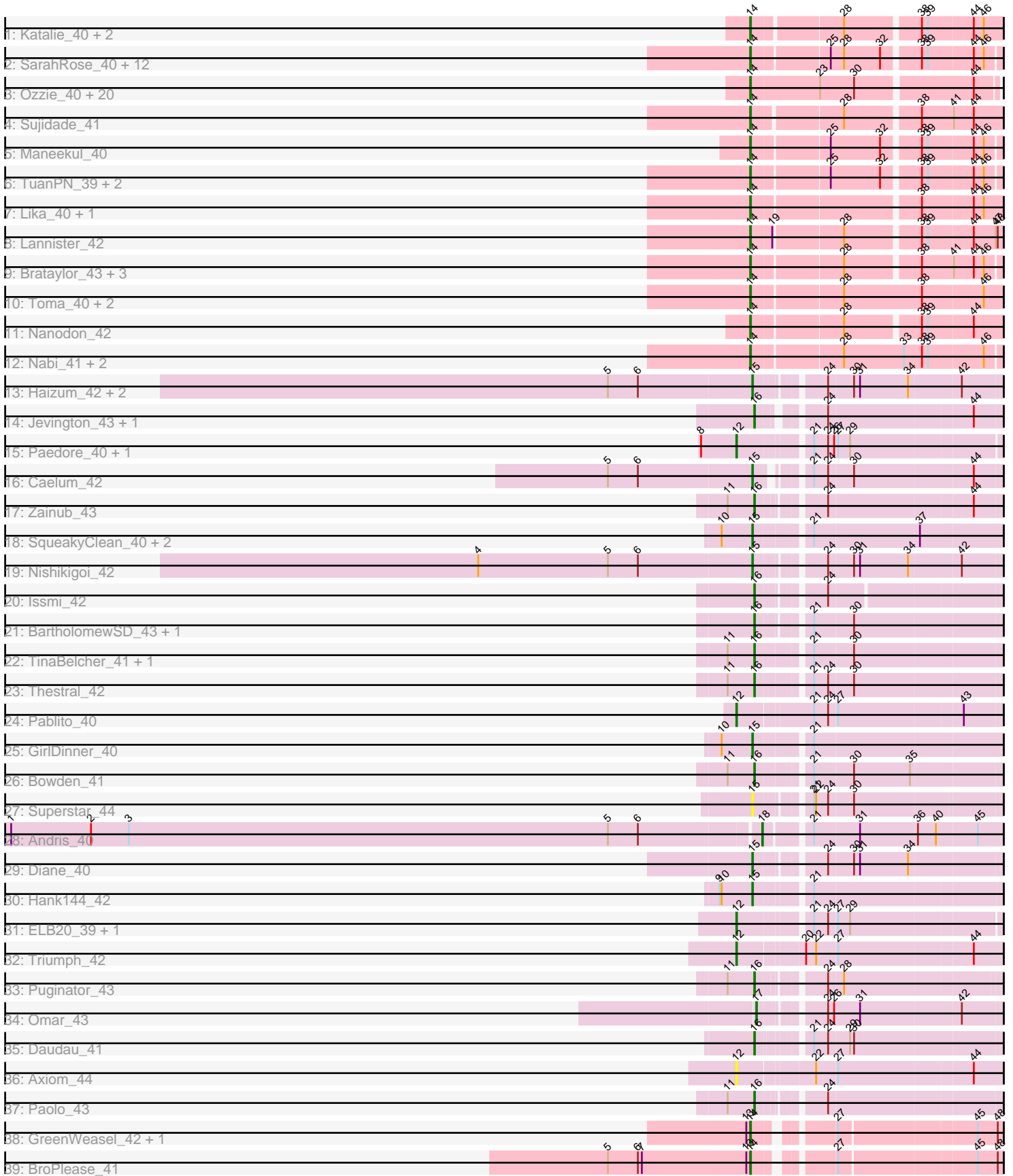


Pham 224478



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 224478 Report

This analysis was run 03/28/25 on database version 593.

Pham number 224478 has 93 members, 3 are drafts.

Phages represented in each track:

- Track 1 : Katalie\_40, RedBear\_41, South40\_40
- Track 2 : SarahRose\_40, Dwayne\_40, Asten\_40, Whatever\_40, OzzyJ\_41, Emaanora\_43, Hippo\_40, Triste\_40, Werner\_40, BarryBee\_43, Chucky\_40, TagePhighter\_42, Snorlax\_40
- Track 3 : Ozzie\_40, Nerdos\_39, Aaronocolus\_40, Eddasa\_41, Jash\_41, Oliynyk\_41, Unstoppable\_40, Izzy\_41, Legacy\_40, BeardedLady\_41, Esperer\_40, BryanRecycles\_41, EnochSoames\_43, Phettuccine\_40, Rusticus\_41, SunsetPointe\_40, Caliburn\_40, Hydra\_42, Bovely\_40, Indigo\_39, Leviticus\_40
- Track 4 : Sujidade\_41
- Track 5 : Maneekul\_40
- Track 6 : TuanPN\_39, Yasdnil\_40, Ejemplo\_39
- Track 7 : Lika\_40, Godpower\_41
- Track 8 : Lannister\_42
- Track 9 : Brataylor\_43, Celeste\_41, Danzina\_42, Zemlya\_42
- Track 10 : Toma\_40, Dattran\_42, Goby\_40
- Track 11 : Nanodon\_42
- Track 12 : Nabi\_41, Rana\_41, Lorelei\_41
- Track 13 : Haizum\_42, Tefunt\_42, Amethyst\_40
- Track 14 : Jevington\_43, Marav\_44
- Track 15 : Paedore\_40, Loofah\_41
- Track 16 : Caelum\_42
- Track 17 : Zainub\_43
- Track 18 : SqueakyClean\_40, Animus\_40, Janus\_41
- Track 19 : Nishikigoi\_42
- Track 20 : Issmi\_42
- Track 21 : BartholomewSD\_43, Alvy\_43
- Track 22 : TinaBelcher\_41, TrvxScott\_40
- Track 23 : Thestral\_42
- Track 24 : Pablito\_40
- Track 25 : GirlDinner\_40
- Track 26 : Bowden\_41
- Track 27 : Superstar\_44
- Track 28 : Andris\_40
- Track 29 : Diane\_40
- Track 30 : Hank144\_42
- Track 31 : ELB20\_39, R4\_41
- Track 32 : Triumph\_42

- Track 33 : Puginator\_43
- Track 34 : Omar\_43
- Track 35 : Daudau\_41
- Track 36 : Axiom\_44
- Track 37 : Paolo\_43
- Track 38 : GreenWeasel\_42, phiHau3\_42
- Track 39 : BroPlease\_41

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

The start number called the most often in the published annotations is 14, it was called in 58 of the 90 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aaronocolus\_40, Asten\_40, BarryBee\_43, BeardedLady\_41, Bovely\_40, Brataylor\_43, BroPlease\_41, BryanRecycles\_41, Caliburn\_40, Celeste\_41, Chucky\_40, Danzina\_42, Dattran\_42, Dwayne\_40, Eddasa\_41, Ejemplo\_39, Emaanora\_43, EnochSoames\_43, Esperer\_40, Goby\_40, Godpower\_41, GreenWeasel\_42, Hippo\_40, Hydra\_42, Indigo\_39, Izzy\_41, Jash\_41, Katalie\_40, Lannister\_42, Legacy\_40, Leviticus\_40, Lika\_40, Lorelei\_41, Maneekul\_40, Nabi\_41, Nanodon\_42, Nerdos\_39, Oliynyk\_41, Ozzie\_40, OzzyJ\_41, Phettuccine\_40, Rana\_41, RedBear\_41, Rusticus\_41, SarahRose\_40, Snorlax\_40, South40\_40, Sujidade\_41, SunsetPointe\_40, TagePhighter\_42, Toma\_40, Triste\_40, TuanPN\_39, Unstoppable\_40, Werner\_40, Whatever\_40, Yasdnil\_40, Zemlya\_42, phiHau3\_42,

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

- 

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

- Alvy\_43, Amethyst\_40, Andris\_40, Animus\_40, Axiom\_44, BartholomewSD\_43, Bowden\_41, Caelum\_42, Daudau\_41, Diane\_40, ELB20\_39, GirlDinner\_40, Haizum\_42, Hank144\_42, Issmi\_42, Janus\_41, Jevington\_43, Loofah\_41, Marav\_44, Nishikigoi\_42, Omar\_43, Pablito\_40, Paedore\_40, Paolo\_43, Puginator\_43, R4\_41, SqueakyClean\_40, Superstar\_44, Tefunt\_42, Thestral\_42, TinaBelcher\_41, Triumph\_42, TrvxScott\_40, Zainub\_43,

**Summary by start number:**

Start 12:

- Found in 7 of 93 ( 7.5% ) of genes in pham
- Manual Annotations of this start: 6 of 90
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Axiom\_44 (BD2), ELB20\_39 (BD2), Loofah\_41 (BD2), Pablito\_40 (BD2), Paedore\_40 (BD2), R4\_41 (BD2), Triumph\_42 (BD2),

Start 14:

- Found in 59 of 93 ( 63.4% ) of genes in pham
- Manual Annotations of this start: 58 of 90
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Aaronocolus\_40 (BD1), Asten\_40 (BD1), BarryBee\_43 (BD1), BeardedLady\_41 (BD1), Bovely\_40 (BD1), Brataylor\_43 (BD1), BroPlease\_41 (BD4), BryanRecycles\_41 (BD1), Caliburn\_40 (BD1), Celeste\_41 (BD1), Chucky\_40 (BD1), Danzina\_42 (BD1), Dattran\_42 (BD1), Dwayne\_40 (BD1), Eddasa\_41 (BD1), Ejemplo\_39 (BD1), Emaanora\_43 (BD1), EnochSoames\_43 (BD1), Esperer\_40 (BD1), Goby\_40 (BD1), Godpower\_41 (BD1), GreenWeasel\_42 (BD4), Hippo\_40 (BD1), Hydra\_42 (BD1), Indigo\_39 (BD1), Izzy\_41 (BD1), Jash\_41 (BD1), Katalie\_40 (BD1), Lannister\_42 (BD1), Legacy\_40 (BD1), Leviticus\_40 (BD1), Lika\_40 (BD1), Lorelei\_41 (BD1), Maneekul\_40 (BD1), Nabi\_41 (BD1), Nanodon\_42 (BD1), Nerdos\_39 (BD1), Oliynyk\_41 (BD1), Ozzie\_40 (BD1), OzzyJ\_41 (BD1), Phettuccine\_40 (BD1), Rana\_41 (BD1), RedBear\_41 (BD1), Rusticus\_41 (BD1), SarahRose\_40 (BD1), Snorlax\_40 (BD1), South40\_40 (BD1), Sujidade\_41 (BD1), SunsetPointe\_40 (BD1), TagePhighter\_42 (BD1), Toma\_40 (BD1), Triste\_40 (BD1), TuanPN\_39 (BD1), Unstoppable\_40 (BD1), Werner\_40 (BD1), Whatever\_40 (BD1), Yasdniil\_40 (BD1), Zemlya\_42 (BD1), phiHau3\_42 (BD4),

#### Start 15:

- Found in 12 of 93 ( 12.9% ) of genes in pham
- Manual Annotations of this start: 11 of 90
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amethyst\_40 (BD2), Animus\_40 (BD2), Caelum\_42 (BD2), Diane\_40 (BD2), GirlDinner\_40 (BD2), Haizum\_42 (BD2), Hank144\_42 (BD2), Janus\_41 (BD2), Nishikigoi\_42 (BD2), SqueakyClean\_40 (BD2), Superstar\_44 (BD2), Tefunt\_42 (BD2),

#### Start 16:

- Found in 13 of 93 ( 14.0% ) of genes in pham
- Manual Annotations of this start: 13 of 90
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alvy\_43 (BD2), BartholomewSD\_43 (BD2), Bowden\_41 (BD2), Daudau\_41 (BD2), Issmi\_42 (BD2), Jevington\_43 (BD2), Marav\_44 (BD2), Paolo\_43 (BD2), Puginator\_43 (BD2), Thestral\_42 (BD2), TinaBelcher\_41 (BD2), TrvxScott\_40 (BD2), Zainub\_43 (BD2),

#### Start 17:

- Found in 1 of 93 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 90
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Omar\_43 (BD2),

#### Start 18:

- Found in 1 of 93 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 90
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Andris\_40 (BD2),

### Summary by clusters:

There are 3 clusters represented in this pham: BD4, BD1, BD2,

Info for manual annotations of cluster BD1:

- Start number 14 was manually annotated 55 times for cluster BD1.

Info for manual annotations of cluster BD2:

- Start number 12 was manually annotated 6 times for cluster BD2.
- Start number 15 was manually annotated 11 times for cluster BD2.
- Start number 16 was manually annotated 13 times for cluster BD2.
- Start number 17 was manually annotated 1 time for cluster BD2.
- Start number 18 was manually annotated 1 time for cluster BD2.

Info for manual annotations of cluster BD4:

- Start number 14 was manually annotated 3 times for cluster BD4.

### ***Gene Information:***

Gene: Aaronocolus\_40 Start: 28479, Stop: 28826, Start Num: 14

Candidate Starts for Aaronocolus\_40:

(Start: 14 @28479 has 58 MA's), (23, 28581), (30, 28632), (44, 28794),

Gene: Alvy\_43 Start: 30032, Stop: 30367, Start Num: 16

Candidate Starts for Alvy\_43:

(Start: 16 @30032 has 13 MA's), (21, 30095), (30, 30152),

Gene: Amethyst\_40 Start: 29395, Stop: 29733, Start Num: 15

Candidate Starts for Amethyst\_40:

(5, 29182), (6, 29227), (Start: 15 @29395 has 11 MA's), (24, 29482), (30, 29518), (31, 29527), (34, 29599), (42, 29674),

Gene: Andris\_40 Start: 29457, Stop: 29789, Start Num: 18

Candidate Starts for Andris\_40:

(1, 28344), (2, 28464), (3, 28521), (5, 29241), (6, 29286), (Start: 18 @29457 has 1 MA's), (21, 29514), (31, 29580), (36, 29664), (40, 29691), (45, 29751),

Gene: Animus\_40 Start: 29869, Stop: 30219, Start Num: 15

Candidate Starts for Animus\_40:

(10, 29824), (Start: 15 @29869 has 11 MA's), (21, 29944), (37, 30097),

Gene: Asten\_40 Start: 28841, Stop: 29185, Start Num: 14

Candidate Starts for Asten\_40:

(Start: 14 @28841 has 58 MA's), (25, 28949), (28, 28967), (32, 29021), (38, 29072), (39, 29081), (44, 29147), (46, 29162),

Gene: Axiom\_44 Start: 29618, Stop: 29989, Start Num: 12

Candidate Starts for Axiom\_44:

(Start: 12 @29618 has 6 MA's), (22, 29723), (27, 29750), (44, 29945),

Gene: BarryBee\_43 Start: 28851, Stop: 29195, Start Num: 14

Candidate Starts for BarryBee\_43:

(Start: 14 @28851 has 58 MA's), (25, 28959), (28, 28977), (32, 29031), (38, 29082), (39, 29091), (44, 29157), (46, 29172),

Gene: BartholomewSD\_43 Start: 30031, Stop: 30366, Start Num: 16

Candidate Starts for BartholomewSD\_43:

(Start: 16 @30031 has 13 MA's), (21, 30094), (30, 30151),

Gene: BeardedLady\_41 Start: 28732, Stop: 29079, Start Num: 14  
Candidate Starts for BeardedLady\_41:  
(Start: 14 @28732 has 58 MA's), (23, 28834), (30, 28885), (44, 29047),

Gene: Bovely\_40 Start: 28485, Stop: 28832, Start Num: 14  
Candidate Starts for Bovely\_40:  
(Start: 14 @28485 has 58 MA's), (23, 28587), (30, 28638), (44, 28800),

Gene: Bowden\_41 Start: 29946, Stop: 30287, Start Num: 16  
Candidate Starts for Bowden\_41:  
(11, 29907), (Start: 16 @29946 has 13 MA's), (21, 30015), (30, 30072), (35, 30156),

Gene: Brataylor\_43 Start: 29824, Stop: 30168, Start Num: 14  
Candidate Starts for Brataylor\_43:  
(Start: 14 @29824 has 58 MA's), (28, 29950), (38, 30055), (41, 30100), (44, 30130), (46, 30145),

Gene: BroPlease\_41 Start: 28966, Stop: 29289, Start Num: 14  
Candidate Starts for BroPlease\_41:  
(5, 28753), (6, 28798), (7, 28804), (13, 28960), (Start: 14 @28966 has 58 MA's), (27, 29059), (45, 29254), (48, 29281),

Gene: BryanRecycles\_41 Start: 28839, Stop: 29195, Start Num: 14  
Candidate Starts for BryanRecycles\_41:  
(Start: 14 @28839 has 58 MA's), (23, 28941), (30, 28992), (44, 29154),

Gene: Caelum\_42 Start: 29642, Stop: 29968, Start Num: 15  
Candidate Starts for Caelum\_42:  
(5, 29429), (6, 29474), (Start: 15 @29642 has 11 MA's), (21, 29696), (24, 29717), (30, 29753), (44, 29927),

Gene: Caliburn\_40 Start: 28462, Stop: 28809, Start Num: 14  
Candidate Starts for Caliburn\_40:  
(Start: 14 @28462 has 58 MA's), (23, 28564), (30, 28615), (44, 28777),

Gene: Celeste\_41 Start: 29293, Stop: 29634, Start Num: 14  
Candidate Starts for Celeste\_41:  
(Start: 14 @29293 has 58 MA's), (28, 29416), (38, 29521), (41, 29566), (44, 29596), (46, 29611),

Gene: Chucky\_40 Start: 28855, Stop: 29199, Start Num: 14  
Candidate Starts for Chucky\_40:  
(Start: 14 @28855 has 58 MA's), (25, 28963), (28, 28981), (32, 29035), (38, 29086), (39, 29095), (44, 29161), (46, 29176),

Gene: Danzina\_42 Start: 29594, Stop: 29935, Start Num: 14  
Candidate Starts for Danzina\_42:  
(Start: 14 @29594 has 58 MA's), (28, 29717), (38, 29822), (41, 29867), (44, 29897), (46, 29912),

Gene: Dattran\_42 Start: 29400, Stop: 29762, Start Num: 14  
Candidate Starts for Dattran\_42:  
(Start: 14 @29400 has 58 MA's), (28, 29526), (38, 29643), (46, 29733),

Gene: Daudau\_41 Start: 29789, Stop: 30124, Start Num: 16

Candidate Starts for Daudau\_41:

(Start: 16 @29789 has 13 MA's), (21, 29852), (24, 29873), (29, 29903), (30, 29909),

Gene: Diane\_40 Start: 29624, Stop: 29962, Start Num: 15

Candidate Starts for Diane\_40:

(Start: 15 @29624 has 11 MA's), (24, 29711), (30, 29747), (31, 29756), (34, 29828),

Gene: Dwayne\_40 Start: 28842, Stop: 29186, Start Num: 14

Candidate Starts for Dwayne\_40:

(Start: 14 @28842 has 58 MA's), (25, 28950), (28, 28968), (32, 29022), (38, 29073), (39, 29082), (44, 29148), (46, 29163),

Gene: ELB20\_39 Start: 30032, Stop: 30394, Start Num: 12

Candidate Starts for ELB20\_39:

(Start: 12 @30032 has 6 MA's), (21, 30128), (24, 30149), (27, 30161), (29, 30179),

Gene: Eddasa\_41 Start: 28839, Stop: 29195, Start Num: 14

Candidate Starts for Eddasa\_41:

(Start: 14 @28839 has 58 MA's), (23, 28941), (30, 28992), (44, 29154),

Gene: Ejemplo\_39 Start: 28786, Stop: 29130, Start Num: 14

Candidate Starts for Ejemplo\_39:

(Start: 14 @28786 has 58 MA's), (25, 28894), (32, 28966), (38, 29017), (39, 29026), (44, 29092), (46, 29107),

Gene: Emaanora\_43 Start: 28800, Stop: 29144, Start Num: 14

Candidate Starts for Emaanora\_43:

(Start: 14 @28800 has 58 MA's), (25, 28908), (28, 28926), (32, 28980), (38, 29031), (39, 29040), (44, 29106), (46, 29121),

Gene: EnochSoames\_43 Start: 28834, Stop: 29190, Start Num: 14

Candidate Starts for EnochSoames\_43:

(Start: 14 @28834 has 58 MA's), (23, 28936), (30, 28987), (44, 29149),

Gene: Esperer\_40 Start: 28298, Stop: 28645, Start Num: 14

Candidate Starts for Esperer\_40:

(Start: 14 @28298 has 58 MA's), (23, 28400), (30, 28451), (44, 28613),

Gene: GirlDinner\_40 Start: 29370, Stop: 29720, Start Num: 15

Candidate Starts for GirlDinner\_40:

(10, 29325), (Start: 15 @29370 has 11 MA's), (21, 29445),

Gene: Goby\_40 Start: 29299, Stop: 29661, Start Num: 14

Candidate Starts for Goby\_40:

(Start: 14 @29299 has 58 MA's), (28, 29425), (38, 29542), (46, 29632),

Gene: Godpower\_41 Start: 29294, Stop: 29644, Start Num: 14

Candidate Starts for Godpower\_41:

(Start: 14 @29294 has 58 MA's), (38, 29525), (44, 29600), (46, 29615),

Gene: GreenWeasel\_42 Start: 28973, Stop: 29296, Start Num: 14

Candidate Starts for GreenWeasel\_42:

(13, 28967), (Start: 14 @28973 has 58 MA's), (27, 29066), (45, 29261), (48, 29288),

Gene: Haizum\_42 Start: 29739, Stop: 30077, Start Num: 15

Candidate Starts for Haizum\_42:

(5, 29526), (6, 29571), (Start: 15 @29739 has 11 MA's), (24, 29826), (30, 29862), (31, 29871), (34, 29943), (42, 30018),

Gene: Hank144\_42 Start: 29734, Stop: 30075, Start Num: 15

Candidate Starts for Hank144\_42:

(9, 29686), (10, 29689), (Start: 15 @29734 has 11 MA's), (21, 29806),

Gene: Hippo\_40 Start: 28854, Stop: 29198, Start Num: 14

Candidate Starts for Hippo\_40:

(Start: 14 @28854 has 58 MA's), (25, 28962), (28, 28980), (32, 29034), (38, 29085), (39, 29094), (44, 29160), (46, 29175),

Gene: Hydra\_42 Start: 29010, Stop: 29357, Start Num: 14

Candidate Starts for Hydra\_42:

(Start: 14 @29010 has 58 MA's), (23, 29112), (30, 29163), (44, 29325),

Gene: Indigo\_39 Start: 28478, Stop: 28825, Start Num: 14

Candidate Starts for Indigo\_39:

(Start: 14 @28478 has 58 MA's), (23, 28580), (30, 28631), (44, 28793),

Gene: Issmi\_42 Start: 30341, Stop: 30664, Start Num: 16

Candidate Starts for Issmi\_42:

(Start: 16 @30341 has 13 MA's), (24, 30425),

Gene: Izzy\_41 Start: 28886, Stop: 29242, Start Num: 14

Candidate Starts for Izzy\_41:

(Start: 14 @28886 has 58 MA's), (23, 28988), (30, 29039), (44, 29201),

Gene: Janus\_41 Start: 29710, Stop: 30060, Start Num: 15

Candidate Starts for Janus\_41:

(10, 29665), (Start: 15 @29710 has 11 MA's), (21, 29785), (37, 29938),

Gene: Jash\_41 Start: 28839, Stop: 29195, Start Num: 14

Candidate Starts for Jash\_41:

(Start: 14 @28839 has 58 MA's), (23, 28941), (30, 28992), (44, 29154),

Gene: Jevington\_43 Start: 30131, Stop: 30454, Start Num: 16

Candidate Starts for Jevington\_43:

(Start: 16 @30131 has 13 MA's), (24, 30206), (44, 30413),

Gene: Katalie\_40 Start: 29025, Stop: 29372, Start Num: 14

Candidate Starts for Katalie\_40:

(Start: 14 @29025 has 58 MA's), (28, 29148), (38, 29253), (39, 29262), (44, 29328), (46, 29343),

Gene: Lannister\_42 Start: 29502, Stop: 29852, Start Num: 14

Candidate Starts for Lannister\_42:

(Start: 14 @29502 has 58 MA's), (19, 29532), (28, 29628), (38, 29733), (39, 29742), (44, 29808), (47, 29841), (48, 29844),

Gene: Legacy\_40 Start: 28453, Stop: 28800, Start Num: 14



Candidate Starts for Legacy\_40:  
(Start: 14 @28453 has 58 MA's), (23, 28555), (30, 28606), (44, 28768),

Gene: Leviticus\_40 Start: 28482, Stop: 28829, Start Num: 14  
Candidate Starts for Leviticus\_40:  
(Start: 14 @28482 has 58 MA's), (23, 28584), (30, 28635), (44, 28797),

Gene: Lika\_40 Start: 29297, Stop: 29647, Start Num: 14  
Candidate Starts for Lika\_40:  
(Start: 14 @29297 has 58 MA's), (38, 29528), (44, 29603), (46, 29618),

Gene: Loofah\_41 Start: 29902, Stop: 30264, Start Num: 12  
Candidate Starts for Loofah\_41:  
(8, 29851), (Start: 12 @29902 has 6 MA's), (21, 29998), (24, 30019), (26, 30028), (27, 30031), (29, 30049),

Gene: Lorelei\_41 Start: 29357, Stop: 29713, Start Num: 14  
Candidate Starts for Lorelei\_41:  
(Start: 14 @29357 has 58 MA's), (28, 29483), (33, 29573), (38, 29600), (39, 29609), (46, 29690),

Gene: Maneekul\_40 Start: 28876, Stop: 29220, Start Num: 14  
Candidate Starts for Maneekul\_40:  
(Start: 14 @28876 has 58 MA's), (25, 28984), (32, 29056), (38, 29107), (39, 29116), (44, 29182), (46, 29197),

Gene: Marav\_44 Start: 30456, Stop: 30779, Start Num: 16  
Candidate Starts for Marav\_44:  
(Start: 16 @30456 has 13 MA's), (24, 30531), (44, 30738),

Gene: Nabi\_41 Start: 29357, Stop: 29713, Start Num: 14  
Candidate Starts for Nabi\_41:  
(Start: 14 @29357 has 58 MA's), (28, 29483), (33, 29573), (38, 29600), (39, 29609), (46, 29690),

Gene: Nanodon\_42 Start: 29128, Stop: 29478, Start Num: 14  
Candidate Starts for Nanodon\_42:  
(Start: 14 @29128 has 58 MA's), (28, 29254), (38, 29359), (39, 29368), (44, 29434),

Gene: Nerdos\_39 Start: 28477, Stop: 28824, Start Num: 14  
Candidate Starts for Nerdos\_39:  
(Start: 14 @28477 has 58 MA's), (23, 28579), (30, 28630), (44, 28792),

Gene: Nishikigoi\_42 Start: 29739, Stop: 30077, Start Num: 15  
Candidate Starts for Nishikigoi\_42:  
(4, 29331), (5, 29526), (6, 29571), (Start: 15 @29739 has 11 MA's), (24, 29826), (30, 29862), (31, 29871), (34, 29943), (42, 30018),

Gene: Oliynyk\_41 Start: 28839, Stop: 29195, Start Num: 14  
Candidate Starts for Oliynyk\_41:  
(Start: 14 @28839 has 58 MA's), (23, 28941), (30, 28992), (44, 29154),

Gene: Omar\_43 Start: 29969, Stop: 30301, Start Num: 17  
Candidate Starts for Omar\_43:  
(Start: 17 @29969 has 1 MA's), (24, 30050), (26, 30059), (31, 30095), (42, 30242),

Gene: Ozzie\_40 Start: 28462, Stop: 28809, Start Num: 14  
Candidate Starts for Ozzie\_40:  
(Start: 14 @28462 has 58 MA's), (23, 28564), (30, 28615), (44, 28777),

Gene: OzzyJ\_41 Start: 28842, Stop: 29186, Start Num: 14  
Candidate Starts for OzzyJ\_41:  
(Start: 14 @28842 has 58 MA's), (25, 28950), (28, 28968), (32, 29022), (38, 29073), (39, 29082), (44, 29148), (46, 29163),

Gene: Pablito\_40 Start: 29276, Stop: 29650, Start Num: 12  
Candidate Starts for Pablito\_40:  
(Start: 12 @29276 has 6 MA's), (21, 29381), (24, 29402), (27, 29414), (43, 29594),

Gene: Paedore\_40 Start: 29887, Stop: 30249, Start Num: 12  
Candidate Starts for Paedore\_40:  
(8, 29836), (Start: 12 @29887 has 6 MA's), (21, 29983), (24, 30004), (26, 30013), (27, 30016), (29, 30034),

Gene: Paolo\_43 Start: 30313, Stop: 30642, Start Num: 16  
Candidate Starts for Paolo\_43:  
(11, 30274), (Start: 16 @30313 has 13 MA's), (24, 30394),

Gene: Phettuccine\_40 Start: 28478, Stop: 28825, Start Num: 14  
Candidate Starts for Phettuccine\_40:  
(Start: 14 @28478 has 58 MA's), (23, 28580), (30, 28631), (44, 28793),

Gene: Puginator\_43 Start: 30334, Stop: 30660, Start Num: 16  
Candidate Starts for Puginator\_43:  
(11, 30295), (Start: 16 @30334 has 13 MA's), (24, 30415), (28, 30436),

Gene: R4\_41 Start: 30042, Stop: 30404, Start Num: 12  
Candidate Starts for R4\_41:  
(Start: 12 @30042 has 6 MA's), (21, 30138), (24, 30159), (27, 30171), (29, 30189),

Gene: Rana\_41 Start: 29357, Stop: 29713, Start Num: 14  
Candidate Starts for Rana\_41:  
(Start: 14 @29357 has 58 MA's), (28, 29483), (33, 29573), (38, 29600), (39, 29609), (46, 29690),

Gene: RedBear\_41 Start: 29025, Stop: 29372, Start Num: 14  
Candidate Starts for RedBear\_41:  
(Start: 14 @29025 has 58 MA's), (28, 29148), (38, 29253), (39, 29262), (44, 29328), (46, 29343),

Gene: Rusticus\_41 Start: 28839, Stop: 29195, Start Num: 14  
Candidate Starts for Rusticus\_41:  
(Start: 14 @28839 has 58 MA's), (23, 28941), (30, 28992), (44, 29154),

Gene: SarahRose\_40 Start: 28850, Stop: 29194, Start Num: 14  
Candidate Starts for SarahRose\_40:  
(Start: 14 @28850 has 58 MA's), (25, 28958), (28, 28976), (32, 29030), (38, 29081), (39, 29090), (44, 29156), (46, 29171),

Gene: Snorlax\_40 Start: 28854, Stop: 29198, Start Num: 14

Candidate Starts for Snorlax\_40:

(Start: 14 @28854 has 58 MA's), (25, 28962), (28, 28980), (32, 29034), (38, 29085), (39, 29094), (44, 29160), (46, 29175),

Gene: South40\_40 Start: 29025, Stop: 29372, Start Num: 14

Candidate Starts for South40\_40:

(Start: 14 @29025 has 58 MA's), (28, 29148), (38, 29253), (39, 29262), (44, 29328), (46, 29343),

Gene: SqueakyClean\_40 Start: 29801, Stop: 30151, Start Num: 15

Candidate Starts for SqueakyClean\_40:

(10, 29756), (Start: 15 @29801 has 11 MA's), (21, 29876), (37, 30029),

Gene: Sujidade\_41 Start: 29582, Stop: 29929, Start Num: 14

Candidate Starts for Sujidade\_41:

(Start: 14 @29582 has 58 MA's), (28, 29705), (38, 29810), (41, 29855), (44, 29885),

Gene: SunsetPointe\_40 Start: 28469, Stop: 28816, Start Num: 14

Candidate Starts for SunsetPointe\_40:

(Start: 14 @28469 has 58 MA's), (23, 28571), (30, 28622), (44, 28784),

Gene: Superstar\_44 Start: 30847, Stop: 31182, Start Num: 15

Candidate Starts for Superstar\_44:

(Start: 15 @30847 has 11 MA's), (21, 30913), (22, 30916), (24, 30934), (30, 30970),

Gene: TagePhighter\_42 Start: 28854, Stop: 29198, Start Num: 14

Candidate Starts for TagePhighter\_42:

(Start: 14 @28854 has 58 MA's), (25, 28962), (28, 28980), (32, 29034), (38, 29085), (39, 29094), (44, 29160), (46, 29175),

Gene: Tefunt\_42 Start: 29741, Stop: 30079, Start Num: 15

Candidate Starts for Tefunt\_42:

(5, 29528), (6, 29573), (Start: 15 @29741 has 11 MA's), (24, 29828), (30, 29864), (31, 29873), (34, 29945), (42, 30020),

Gene: Thestral\_42 Start: 29938, Stop: 30279, Start Num: 16

Candidate Starts for Thestral\_42:

(11, 29899), (Start: 16 @29938 has 13 MA's), (21, 30007), (24, 30028), (30, 30064),

Gene: TinaBelcher\_41 Start: 29885, Stop: 30226, Start Num: 16

Candidate Starts for TinaBelcher\_41:

(11, 29846), (Start: 16 @29885 has 13 MA's), (21, 29954), (30, 30011),

Gene: Toma\_40 Start: 29299, Stop: 29661, Start Num: 14

Candidate Starts for Toma\_40:

(Start: 14 @29299 has 58 MA's), (28, 29425), (38, 29542), (46, 29632),

Gene: Triste\_40 Start: 28842, Stop: 29186, Start Num: 14

Candidate Starts for Triste\_40:

(Start: 14 @28842 has 58 MA's), (25, 28950), (28, 28968), (32, 29022), (38, 29073), (39, 29082), (44, 29148), (46, 29163),

Gene: Triumph\_42 Start: 29635, Stop: 30006, Start Num: 12

Candidate Starts for Triumph\_42:

(Start: 12 @29635 has 6 MA's), (20, 29725), (22, 29740), (27, 29767), (44, 29962),

Gene: TrvxScott\_40 Start: 29931, Stop: 30272, Start Num: 16

Candidate Starts for TrvxScott\_40:

(11, 29892), (Start: 16 @29931 has 13 MA's), (21, 30000), (30, 30057),

Gene: TuanPN\_39 Start: 28786, Stop: 29130, Start Num: 14

Candidate Starts for TuanPN\_39:

(Start: 14 @28786 has 58 MA's), (25, 28894), (32, 28966), (38, 29017), (39, 29026), (44, 29092), (46, 29107),

Gene: Unstoppable\_40 Start: 28473, Stop: 28820, Start Num: 14

Candidate Starts for Unstoppable\_40:

(Start: 14 @28473 has 58 MA's), (23, 28575), (30, 28626), (44, 28788),

Gene: Werner\_40 Start: 28852, Stop: 29196, Start Num: 14

Candidate Starts for Werner\_40:

(Start: 14 @28852 has 58 MA's), (25, 28960), (28, 28978), (32, 29032), (38, 29083), (39, 29092), (44, 29158), (46, 29173),

Gene: Whatever\_40 Start: 28852, Stop: 29196, Start Num: 14

Candidate Starts for Whatever\_40:

(Start: 14 @28852 has 58 MA's), (25, 28960), (28, 28978), (32, 29032), (38, 29083), (39, 29092), (44, 29158), (46, 29173),

Gene: Yasdnil\_40 Start: 28904, Stop: 29248, Start Num: 14

Candidate Starts for Yasdnil\_40:

(Start: 14 @28904 has 58 MA's), (25, 29012), (32, 29084), (38, 29135), (39, 29144), (44, 29210), (46, 29225),

Gene: Zainub\_43 Start: 30274, Stop: 30603, Start Num: 16

Candidate Starts for Zainub\_43:

(11, 30235), (Start: 16 @30274 has 13 MA's), (24, 30355), (44, 30562),

Gene: Zemlya\_42 Start: 29400, Stop: 29735, Start Num: 14

Candidate Starts for Zemlya\_42:

(Start: 14 @29400 has 58 MA's), (28, 29517), (38, 29622), (41, 29667), (44, 29697), (46, 29712),

Gene: phiHau3\_42 Start: 28938, Stop: 29264, Start Num: 14

Candidate Starts for phiHau3\_42:

(13, 28932), (Start: 14 @28938 has 58 MA's), (27, 29034), (45, 29229), (48, 29256),