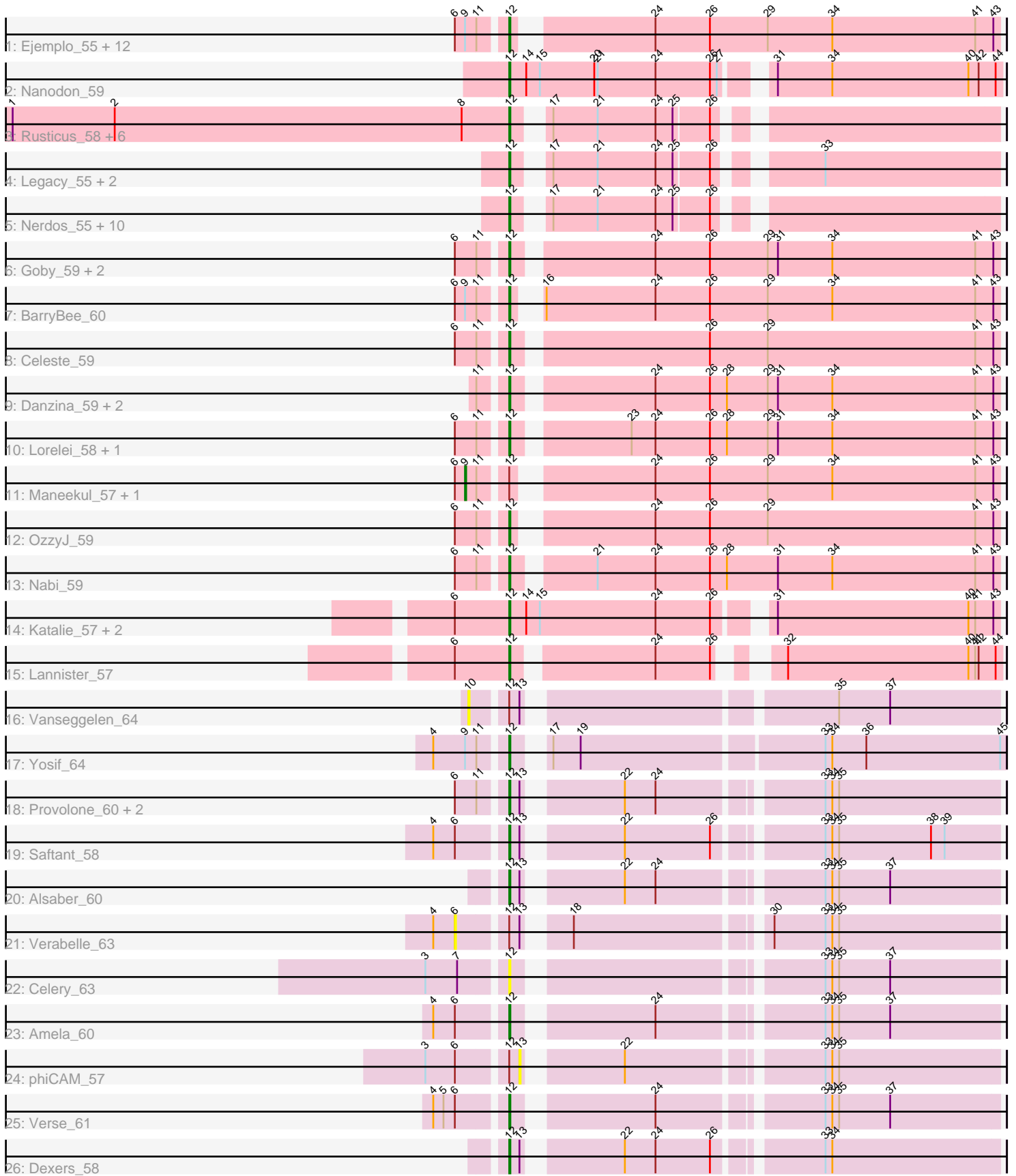


# Pham 85546



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 85546 Report

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

Pham number 85546 has 66 members, 8 are drafts.

Phages represented in each track:

- Track 1 : Ejemplo\_55, Werner\_57, Emaanora\_60, Dwayne\_57, Whatever\_57, Snorlax\_57, Chucky\_57, Asten\_57, SarahRose\_57, Hippo\_57, TuanPN\_55, TagePhighter\_59, Triste\_58
- Track 2 : Nanodon\_59
- Track 3 : Rusticus\_58, EnochSoames\_60, Eddasa\_59, Izzy\_58, Oliynyk\_58, Jash\_58, BryanRecycles\_58
- Track 4 : Legacy\_55, SunsetPointe\_55, Ozzie\_55
- Track 5 : Nerdos\_55, BeardedLady\_56, Esperer\_57, Phettuccine\_56, Leviticus\_57, Aaronocolus\_56, Caliburn\_55, Hydra\_58, Bovely\_56, Indigo\_55, Unstoppable\_56
- Track 6 : Goby\_59, Dattran\_60, Toma\_59
- Track 7 : BarryBee\_60
- Track 8 : Celeste\_59
- Track 9 : Danzina\_59, Brataylor\_60, Zemlya\_59
- Track 10 : Lorelei\_58, Rana\_59
- Track 11 : Maneekul\_57, Yasdnil\_57
- Track 12 : OzzyJ\_59
- Track 13 : Nabi\_59
- Track 14 : Katalie\_57, RedBear\_58, South40\_57
- Track 15 : Lannister\_57
- Track 16 : Vanseggelen\_64
- Track 17 : Yosif\_64
- Track 18 : Provolone\_60, ElGato\_62, Conan\_62
- Track 19 : Saftant\_58
- Track 20 : Alsaber\_60
- Track 21 : Verabelle\_63
- Track 22 : Celery\_63
- Track 23 : Amela\_60
- Track 24 : phiCAM\_57
- Track 25 : Verse\_61
- Track 26 : Dexers\_58

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

The start number called the most often in the published annotations is 12, it was called in 56 of the 58 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aaronocolus\_56, Alsaber\_60, Amela\_60, Asten\_57, BarryBee\_60, BeardedLady\_56, Bovely\_56, Brataylor\_60, BryanRecycles\_58, Caliburn\_55, Celery\_63, Celeste\_59, Chucky\_57, Conan\_62, Danzina\_59, Dattran\_60, Dexers\_58, Dwayne\_57, Eddasa\_59, Ejemplo\_55, ElGato\_62, Emaanora\_60, EnochSoames\_60, Esperer\_57, Goby\_59, Hippo\_57, Hydra\_58, Indigo\_55, Izzy\_58, Jash\_58, Katalie\_57, Lannister\_57, Legacy\_55, Leviticus\_57, Lorelei\_58, Nabi\_59, Nanodon\_59, Nerdos\_55, Oliynyk\_58, Ozzie\_55, OzzyJ\_59, Phettuccine\_56, Provolone\_60, Rana\_59, RedBear\_58, Rusticus\_58, Saftant\_58, SarahRose\_57, Snorlax\_57, South40\_57, SunsetPointe\_55, TagePhighter\_59, Toma\_59, Triste\_58, TuanPN\_55, Unstoppable\_56, Verse\_61, Werner\_57, Whatever\_57, Yosif\_64, Zemlya\_59,

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

- Maneekul\_57, Vanseggelen\_64, Verabelle\_63, Yasdnil\_57, phiCAM\_57,

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

- 

### Summary by start number:

Start 6:

- Found in 36 of 66 ( 54.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.8% of time when present
- Phage (with cluster) where this start called: Verabelle\_63 (BD3),

Start 9:

- Found in 17 of 66 ( 25.8% ) of genes in pham
- Manual Annotations of this start: 2 of 58
- Called 11.8% of time when present
- Phage (with cluster) where this start called: Maneekul\_57 (BD1), Yasdnil\_57 (BD1),

Start 10:

- Found in 1 of 66 ( 1.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Vanseggelen\_64 (BD3),

Start 12:

- Found in 66 of 66 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 56 of 58
- Called 92.4% of time when present
- Phage (with cluster) where this start called: Aaronocolus\_56 (BD1), Alsaber\_60 (BD3), Amela\_60 (BD3), Asten\_57 (BD1), BarryBee\_60 (BD1), BeardedLady\_56 (BD1), Bovely\_56 (BD1), Brataylor\_60 (BD1), BryanRecycles\_58 (BD1), Caliburn\_55 (BD1), Celery\_63 (BD3), Celeste\_59 (BD1), Chucky\_57 (BD1), Conan\_62 (BD3), Danzina\_59 (BD1), Dattran\_60 (BD1), Dexers\_58 (BD3), Dwayne\_57 (BD1), Eddasa\_59 (BD1), Ejemplo\_55 (BD1), ElGato\_62 (BD3), Emaanora\_60 (BD1), EnochSoames\_60 (BD1), Esperer\_57 (BD1), Goby\_59 (BD1), Hippo\_57 (BD1),

Hydra\_58 (BD1), Indigo\_55 (BD1), Izzy\_58 (BD1), Jash\_58 (BD1), Katalie\_57 (BD1), Lannister\_57 (BD1), Legacy\_55 (BD1), Leviticus\_57 (BD1), Lorelei\_58 (BD1), Nabi\_59 (BD1), Nanodon\_59 (BD1), Nerdos\_55 (BD1), Oliynyk\_58 (BD1), Ozzie\_55 (BD1), OzzyJ\_59 (BD1), Phettuccine\_56 (BD1), Provolone\_60 (BD3), Rana\_59 (BD1), RedBear\_58 (BD1), Rusticus\_58 (BD1), Saftant\_58 (BD3), SarahRose\_57 (BD1), Snorlax\_57 (BD1), South40\_57 (BD1), SunsetPointe\_55 (BD1), TagePhighter\_59 (BD1), Toma\_59 (BD1), Triste\_58 (BD1), TuanPN\_55 (BD1), Unstoppable\_56 (BD1), Verse\_61 (BD3), Werner\_57 (BD1), Whatever\_57 (BD1), Yosif\_64 (BD3), Zemlya\_59 (BD1),

Start 13:

- Found in 9 of 66 ( 13.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 11.1% of time when present
- Phage (with cluster) where this start called: phiCAM\_57 (BD3),

### **Summary by clusters:**

There are 2 clusters represented in this pham: BD1, BD3,

Info for manual annotations of cluster BD1:

- Start number 9 was manually annotated 2 times for cluster BD1.
- Start number 12 was manually annotated 49 times for cluster BD1.

Info for manual annotations of cluster BD3:

- Start number 12 was manually annotated 7 times for cluster BD3.

### **Gene Information:**

Gene: Aaronocolus\_56 Start: 41365, Stop: 40988, Start Num: 12

Candidate Starts for Aaronocolus\_56:

(Start: 12 @41365 has 56 MA's), (17, 41347), (21, 41308), (24, 41257), (25, 41242), (26, 41212),

Gene: Alsaber\_60 Start: 41331, Stop: 40942, Start Num: 12

Candidate Starts for Alsaber\_60:

(Start: 12 @41331 has 56 MA's), (13, 41322), (22, 41250), (24, 41223), (33, 41094), (34, 41088), (35, 41082), (37, 41037),

Gene: Amela\_60 Start: 42314, Stop: 41925, Start Num: 12

Candidate Starts for Amela\_60:

(4, 42371), (6, 42353), (Start: 12 @42314 has 56 MA's), (24, 42206), (33, 42077), (34, 42071), (35, 42065), (37, 42020),

Gene: Asten\_57 Start: 43624, Stop: 43217, Start Num: 12

Candidate Starts for Asten\_57:

(6, 43663), (Start: 9 @43654 has 2 MA's), (11, 43645), (Start: 12 @43624 has 56 MA's), (24, 43519), (26, 43471), (29, 43420), (34, 43363), (41, 43237), (43, 43222),

Gene: BarryBee\_60 Start: 43646, Stop: 43239, Start Num: 12

Candidate Starts for BarryBee\_60:

(6, 43685), (Start: 9 @43676 has 2 MA's), (11, 43667), (Start: 12 @43646 has 56 MA's), (16, 43637), (24, 43541), (26, 43493), (29, 43442), (34, 43385), (41, 43259), (43, 43244),

Gene: BeardedLady\_56 Start: 41739, Stop: 41362, Start Num: 12

Candidate Starts for BeardedLady\_56:

(Start: 12 @41739 has 56 MA's), (17, 41721), (21, 41682), (24, 41631), (25, 41616), (26, 41586),

Gene: Bovely\_56 Start: 41368, Stop: 40991, Start Num: 12

Candidate Starts for Bovely\_56:

(Start: 12 @41368 has 56 MA's), (17, 41350), (21, 41311), (24, 41260), (25, 41245), (26, 41215),

Gene: Brataylor\_60 Start: 43194, Stop: 42781, Start Num: 12

Candidate Starts for Brataylor\_60:

(11, 43215), (Start: 12 @43194 has 56 MA's), (24, 43083), (26, 43035), (28, 43020), (29, 42984), (31, 42975), (34, 42927), (41, 42801), (43, 42786),

Gene: BryanRecycles\_58 Start: 41855, Stop: 41478, Start Num: 12

Candidate Starts for BryanRecycles\_58:

(1, 42293), (2, 42203), (8, 41897), (Start: 12 @41855 has 56 MA's), (17, 41837), (21, 41798), (24, 41747), (25, 41732), (26, 41702),

Gene: Caliburn\_55 Start: 41469, Stop: 41092, Start Num: 12

Candidate Starts for Caliburn\_55:

(Start: 12 @41469 has 56 MA's), (17, 41451), (21, 41412), (24, 41361), (25, 41346), (26, 41316),

Gene: Celery\_63 Start: 41300, Stop: 40911, Start Num: 12

Candidate Starts for Celery\_63:

(3, 41363), (7, 41336), (Start: 12 @41300 has 56 MA's), (33, 41063), (34, 41057), (35, 41051), (37, 41006),

Gene: Celeste\_59 Start: 42663, Stop: 42250, Start Num: 12

Candidate Starts for Celeste\_59:

(6, 42702), (11, 42684), (Start: 12 @42663 has 56 MA's), (26, 42504), (29, 42453), (41, 42270), (43, 42255),

Gene: Chucky\_57 Start: 43663, Stop: 43256, Start Num: 12

Candidate Starts for Chucky\_57:

(6, 43702), (Start: 9 @43693 has 2 MA's), (11, 43684), (Start: 12 @43663 has 56 MA's), (24, 43558), (26, 43510), (29, 43459), (34, 43402), (41, 43276), (43, 43261),

Gene: Conan\_62 Start: 41291, Stop: 40902, Start Num: 12

Candidate Starts for Conan\_62:

(6, 41330), (11, 41312), (Start: 12 @41291 has 56 MA's), (13, 41282), (22, 41210), (24, 41183), (33, 41054), (34, 41048), (35, 41042),

Gene: Danzina\_59 Start: 42908, Stop: 42495, Start Num: 12

Candidate Starts for Danzina\_59:

(11, 42929), (Start: 12 @42908 has 56 MA's), (24, 42797), (26, 42749), (28, 42734), (29, 42698), (31, 42689), (34, 42641), (41, 42515), (43, 42500),

Gene: Dattran\_60 Start: 43054, Stop: 42641, Start Num: 12

Candidate Starts for Dattran\_60:

(6, 43093), (11, 43075), (Start: 12 @43054 has 56 MA's), (24, 42943), (26, 42895), (29, 42844), (31, 42835), (34, 42787), (41, 42661), (43, 42646),

Gene: Dexers\_58 Start: 41573, Stop: 41184, Start Num: 12

Candidate Starts for Dexers\_58:

(Start: 12 @41573 has 56 MA's), (13, 41564), (22, 41492), (24, 41465), (26, 41417), (33, 41336), (34, 41330),

Gene: Dwayne\_57 Start: 43651, Stop: 43244, Start Num: 12

Candidate Starts for Dwayne\_57:

(6, 43690), (Start: 9 @43681 has 2 MA's), (11, 43672), (Start: 12 @43651 has 56 MA's), (24, 43546), (26, 43498), (29, 43447), (34, 43390), (41, 43264), (43, 43249),

Gene: Eddasa\_59 Start: 42394, Stop: 42017, Start Num: 12

Candidate Starts for Eddasa\_59:

(1, 42832), (2, 42742), (8, 42436), (Start: 12 @42394 has 56 MA's), (17, 42376), (21, 42337), (24, 42286), (25, 42271), (26, 42241),

Gene: Ejemplo\_55 Start: 43589, Stop: 43182, Start Num: 12

Candidate Starts for Ejemplo\_55:

(6, 43628), (Start: 9 @43619 has 2 MA's), (11, 43610), (Start: 12 @43589 has 56 MA's), (24, 43484), (26, 43436), (29, 43385), (34, 43328), (41, 43202), (43, 43187),

Gene: ElGato\_62 Start: 41162, Stop: 40773, Start Num: 12

Candidate Starts for ElGato\_62:

(6, 41201), (11, 41183), (Start: 12 @41162 has 56 MA's), (13, 41153), (22, 41081), (24, 41054), (33, 40925), (34, 40919), (35, 40913),

Gene: Emaanora\_60 Start: 43574, Stop: 43167, Start Num: 12

Candidate Starts for Emaanora\_60:

(6, 43613), (Start: 9 @43604 has 2 MA's), (11, 43595), (Start: 12 @43574 has 56 MA's), (24, 43469), (26, 43421), (29, 43370), (34, 43313), (41, 43187), (43, 43172),

Gene: EnochSoames\_60 Start: 41651, Stop: 41274, Start Num: 12

Candidate Starts for EnochSoames\_60:

(1, 42089), (2, 41999), (8, 41693), (Start: 12 @41651 has 56 MA's), (17, 41633), (21, 41594), (24, 41543), (25, 41528), (26, 41498),

Gene: Esperer\_57 Start: 41711, Stop: 41334, Start Num: 12

Candidate Starts for Esperer\_57:

(Start: 12 @41711 has 56 MA's), (17, 41693), (21, 41654), (24, 41603), (25, 41588), (26, 41558),

Gene: Goby\_59 Start: 43480, Stop: 43067, Start Num: 12

Candidate Starts for Goby\_59:

(6, 43519), (11, 43501), (Start: 12 @43480 has 56 MA's), (24, 43369), (26, 43321), (29, 43270), (31, 43261), (34, 43213), (41, 43087), (43, 43072),

Gene: Hippo\_57 Start: 43637, Stop: 43230, Start Num: 12

Candidate Starts for Hippo\_57:

(6, 43676), (Start: 9 @43667 has 2 MA's), (11, 43658), (Start: 12 @43637 has 56 MA's), (24, 43532), (26, 43484), (29, 43433), (34, 43376), (41, 43250), (43, 43235),

Gene: Hydra\_58 Start: 42547, Stop: 42170, Start Num: 12

Candidate Starts for Hydra\_58:

(Start: 12 @42547 has 56 MA's), (17, 42529), (21, 42490), (24, 42439), (25, 42424), (26, 42394),

Gene: Indigo\_55 Start: 41361, Stop: 40984, Start Num: 12

Candidate Starts for Indigo\_55:

(Start: 12 @41361 has 56 MA's), (17, 41343), (21, 41304), (24, 41253), (25, 41238), (26, 41208),

Gene: Izzy\_58 Start: 41902, Stop: 41525, Start Num: 12

Candidate Starts for Izzy\_58:

(1, 42340), (2, 42250), (8, 41944), (Start: 12 @41902 has 56 MA's), (17, 41884), (21, 41845), (24, 41794), (25, 41779), (26, 41749),

Gene: Jash\_58 Start: 41855, Stop: 41478, Start Num: 12

Candidate Starts for Jash\_58:

(1, 42293), (2, 42203), (8, 41897), (Start: 12 @41855 has 56 MA's), (17, 41837), (21, 41798), (24, 41747), (25, 41732), (26, 41702),

Gene: Katalie\_57 Start: 43906, Stop: 43499, Start Num: 12

Candidate Starts for Katalie\_57:

(6, 43954), (Start: 12 @43906 has 56 MA's), (14, 43891), (15, 43879), (24, 43777), (26, 43729), (31, 43693), (40, 43525), (41, 43519), (43, 43504),

Gene: Lannister\_57 Start: 42573, Stop: 42196, Start Num: 12

Candidate Starts for Lannister\_57:

(6, 42621), (Start: 12 @42573 has 56 MA's), (24, 42462), (26, 42414), (32, 42384), (40, 42225), (41, 42219), (42, 42216), (44, 42201),

Gene: Legacy\_55 Start: 41460, Stop: 41083, Start Num: 12

Candidate Starts for Legacy\_55:

(Start: 12 @41460 has 56 MA's), (17, 41442), (21, 41403), (24, 41352), (25, 41337), (26, 41307), (33, 41235),

Gene: Leviticus\_57 Start: 41898, Stop: 41521, Start Num: 12

Candidate Starts for Leviticus\_57:

(Start: 12 @41898 has 56 MA's), (17, 41880), (21, 41841), (24, 41790), (25, 41775), (26, 41745),

Gene: Lorelei\_58 Start: 42670, Stop: 42257, Start Num: 12

Candidate Starts for Lorelei\_58:

(6, 42709), (11, 42691), (Start: 12 @42670 has 56 MA's), (23, 42580), (24, 42559), (26, 42511), (28, 42496), (29, 42460), (31, 42451), (34, 42403), (41, 42277), (43, 42262),

Gene: Maneekul\_57 Start: 43697, Stop: 43260, Start Num: 9

Candidate Starts for Maneekul\_57:

(6, 43706), (Start: 9 @43697 has 2 MA's), (11, 43688), (Start: 12 @43667 has 56 MA's), (24, 43562), (26, 43514), (29, 43463), (34, 43406), (41, 43280), (43, 43265),

Gene: Nabi\_59 Start: 43197, Stop: 42784, Start Num: 12

Candidate Starts for Nabi\_59:

(6, 43236), (11, 43218), (Start: 12 @43197 has 56 MA's), (21, 43137), (24, 43086), (26, 43038), (28, 43023), (31, 42978), (34, 42930), (41, 42804), (43, 42789),

Gene: Nanodon\_59 Start: 42598, Stop: 42188, Start Num: 12

Candidate Starts for Nanodon\_59:

(Start: 12 @42598 has 56 MA's), (14, 42583), (15, 42571), (20, 42523), (21, 42520), (24, 42469), (26, 42421), (27, 42415), (31, 42385), (34, 42337), (40, 42217), (42, 42208), (44, 42193),

Gene: Nerdos\_55 Start: 41360, Stop: 40983, Start Num: 12

Candidate Starts for Nerdos\_55:

(Start: 12 @41360 has 56 MA's), (17, 41342), (21, 41303), (24, 41252), (25, 41237), (26, 41207),

Gene: Oliynyk\_58 Start: 41855, Stop: 41478, Start Num: 12

Candidate Starts for Oliynyk\_58:

(1, 42293), (2, 42203), (8, 41897), (Start: 12 @41855 has 56 MA's), (17, 41837), (21, 41798), (24, 41747), (25, 41732), (26, 41702),

Gene: Ozzie\_55 Start: 41469, Stop: 41092, Start Num: 12

Candidate Starts for Ozzie\_55:

(Start: 12 @41469 has 56 MA's), (17, 41451), (21, 41412), (24, 41361), (25, 41346), (26, 41316), (33, 41244),

Gene: OzzyJ\_59 Start: 43564, Stop: 43157, Start Num: 12

Candidate Starts for OzzyJ\_59:

(6, 43603), (11, 43585), (Start: 12 @43564 has 56 MA's), (24, 43459), (26, 43411), (29, 43360), (41, 43177), (43, 43162),

Gene: Phettuccine\_56 Start: 41361, Stop: 40984, Start Num: 12

Candidate Starts for Phettuccine\_56:

(Start: 12 @41361 has 56 MA's), (17, 41343), (21, 41304), (24, 41253), (25, 41238), (26, 41208),

Gene: Provolone\_60 Start: 41374, Stop: 40985, Start Num: 12

Candidate Starts for Provolone\_60:

(6, 41413), (11, 41395), (Start: 12 @41374 has 56 MA's), (13, 41365), (22, 41293), (24, 41266), (33, 41137), (34, 41131), (35, 41125),

Gene: Rana\_59 Start: 43092, Stop: 42679, Start Num: 12

Candidate Starts for Rana\_59:

(6, 43131), (11, 43113), (Start: 12 @43092 has 56 MA's), (23, 43002), (24, 42981), (26, 42933), (28, 42918), (29, 42882), (31, 42873), (34, 42825), (41, 42699), (43, 42684),

Gene: RedBear\_58 Start: 43906, Stop: 43499, Start Num: 12

Candidate Starts for RedBear\_58:

(6, 43954), (Start: 12 @43906 has 56 MA's), (14, 43891), (15, 43879), (24, 43777), (26, 43729), (31, 43693), (40, 43525), (41, 43519), (43, 43504),

Gene: Rusticus\_58 Start: 41855, Stop: 41478, Start Num: 12

Candidate Starts for Rusticus\_58:

(1, 42293), (2, 42203), (8, 41897), (Start: 12 @41855 has 56 MA's), (17, 41837), (21, 41798), (24, 41747), (25, 41732), (26, 41702),

Gene: Saftant\_58 Start: 41448, Stop: 41059, Start Num: 12

Candidate Starts for Saftant\_58:

(4, 41505), (6, 41487), (Start: 12 @41448 has 56 MA's), (13, 41439), (22, 41367), (26, 41292), (33, 41211), (34, 41205), (35, 41199), (38, 41118), (39, 41106),

Gene: SarahRose\_57 Start: 43636, Stop: 43229, Start Num: 12

Candidate Starts for SarahRose\_57:



(6, 43675), (Start: 9 @43666 has 2 MA's), (11, 43657), (Start: 12 @43636 has 56 MA's), (24, 43531), (26, 43483), (29, 43432), (34, 43375), (41, 43249), (43, 43234),

Gene: Snorlax\_57 Start: 43661, Stop: 43254, Start Num: 12

Candidate Starts for Snorlax\_57:

(6, 43700), (Start: 9 @43691 has 2 MA's), (11, 43682), (Start: 12 @43661 has 56 MA's), (24, 43556), (26, 43508), (29, 43457), (34, 43400), (41, 43274), (43, 43259),

Gene: South40\_57 Start: 43906, Stop: 43499, Start Num: 12

Candidate Starts for South40\_57:

(6, 43954), (Start: 12 @43906 has 56 MA's), (14, 43891), (15, 43879), (24, 43777), (26, 43729), (31, 43693), (40, 43525), (41, 43519), (43, 43504),

Gene: SunsetPointe\_55 Start: 41476, Stop: 41099, Start Num: 12

Candidate Starts for SunsetPointe\_55:

(Start: 12 @41476 has 56 MA's), (17, 41458), (21, 41419), (24, 41368), (25, 41353), (26, 41323), (33, 41251),

Gene: TagePhighter\_59 Start: 43637, Stop: 43230, Start Num: 12

Candidate Starts for TagePhighter\_59:

(6, 43676), (Start: 9 @43667 has 2 MA's), (11, 43658), (Start: 12 @43637 has 56 MA's), (24, 43532), (26, 43484), (29, 43433), (34, 43376), (41, 43250), (43, 43235),

Gene: Toma\_59 Start: 43483, Stop: 43070, Start Num: 12

Candidate Starts for Toma\_59:

(6, 43522), (11, 43504), (Start: 12 @43483 has 56 MA's), (24, 43372), (26, 43324), (29, 43273), (31, 43264), (34, 43216), (41, 43090), (43, 43075),

Gene: Triste\_58 Start: 43636, Stop: 43229, Start Num: 12

Candidate Starts for Triste\_58:

(6, 43675), (Start: 9 @43666 has 2 MA's), (11, 43657), (Start: 12 @43636 has 56 MA's), (24, 43531), (26, 43483), (29, 43432), (34, 43375), (41, 43249), (43, 43234),

Gene: TuanPN\_55 Start: 43589, Stop: 43182, Start Num: 12

Candidate Starts for TuanPN\_55:

(6, 43628), (Start: 9 @43619 has 2 MA's), (11, 43610), (Start: 12 @43589 has 56 MA's), (24, 43484), (26, 43436), (29, 43385), (34, 43328), (41, 43202), (43, 43187),

Gene: Unstoppable\_56 Start: 41359, Stop: 40982, Start Num: 12

Candidate Starts for Unstoppable\_56:

(Start: 12 @41359 has 56 MA's), (17, 41341), (21, 41302), (24, 41251), (25, 41236), (26, 41206),

Gene: Vanseggelen\_64 Start: 41217, Stop: 40798, Start Num: 10

Candidate Starts for Vanseggelen\_64:

(10, 41217), (Start: 12 @41190 has 56 MA's), (13, 41181), (35, 40938), (37, 40893),

Gene: Verabelle\_63 Start: 41104, Stop: 40676, Start Num: 6

Candidate Starts for Verabelle\_63:

(4, 41122), (6, 41104), (Start: 12 @41065 has 56 MA's), (13, 41056), (18, 41029), (30, 40873), (33, 40828), (34, 40822), (35, 40816),

Gene: Verse\_61 Start: 42305, Stop: 41916, Start Num: 12

Candidate Starts for Verse\_61:

(4, 42362), (5, 42353), (6, 42344), (Start: 12 @42305 has 56 MA's), (24, 42197), (33, 42068), (34, 42062), (35, 42056), (37, 42011),

Gene: Werner\_57 Start: 43634, Stop: 43227, Start Num: 12

Candidate Starts for Werner\_57:

(6, 43673), (Start: 9 @43664 has 2 MA's), (11, 43655), (Start: 12 @43634 has 56 MA's), (24, 43529), (26, 43481), (29, 43430), (34, 43373), (41, 43247), (43, 43232),

Gene: Whatever\_57 Start: 43660, Stop: 43253, Start Num: 12

Candidate Starts for Whatever\_57:

(6, 43699), (Start: 9 @43690 has 2 MA's), (11, 43681), (Start: 12 @43660 has 56 MA's), (24, 43555), (26, 43507), (29, 43456), (34, 43399), (41, 43273), (43, 43258),

Gene: Yasdnil\_57 Start: 43716, Stop: 43279, Start Num: 9

Candidate Starts for Yasdnil\_57:

(6, 43725), (Start: 9 @43716 has 2 MA's), (11, 43707), (Start: 12 @43686 has 56 MA's), (24, 43581), (26, 43533), (29, 43482), (34, 43425), (41, 43299), (43, 43284),

Gene: Yosif\_64 Start: 42492, Stop: 42088, Start Num: 12

Candidate Starts for Yosif\_64:

(4, 42549), (Start: 9 @42522 has 2 MA's), (11, 42513), (Start: 12 @42492 has 56 MA's), (17, 42474), (19, 42450), (33, 42246), (34, 42240), (36, 42210), (45, 42093),

Gene: Zemlya\_59 Start: 43213, Stop: 42800, Start Num: 12

Candidate Starts for Zemlya\_59:

(11, 43234), (Start: 12 @43213 has 56 MA's), (24, 43102), (26, 43054), (28, 43039), (29, 43003), (31, 42994), (34, 42946), (41, 42820), (43, 42805),

Gene: phiCAM\_57 Start: 43102, Stop: 42722, Start Num: 13

Candidate Starts for phiCAM\_57:

(3, 43174), (6, 43150), (Start: 12 @43111 has 56 MA's), (13, 43102), (22, 43030), (33, 42874), (34, 42868), (35, 42862),