate Starts for EnochSoames\_45:  
(5, 29066), (10, 29180), (Start: 12 @29339 has 10 MA's), (29, 29489),

Gene: Esperer\_42 Start: 28812, Stop: 29039, Start Num: 13  
Candidate Starts for Esperer\_42:  
(Start: 13 @28812 has 47 MA's), (Start: 19 @28851 has 7 MA's), (Start: 21 @28878 has 8 MA's), (23, 28899), (25, 28911), (29, 28974), (31, 29025),

Gene: GirlDinner\_44 Start: 29929, Stop: 30165, Start Num: 17  
Candidate Starts for GirlDinner\_44:  
(1, 29158), (2, 29203), (3, 29575), (9, 29746), (Start: 17 @29929 has 3 MA's), (Start: 21 @29995 has 8 MA's), (29, 30091),

Gene: Goby\_42 Start: 29828, Stop: 30046, Start Num: 13  
Candidate Starts for Goby\_42:  
(Start: 13 @29828 has 47 MA's), (Start: 19 @29858 has 7 MA's), (Start: 21 @29885 has 8 MA's), (23, 29906), (25, 29918), (29, 29981),

Gene: Godpower\_43 Start: 29811, Stop: 30029, Start Num: 13  
Candidate Starts for Godpower\_43:  
(Start: 13 @29811 has 47 MA's), (Start: 19 @29841 has 7 MA's), (Start: 21 @29868 has 8 MA's), (23, 29889), (25, 29901), (29, 29964),

Gene: GreenWeasel\_44 Start: 29505, Stop: 29720, Start Num: 15  
Candidate Starts for GreenWeasel\_44:  
(Start: 15 @29505 has 3 MA's), (27, 29619), (31, 29706),

Gene: Haizum\_44 Start: 30328, Stop: 30489, Start Num: 21  
Candidate Starts for Haizum\_44:



(4, 29950), (Start: 21 @30328 has 8 MA's), (29, 30424), (31, 30475),

Gene: Hank144\_45 Start: 30484, Stop: 30714, Start Num: 14

Candidate Starts for Hank144\_45:

(Start: 14 @30484 has 7 MA's), (Start: 21 @30544 has 8 MA's), (29, 30640),

Gene: Hippo\_42 Start: 29353, Stop: 29568, Start Num: 13

Candidate Starts for Hippo\_42:

(Start: 13 @29353 has 47 MA's), (Start: 19 @29380 has 7 MA's), (Start: 21 @29407 has 8 MA's), (23, 29428), (25, 29440), (29, 29503),

Gene: Hydra\_44 Start: 29563, Stop: 29751, Start Num: 19

Candidate Starts for Hydra\_44:

(Start: 13 @29524 has 47 MA's), (Start: 19 @29563 has 7 MA's), (Start: 21 @29590 has 8 MA's), (23, 29611), (25, 29623), (29, 29686), (31, 29737),

Gene: Indigo\_41 Start: 28992, Stop: 29219, Start Num: 13

Candidate Starts for Indigo\_41:

(Start: 13 @28992 has 47 MA's), (Start: 19 @29031 has 7 MA's), (Start: 21 @29058 has 8 MA's), (23, 29079), (25, 29091), (29, 29154), (31, 29205),

Gene: Issmi\_44 Start: 30915, Stop: 31076, Start Num: 21

Candidate Starts for Issmi\_44:

(Start: 21 @30915 has 8 MA's), (29, 31011), (31, 31062),

Gene: Itza\_44 Start: 29888, Stop: 30094, Start Num: 12

Candidate Starts for Itza\_44:

(Start: 12 @29888 has 10 MA's), (30, 30074), (32, 30089),

Gene: Izzy\_43 Start: 29391, Stop: 29588, Start Num: 12

Candidate Starts for Izzy\_43:

(5, 29118), (10, 29232), (Start: 12 @29391 has 10 MA's), (29, 29541),

Gene: Janus\_43 Start: 30269, Stop: 30505, Start Num: 17

Candidate Starts for Janus\_43:

(1, 29498), (2, 29543), (3, 29915), (9, 30086), (Start: 17 @30269 has 3 MA's), (Start: 21 @30335 has 8 MA's), (29, 30431),

Gene: Jash\_43 Start: 29344, Stop: 29541, Start Num: 12

Candidate Starts for Jash\_43:

(5, 29071), (10, 29185), (Start: 12 @29344 has 10 MA's), (29, 29494),

Gene: Jevington\_46 Start: 30726, Stop: 30887, Start Num: 21

Candidate Starts for Jevington\_46:

(8, 30489), (Start: 21 @30726 has 8 MA's), (29, 30822), (31, 30873),

Gene: Katalie\_42 Start: 29539, Stop: 29760, Start Num: 13

Candidate Starts for Katalie\_42:

(Start: 13 @29539 has 47 MA's), (Start: 21 @29596 has 8 MA's), (29, 29695),

Gene: Lannister\_44 Start: 30004, Stop: 30222, Start Num: 13

Candidate Starts for Lannister\_44:

(Start: 13 @30004 has 47 MA's), (Start: 19 @30034 has 7 MA's), (Start: 21 @30061 has 8 MA's), (23, 30082), (25, 30094), (29, 30157),

Gene: Legacy\_42 Start: 29006, Stop: 29194, Start Num: 19

Candidate Starts for Legacy\_42:

(Start: 13 @28967 has 47 MA's), (Start: 19 @29006 has 7 MA's), (Start: 21 @29033 has 8 MA's), (23, 29054), (25, 29066), (29, 29129), (31, 29180),

Gene: Leviticus\_42 Start: 29035, Stop: 29223, Start Num: 19

Candidate Starts for Leviticus\_42:

(Start: 13 @28996 has 47 MA's), (Start: 19 @29035 has 7 MA's), (Start: 21 @29062 has 8 MA's), (23, 29083), (25, 29095), (29, 29158), (31, 29209),

Gene: Lika\_42 Start: 29844, Stop: 30032, Start Num: 19

Candidate Starts for Lika\_42:

(Start: 13 @29814 has 47 MA's), (Start: 19 @29844 has 7 MA's), (Start: 21 @29871 has 8 MA's), (23, 29892), (25, 29904), (29, 29967),

Gene: Loofah\_44 Start: 30664, Stop: 30888, Start Num: 14

Candidate Starts for Loofah\_44:

(11, 30622), (Start: 14 @30664 has 7 MA's), (Start: 21 @30718 has 8 MA's), (24, 30745),

Gene: Lorelei\_43 Start: 29865, Stop: 30083, Start Num: 13

Candidate Starts for Lorelei\_43:

(Start: 13 @29865 has 47 MA's), (Start: 19 @29895 has 7 MA's), (Start: 21 @29922 has 8 MA's), (23, 29943), (25, 29955), (29, 30018),

Gene: Maneekul\_42 Start: 29369, Stop: 29587, Start Num: 13

Candidate Starts for Maneekul\_42:

(Start: 13 @29369 has 47 MA's), (Start: 19 @29399 has 7 MA's), (Start: 21 @29426 has 8 MA's), (23, 29447), (25, 29459), (29, 29522),

Gene: Marav\_46 Start: 31048, Stop: 31209, Start Num: 21

Candidate Starts for Marav\_46:

(8, 30811), (Start: 21 @31048 has 8 MA's), (29, 31144), (31, 31195),

Gene: Nabi\_43 Start: 29865, Stop: 30083, Start Num: 13

Candidate Starts for Nabi\_43:

(Start: 13 @29865 has 47 MA's), (Start: 19 @29895 has 7 MA's), (Start: 21 @29922 has 8 MA's), (23, 29943), (25, 29955), (29, 30018),

Gene: Nanodon\_44 Start: 29648, Stop: 29866, Start Num: 13

Candidate Starts for Nanodon\_44:

(Start: 13 @29648 has 47 MA's), (Start: 19 @29678 has 7 MA's), (23, 29726), (25, 29738), (29, 29801),

Gene: Nerdos\_41 Start: 28991, Stop: 29218, Start Num: 13

Candidate Starts for Nerdos\_41:

(Start: 13 @28991 has 47 MA's), (Start: 19 @29030 has 7 MA's), (Start: 21 @29057 has 8 MA's), (23, 29078), (25, 29090), (29, 29153), (31, 29204),

Gene: Nishikigoi\_44 Start: 30328, Stop: 30489, Start Num: 21

Candidate Starts for Nishikigoi\_44:

(4, 29950), (Start: 21 @30328 has 8 MA's), (29, 30424), (31, 30475),

Gene: Oliynyk\_43 Start: 29344, Stop: 29541, Start Num: 12

Candidate Starts for Oliynyk\_43:

(5, 29071), (10, 29185), (Start: 12 @29344 has 10 MA's), (29, 29494),

Gene: Omar\_45 Start: 30528, Stop: 30689, Start Num: 21

Candidate Starts for Omar\_45:

(Start: 21 @30528 has 8 MA's), (29, 30624), (31, 30675),

Gene: Ozzie\_42 Start: 28976, Stop: 29203, Start Num: 13

Candidate Starts for Ozzie\_42:

(Start: 13 @28976 has 47 MA's), (Start: 19 @29015 has 7 MA's), (Start: 21 @29042 has 8 MA's), (23, 29063), (25, 29075), (29, 29138), (31, 29189),

Gene: OzzyJ\_43 Start: 29341, Stop: 29556, Start Num: 13

Candidate Starts for OzzyJ\_43:

(Start: 13 @29341 has 47 MA's), (Start: 19 @29368 has 7 MA's), (Start: 21 @29395 has 8 MA's), (23, 29416), (25, 29428), (29, 29491),

Gene: Pablito\_43 Start: 30050, Stop: 30283, Start Num: 14

Candidate Starts for Pablito\_43:

(Start: 14 @30050 has 7 MA's), (Start: 21 @30110 has 8 MA's), (29, 30206),

Gene: Paedore\_43 Start: 30649, Stop: 30873, Start Num: 14

Candidate Starts for Paedore\_43:

(11, 30607), (Start: 14 @30649 has 7 MA's), (Start: 21 @30703 has 8 MA's), (24, 30730),

Gene: Paolo\_47 Start: 30911, Stop: 31072, Start Num: 21

Candidate Starts for Paolo\_47:

(Start: 21 @30911 has 8 MA's), (29, 31007), (31, 31058),

Gene: Phettuccine\_42 Start: 28992, Stop: 29219, Start Num: 13

Candidate Starts for Phettuccine\_42:

(Start: 13 @28992 has 47 MA's), (Start: 19 @29031 has 7 MA's), (Start: 21 @29058 has 8 MA's), (23, 29079), (25, 29091), (29, 29154), (31, 29205),

Gene: Provolone\_43 Start: 30256, Stop: 30465, Start Num: 13

Candidate Starts for Provolone\_43:

(Start: 13 @30256 has 47 MA's), (29, 30406),

Gene: Puginator\_49 Start: 30929, Stop: 31090, Start Num: 21

Candidate Starts for Puginator\_49:

(8, 30692), (Start: 21 @30929 has 8 MA's), (29, 31025), (31, 31076),

Gene: R4\_44 Start: 30804, Stop: 31034, Start Num: 14

Candidate Starts for R4\_44:

(Start: 14 @30804 has 7 MA's), (29, 30960),

Gene: Rana\_43 Start: 29865, Stop: 30083, Start Num: 13

Candidate Starts for Rana\_43:

(Start: 13 @29865 has 47 MA's), (Start: 19 @29895 has 7 MA's), (Start: 21 @29922 has 8 MA's), (23, 29943), (25, 29955), (29, 30018),

Gene: RedBear\_43 Start: 29539, Stop: 29760, Start Num: 13

Candidate Starts for RedBear\_43:

(Start: 13 @29539 has 47 MA's), (Start: 21 @29596 has 8 MA's), (29, 29695),

Gene: Rusticus\_43 Start: 29344, Stop: 29541, Start Num: 12

Candidate Starts for Rusticus\_43:

(5, 29071), (10, 29185), (Start: 12 @29344 has 10 MA's), (29, 29494),

Gene: Saftant\_42 Start: 30834, Stop: 31043, Start Num: 13

Candidate Starts for Saftant\_42:

(Start: 13 @30834 has 47 MA's), (29, 30984),

Gene: SarahRose\_42 Start: 29349, Stop: 29564, Start Num: 13

Candidate Starts for SarahRose\_42:

(Start: 13 @29349 has 47 MA's), (Start: 19 @29376 has 7 MA's), (Start: 21 @29403 has 8 MA's), (23, 29424), (25, 29436), (29, 29499),

Gene: Snorlax\_42 Start: 29353, Stop: 29568, Start Num: 13

Candidate Starts for Snorlax\_42:

(Start: 13 @29353 has 47 MA's), (Start: 19 @29380 has 7 MA's), (Start: 21 @29407 has 8 MA's), (23, 29428), (25, 29440), (29, 29503),

Gene: South40\_42 Start: 29539, Stop: 29760, Start Num: 13

Candidate Starts for South40\_42:

(Start: 13 @29539 has 47 MA's), (Start: 21 @29596 has 8 MA's), (29, 29695),

Gene: SqueakyClean\_42 Start: 30360, Stop: 30596, Start Num: 17

Candidate Starts for SqueakyClean\_42:

(1, 29589), (2, 29634), (3, 30006), (9, 30177), (Start: 17 @30360 has 3 MA's), (Start: 21 @30426 has 8 MA's), (29, 30522),

Gene: Sujidade\_43 Start: 30096, Stop: 30314, Start Num: 13

Candidate Starts for Sujidade\_43:

(Start: 13 @30096 has 47 MA's), (Start: 19 @30126 has 7 MA's), (Start: 21 @30153 has 8 MA's), (23, 30174), (25, 30186), (29, 30249),

Gene: SunsetPointe\_42 Start: 29022, Stop: 29210, Start Num: 19

Candidate Starts for SunsetPointe\_42:

(Start: 13 @28983 has 47 MA's), (Start: 19 @29022 has 7 MA's), (Start: 21 @29049 has 8 MA's), (23, 29070), (25, 29082), (29, 29145), (31, 29196),

Gene: Superstar\_47 Start: 31549, Stop: 31764, Start Num: 14

Candidate Starts for Superstar\_47:

(Start: 14 @31549 has 7 MA's), (Start: 21 @31612 has 8 MA's), (29, 31708),

Gene: TagePhighter\_44 Start: 29353, Stop: 29568, Start Num: 13

Candidate Starts for TagePhighter\_44:

(Start: 13 @29353 has 47 MA's), (Start: 19 @29380 has 7 MA's), (Start: 21 @29407 has 8 MA's), (23, 29428), (25, 29440), (29, 29503),

Gene: Tefunt\_44 Start: 30330, Stop: 30491, Start Num: 21

Candidate Starts for Tefunt\_44:

(4, 29952), (Start: 21 @30330 has 8 MA's), (29, 30426), (31, 30477),

Gene: Toma\_42 Start: 29828, Stop: 30046, Start Num: 13

Candidate Starts for Toma\_42:

(Start: 13 @29828 has 47 MA's), (Start: 19 @29858 has 7 MA's), (Start: 21 @29885 has 8 MA's), (23, 29906), (25, 29918), (29, 29981),

Gene: Triste\_42 Start: 29341, Stop: 29556, Start Num: 13

Candidate Starts for Triste\_42:

(Start: 13 @29341 has 47 MA's), (Start: 19 @29368 has 7 MA's), (Start: 21 @29395 has 8 MA's), (23, 29416), (25, 29428), (28, 29467), (29, 29491),

Gene: Triumph\_45 Start: 30403, Stop: 30636, Start Num: 14

Candidate Starts for Triumph\_45:

(Start: 14 @30403 has 7 MA's), (Start: 21 @30466 has 8 MA's), (29, 30562),

Gene: TuanPN\_41 Start: 29279, Stop: 29497, Start Num: 13

Candidate Starts for TuanPN\_41:

(Start: 13 @29279 has 47 MA's), (Start: 19 @29309 has 7 MA's), (Start: 21 @29336 has 8 MA's), (23, 29357), (25, 29369), (29, 29432),

Gene: Unstoppable\_42 Start: 29026, Stop: 29214, Start Num: 19

Candidate Starts for Unstoppable\_42:

(Start: 13 @28987 has 47 MA's), (Start: 19 @29026 has 7 MA's), (Start: 21 @29053 has 8 MA's), (23, 29074), (25, 29086), (29, 29149), (31, 29200),

Gene: Urza\_44 Start: 29909, Stop: 30115, Start Num: 12

Candidate Starts for Urza\_44:

(Start: 12 @29909 has 10 MA's), (30, 30095), (32, 30110),

Gene: Vanseggelen\_47 Start: 30357, Stop: 30566, Start Num: 13

Candidate Starts for Vanseggelen\_47:

(Start: 13 @30357 has 47 MA's), (Start: 18 @30363 has 1 MA's), (29, 30507),

Gene: Verabelle\_46 Start: 30918, Stop: 31127, Start Num: 13

Candidate Starts for Verabelle\_46:

(Start: 13 @30918 has 47 MA's),

Gene: Verse\_42 Start: 31511, Stop: 31720, Start Num: 13

Candidate Starts for Verse\_42:

(6, 31274), (Start: 13 @31511 has 47 MA's), (29, 31661),

Gene: VieEnRose\_44 Start: 29979, Stop: 30185, Start Num: 12

Candidate Starts for VieEnRose\_44:

(Start: 12 @29979 has 10 MA's), (30, 30165), (32, 30180),

Gene: Werner\_42 Start: 29351, Stop: 29566, Start Num: 13

Candidate Starts for Werner\_42:

(Start: 13 @29351 has 47 MA's), (Start: 19 @29378 has 7 MA's), (Start: 21 @29405 has 8 MA's), (23, 29426), (29, 29501),

Gene: Whatever\_42 Start: 29351, Stop: 29566, Start Num: 13

Candidate Starts for Whatever\_42:

(Start: 13 @29351 has 47 MA's), (Start: 19 @29378 has 7 MA's), (Start: 21 @29405 has 8 MA's), (23, 29426), (25, 29438), (29, 29501),

Gene: Yasdnii\_42 Start: 29397, Stop: 29615, Start Num: 13

Candidate Starts for Yasdnii\_42:

(Start: 13 @29397 has 47 MA's), (Start: 19 @29427 has 7 MA's), (Start: 21 @29454 has 8 MA's), (23, 29475), (25, 29487), (29, 29550),

Gene: Yosif\_45 Start: 31468, Stop: 31668, Start Num: 18

Candidate Starts for Yosif\_45:

(7, 31240), (10, 31297), (Start: 18 @31468 has 1 MA's), (26, 31555), (30, 31648), (32, 31663),

Gene: Zemlya\_44 Start: 29887, Stop: 30105, Start Num: 13

Candidate Starts for Zemlya\_44:

(Start: 13 @29887 has 47 MA's), (Start: 21 @29944 has 8 MA's), (23, 29965), (25, 29977), (29, 30040),

Gene: phiCAM\_40 Start: 32662, Stop: 32871, Start Num: 13

Candidate Starts for phiCAM\_40:

(Start: 13 @32662 has 47 MA's), (20, 32695), (29, 32812),

Gene: phiHau3\_44 Start: 29473, Stop: 29688, Start Num: 15

Candidate Starts for phiHau3\_44:

(Start: 15 @29473 has 3 MA's), (27, 29587), (31, 29674),