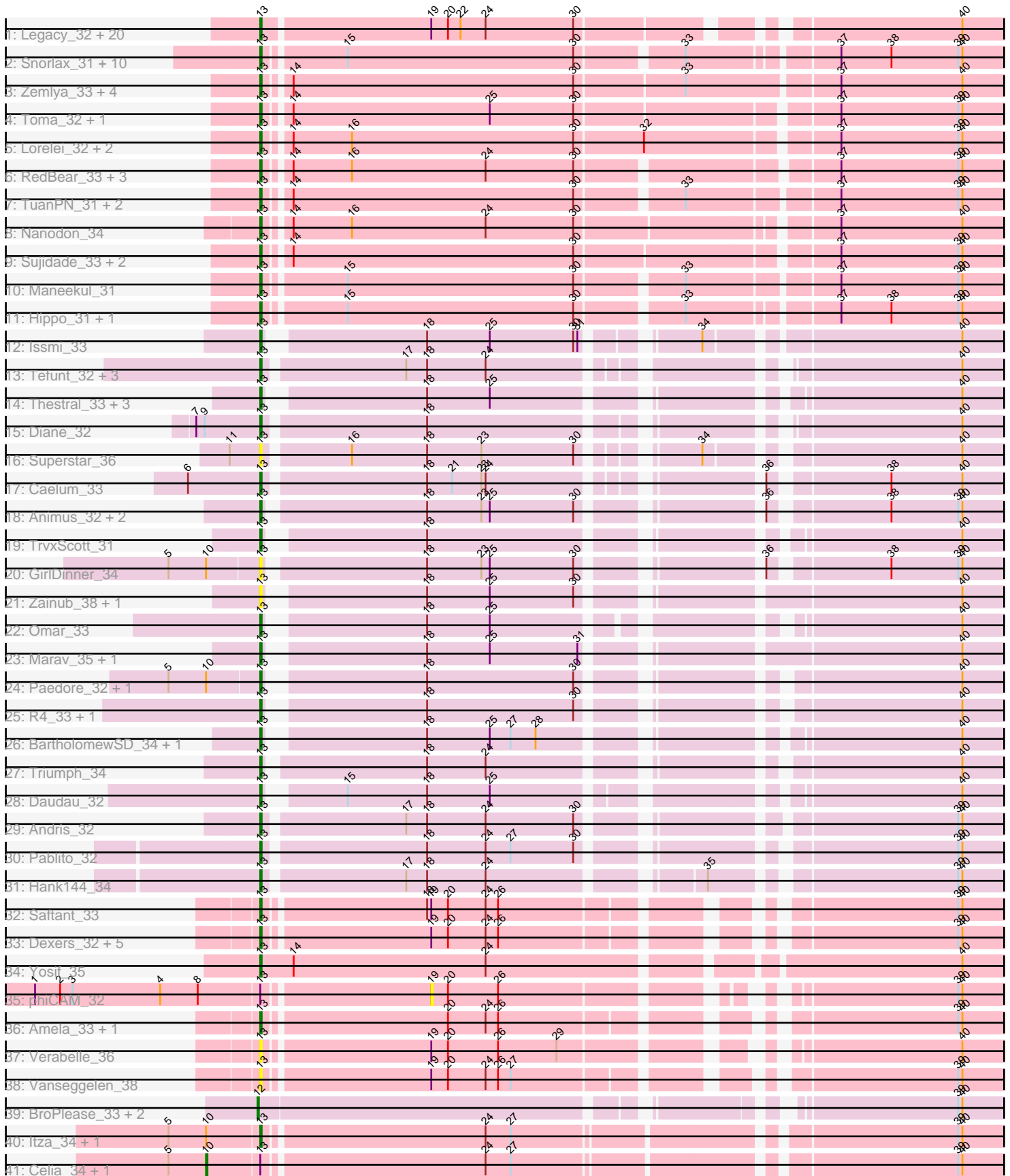


# Pham 154591



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 154591 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 154591 has 109 members, 15 are drafts.

Phages represented in each track:

- Track 1 : Legacy\_32, BeardedLady\_33, Nerdos\_32, Caliburn\_32, EnochSoames\_35, Esperer\_32, Izzy\_33, Unstoppable\_32, SunsetPointe\_32, Leviticus\_32, Indigo\_31, Aaronocolus\_32, Phettuccine\_32, Rusticus\_33, Hydra\_34, Jash\_33, Bovely\_32, BryanRecycles\_33, Oliynyk\_33, Ozzie\_32, Eddasa\_33
- Track 2 : Snorlax\_31, Werner\_31, Chucky\_31, BarryBee\_34, TagePhighter\_33, SarahRose\_31, Triste\_31, OzzyJ\_32, Whatever\_31, Emaanora\_34, Asten\_31
- Track 3 : Zemlya\_33, Celeste\_32, Brataylor\_34, Danzina\_33, Dattran\_33
- Track 4 : Toma\_32, Goby\_32
- Track 5 : Lorelei\_32, Nabi\_32, Rana\_32
- Track 6 : RedBear\_33, South40\_32, Katalie\_32, Lannister\_34
- Track 7 : TuanPN\_31, Yasdnih\_31, Ejemplo\_31
- Track 8 : Nanodon\_34
- Track 9 : Sujidade\_33, Godpower\_33, Lika\_32
- Track 10 : Maneekul\_31
- Track 11 : Hippo\_31, Dwayne\_31
- Track 12 : Issmi\_33
- Track 13 : Tefunt\_32, Nishikigoi\_32, Haizum\_32, Amethyst\_32
- Track 14 : Thestral\_33, Bowden\_32, Puginator\_36, TinaBelcher\_32
- Track 15 : Diane\_32
- Track 16 : Superstar\_36
- Track 17 : Caelum\_33
- Track 18 : Animus\_32, SqueakyClean\_32, Janus\_33
- Track 19 : TrvxScott\_31
- Track 20 : GirlDinner\_34
- Track 21 : Zainub\_38, Paolo\_36
- Track 22 : Omar\_33
- Track 23 : Marav\_35, Jevington\_35
- Track 24 : Paedore\_32, Loofah\_33
- Track 25 : R4\_33, ELB20\_31
- Track 26 : BartholomewSD\_34, Alvy\_34
- Track 27 : Triumph\_34
- Track 28 : Daudau\_32
- Track 29 : Andris\_32

- Track 30 : Pablito\_32
- Track 31 : Hank144\_34
- Track 32 : Saftant\_33
- Track 33 : Dexers\_32, Alsaber\_34, Celery\_36, Conan\_36, ElGato\_35, Provolone\_34
- Track 34 : Yosif\_35
- Track 35 : phiCAM\_32
- Track 36 : Amela\_33, Verse\_33
- Track 37 : Verabelle\_36
- Track 38 : Vanseggelen\_38
- Track 39 : BroPlease\_33, phiHau3\_34, GreenWeasel\_34
- Track 40 : Itza\_34, Urza\_34
- Track 41 : Celia\_34, VieEnRose\_34

### ***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 89 of the 94 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aaronocolus\_32, Alsaber\_34, Alvy\_34, Amela\_33, Amethyst\_32, Andris\_32, Animus\_32, Asten\_31, BarryBee\_34, BartholomewSD\_34, BeardedLady\_33, Bovely\_32, Bowden\_32, Brataylor\_34, BryanRecycles\_33, Caelum\_33, Caliburn\_32, Celery\_36, Celeste\_32, Chucky\_31, Conan\_36, Danzina\_33, Dattran\_33, Daudau\_32, Dexers\_32, Diane\_32, Dwayne\_31, ELB20\_31, Eddasa\_33, Ejemplo\_31, ElGato\_35, Emaanora\_34, EnochSoames\_35, Esperer\_32, GirlDinner\_34, Goby\_32, Godpower\_33, Haizum\_32, Hank144\_34, Hippo\_31, Hydra\_34, Indigo\_31, Issmi\_33, Itza\_34, Izzy\_33, Janus\_33, Jash\_33, Jevington\_35, Katalie\_32, Lannister\_34, Legacy\_32, Leviticus\_32, Lika\_32, Loofah\_33, Lorelei\_32, Maneekul\_31, Marav\_35, Nabi\_32, Nanodon\_34, Nerdos\_32, Nishikigoi\_32, Oliynyk\_33, Omar\_33, Ozzie\_32, OzzyJ\_32, Pablito\_32, Paedore\_32, Paolo\_36, Phettuccine\_32, Provolone\_34, Puginator\_36, R4\_33, Rana\_32, RedBear\_33, Rusticus\_33, Saftant\_33, SarahRose\_31, Snorlax\_31, South40\_32, SqueakyClean\_32, Sujidade\_33, SunsetPointe\_32, Superstar\_36, TagePhighter\_33, Tefunt\_32, Thestral\_33, TinaBelcher\_32, Toma\_32, Triste\_31, Triumph\_34, TrvxScott\_31, TuanPN\_31, Unstoppable\_32, Urza\_34, Vanseggelen\_38, Verabelle\_36, Verse\_33, Werner\_31, Whatever\_31, Yasdnil\_31, Yosif\_35, Zainub\_38, Zemlya\_33,

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

- Celia\_34, VieEnRose\_34, phiCAM\_32,

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

- BroPlease\_33, GreenWeasel\_34, phiHau3\_34,

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

Start 10:

- Found in 7 of 109 ( 6.4% ) of genes in pham
- Manual Annotations of this start: 2 of 94

- Called 28.6% of time when present
- Phage (with cluster) where this start called: Celia\_34 (BD6), VieEnRose\_34 (BD6),

Start 12:

- Found in 3 of 109 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 3 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BroPlease\_33 (BD4), GreenWeasel\_34 (BD4), phiHau3\_34 (BD4),

Start 13:

- Found in 106 of 109 ( 97.2% ) of genes in pham
- Manual Annotations of this start: 89 of 94
- Called 97.2% of time when present
- Phage (with cluster) where this start called: Aaronocolus\_32 (BD1), Alsaber\_34 (BD3), Alvy\_34 (BD2), Amela\_33 (BD3), Amethyst\_32 (BD2), Andris\_32 (BD2), Animus\_32 (BD2), Asten\_31 (BD1), BarryBee\_34 (BD1), BartholomewSD\_34 (BD2), BeardedLady\_33 (BD1), Bovely\_32 (BD1), Bowden\_32 (BD2), Brataylor\_34 (BD1), BryanRecycles\_33 (BD1), Caelum\_33 (BD2), Caliburn\_32 (BD1), Celery\_36 (BD3), Celeste\_32 (BD1), Chucky\_31 (BD1), Conan\_36 (BD3), Danzina\_33 (BD1), Dattran\_33 (BD1), Daudau\_32 (BD2), Dexers\_32 (BD3), Diane\_32 (BD2), Dwayne\_31 (BD1), ELB20\_31 (BD2), Eddasa\_33 (BD1), Ejemplo\_31 (BD1), ElGato\_35 (BD3), Emaanora\_34 (BD1), EnochSoames\_35 (BD1), Esperer\_32 (BD1), GirlDinner\_34 (BD2), Goby\_32 (BD1), Godpower\_33 (BD1), Haizum\_32 (BD2), Hank144\_34 (BD2), Hippo\_31 (BD1), Hydra\_34 (BD1), Indigo\_31 (BD1), Issmi\_33 (BD2), Itza\_34 (BD6), Izzy\_33 (BD1), Janus\_33 (BD2), Jash\_33 (BD1), Jevington\_35 (BD2), Katalie\_32 (BD1), Lannister\_34 (BD1), Legacy\_32 (BD1), Leviticus\_32 (BD1), Lika\_32 (BD1), Loofah\_33 (BD2), Lorelei\_32 (BD1), Maneekul\_31 (BD1), Marav\_35 (BD2), Nabi\_32 (BD1), Nanodon\_34 (BD1), Nerdos\_32 (BD1), Nishikigoi\_32 (BD2), Oliynyk\_33 (BD1), Omar\_33 (BD2), Ozzie\_32 (BD1), OzzyJ\_32 (BD1), Pablito\_32 (BD2), Paedore\_32 (BD2), Paolo\_36 (BD2), Phettuccine\_32 (BD1), Provolone\_34 (BD3), Puginator\_36 (BD2), R4\_33 (BD2), Rana\_32 (BD1), RedBear\_33 (BD1), Rusticus\_33 (BD1), Saftant\_33 (BD3), SarahRose\_31 (BD1), Snorlax\_31 (BD1), South40\_32 (BD1), SqueakyClean\_32 (BD2), Sujidade\_33 (BD1), SunsetPointe\_32 (BD1), Superstar\_36 (BD2), TagePhighter\_33 (BD1), Tefunt\_32 (BD2), Thestral\_33 (BD2), TinaBelcher\_32 (BD2), Toma\_32 (BD1), Triste\_31 (BD1), Triumph\_34 (BD2), TrvxScott\_31 (BD2), TuanPN\_31 (BD1), Unstoppable\_32 (BD1), Urza\_34 (BD6), Vanseggelen\_38 (BD3), Verabelle\_36 (BD3), Verse\_33 (BD3), Werner\_31 (BD1), Whatever\_31 (BD1), Yasdnil\_31 (BD1), Yosif\_35 (BD3), Zainub\_38 (BD2), Zemlya\_33 (BD1),

Start 19:

- Found in 31 of 109 ( 28.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 3.2% of time when present
- Phage (with cluster) where this start called: phiCAM\_32 (BD3),

### 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 13 was manually annotated 54 times for cluster BD1.

Info for manual annotations of cluster BD2:

- Start number 13 was manually annotated 26 times for cluster BD2.

Info for manual annotations of cluster BD3:

- Start number 13 was manually annotated 7 times for cluster BD3.

Info for manual annotations of cluster BD4:

- Start number 12 was manually annotated 3 times for cluster BD4.

Info for manual annotations of cluster BD6:

- Start number 10 was manually annotated 2 times for cluster BD6.
- Start number 13 was manually annotated 2 times for cluster BD6.

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

Gene: Aaronocolus\_32 Start: 24632, Stop: 25132, Start Num: 13

Candidate Starts for Aaronocolus\_32:

(Start: 13 @24632 has 89 MA's), (19, 24749), (20, 24761), (22, 24770), (24, 24788), (30, 24851), (40, 25088),

Gene: Alsaber\_34 Start: 26483, Stop: 26968, Start Num: 13

Candidate Starts for Alsaber\_34:

(Start: 13 @26483 has 89 MA's), (19, 26597), (20, 26609), (24, 26636), (26, 26645), (39, 26921), (40, 26924),

Gene: Alvy\_34 Start: 25839, Stop: 26327, Start Num: 13

Candidate Starts for Alvy\_34:

(Start: 13 @25839 has 89 MA's), (18, 25941), (25, 25986), (27, 26001), (28, 26019), (40, 26277),

Gene: Amela\_33 Start: 27315, Stop: 27800, Start Num: 13

Candidate Starts for Amela\_33:

(Start: 13 @27315 has 89 MA's), (20, 27441), (24, 27468), (26, 27477), (39, 27753), (40, 27756),

Gene: Amethyst\_32 Start: 25324, Stop: 25806, Start Num: 13

Candidate Starts for Amethyst\_32:

(Start: 13 @25324 has 89 MA's), (17, 25420), (18, 25435), (24, 25477), (40, 25765),

Gene: Andris\_32 Start: 25368, Stop: 25856, Start Num: 13

Candidate Starts for Andris\_32:

(Start: 13 @25368 has 89 MA's), (17, 25464), (18, 25479), (24, 25521), (30, 25584), (39, 25815), (40, 25818),

Gene: Animus\_32 Start: 25819, Stop: 26301, Start Num: 13

Candidate Starts for Animus\_32:

(Start: 13 @25819 has 89 MA's), (18, 25927), (23, 25966), (25, 25972), (30, 26032), (36, 26137), (38, 26212), (39, 26260), (40, 26263),

Gene: Asten\_31 Start: 24854, Stop: 25366, Start Num: 13

Candidate Starts for Asten\_31:

(Start: 13 @24854 has 89 MA's), (15, 24908), (30, 25070), (33, 25139), (37, 25235), (38, 25271), (39, 25319), (40, 25322),

Gene: BarryBee\_34 Start: 24864, Stop: 25376, Start Num: 13

Candidate Starts for BarryBee\_34:

(Start: 13 @24864 has 89 MA's), (15, 24918), (30, 25080), (33, 25149), (37, 25245), (38, 25281), (39, 25329), (40, 25332),

Gene: BartholomewSD\_34 Start: 25839, Stop: 26327, Start Num: 13

Candidate Starts for BartholomewSD\_34:

(Start: 13 @25839 has 89 MA's), (18, 25941), (25, 25986), (27, 26001), (28, 26019), (40, 26277),

Gene: BeardedLady\_33 Start: 24885, Stop: 25385, Start Num: 13

Candidate Starts for BeardedLady\_33:

(Start: 13 @24885 has 89 MA's), (19, 25002), (20, 25014), (22, 25023), (24, 25041), (30, 25104), (40, 25341),

Gene: Bovely\_32 Start: 24638, Stop: 25138, Start Num: 13

Candidate Starts for Bovely\_32:

(Start: 13 @24638 has 89 MA's), (19, 24755), (20, 24767), (22, 24776), (24, 24794), (30, 24857), (40, 25094),

Gene: Bowden\_32 Start: 25754, Stop: 26239, Start Num: 13

Candidate Starts for Bowden\_32:

(Start: 13 @25754 has 89 MA's), (18, 25856), (25, 25901), (40, 26192),

Gene: Brataylor\_34 Start: 25816, Stop: 26340, Start Num: 13

Candidate Starts for Brataylor\_34:

(Start: 13 @25816 has 89 MA's), (14, 25831), (30, 26032), (33, 26107), (37, 26209), (40, 26296),

Gene: BroPlease\_33 Start: 25170, Stop: 25658, Start Num: 12

Candidate Starts for BroPlease\_33:

(Start: 12 @25170 has 3 MA's), (39, 25614), (40, 25617),

Gene: BryanRecycles\_33 Start: 24989, Stop: 25489, Start Num: 13

Candidate Starts for BryanRecycles\_33:

(Start: 13 @24989 has 89 MA's), (19, 25106), (20, 25118), (22, 25127), (24, 25145), (30, 25208), (40, 25445),

Gene: Caelum\_33 Start: 25475, Stop: 25954, Start Num: 13

Candidate Starts for Caelum\_33:

(6, 25424), (Start: 13 @25475 has 89 MA's), (18, 25586), (21, 25604), (23, 25625), (24, 25628), (36, 25790), (38, 25865), (40, 25916),

Gene: Caliburn\_32 Start: 24615, Stop: 25115, Start Num: 13

Candidate Starts for Caliburn\_32:

(Start: 13 @24615 has 89 MA's), (19, 24732), (20, 24744), (22, 24753), (24, 24771), (30, 24834), (40, 25071),

Gene: Celery\_36 Start: 26418, Stop: 26903, Start Num: 13

Candidate Starts for Celery\_36:

(Start: 13 @26418 has 89 MA's), (19, 26532), (20, 26544), (24, 26571), (26, 26580), (39, 26856), (40, 26859),

Gene: Celeste\_32 Start: 25285, Stop: 25809, Start Num: 13

Candidate Starts for Celeste\_32:

(Start: 13 @25285 has 89 MA's), (14, 25300), (30, 25501), (33, 25576), (37, 25678), (40, 25765),

Gene: Celia\_34 Start: 25662, Stop: 26207, Start Num: 10

Candidate Starts for Celia\_34:

(5, 25635), (Start: 10 @25662 has 2 MA's), (Start: 13 @25698 has 89 MA's), (24, 25851), (27, 25869), (39, 26157), (40, 26160),

Gene: Chucky\_31 Start: 24868, Stop: 25380, Start Num: 13

Candidate Starts for Chucky\_31:

(Start: 13 @24868 has 89 MA's), (15, 24922), (30, 25084), (33, 25153), (37, 25249), (38, 25285), (39, 25333), (40, 25336),

Gene: Conan\_36 Start: 26379, Stop: 26864, Start Num: 13

Candidate Starts for Conan\_36:

(Start: 13 @26379 has 89 MA's), (19, 26493), (20, 26505), (24, 26532), (26, 26541), (39, 26817), (40, 26820),

Gene: Danzina\_33 Start: 25586, Stop: 26110, Start Num: 13

Candidate Starts for Danzina\_33:

(Start: 13 @25586 has 89 MA's), (14, 25601), (30, 25802), (33, 25877), (37, 25979), (40, 26066),

Gene: Dattran\_33 Start: 25392, Stop: 25916, Start Num: 13

Candidate Starts for Dattran\_33:

(Start: 13 @25392 has 89 MA's), (14, 25407), (30, 25608), (33, 25683), (37, 25785), (40, 25872),

Gene: Daudau\_32 Start: 25582, Stop: 26070, Start Num: 13

Candidate Starts for Daudau\_32:

(Start: 13 @25582 has 89 MA's), (15, 25627), (18, 25684), (25, 25729), (40, 26020),

Gene: Dexers\_32 Start: 26405, Stop: 26890, Start Num: 13

Candidate Starts for Dexers\_32:

(Start: 13 @26405 has 89 MA's), (19, 26519), (20, 26531), (24, 26558), (26, 26567), (39, 26843), (40, 26846),

Gene: Diane\_32 Start: 25594, Stop: 26076, Start Num: 13

Candidate Starts for Diane\_32:

(7, 25549), (9, 25555), (Start: 13 @25594 has 89 MA's), (18, 25705), (40, 26035),

Gene: Dwayne\_31 Start: 24855, Stop: 25367, Start Num: 13

Candidate Starts for Dwayne\_31:

(Start: 13 @24855 has 89 MA's), (15, 24909), (30, 25071), (33, 25140), (37, 25236), (38, 25272), (39, 25320), (40, 25323),

Gene: ELB20\_31 Start: 25968, Stop: 26450, Start Num: 13

Candidate Starts for ELB20\_31:

(Start: 13 @25968 has 89 MA's), (18, 26070), (30, 26175), (40, 26406),

Gene: Eddasa\_33 Start: 24989, Stop: 25489, Start Num: 13

Candidate Starts for Eddasa\_33:

(Start: 13 @24989 has 89 MA's), (19, 25106), (20, 25118), (22, 25127), (24, 25145), (30, 25208), (40, 25445),

Gene: Ejemplo\_31 Start: 24912, Stop: 25427, Start Num: 13

Candidate Starts for Ejemplo\_31:

(Start: 13 @24912 has 89 MA's), (14, 24927), (30, 25128), (33, 25197), (37, 25296), (39, 25380), (40, 25383),

Gene: ElGato\_35 Start: 26043, Stop: 26528, Start Num: 13

Candidate Starts for ElGato\_35:

(Start: 13 @26043 has 89 MA's), (19, 26157), (20, 26169), (24, 26196), (26, 26205), (39, 26481), (40, 26484),

Gene: Emaanora\_34 Start: 24813, Stop: 25325, Start Num: 13

Candidate Starts for Emaanora\_34:

(Start: 13 @24813 has 89 MA's), (15, 24867), (30, 25029), (33, 25098), (37, 25194), (38, 25230), (39, 25278), (40, 25281),

Gene: EnochSoames\_35 Start: 24984, Stop: 25484, Start Num: 13

Candidate Starts for EnochSoames\_35:

(Start: 13 @24984 has 89 MA's), (19, 25101), (20, 25113), (22, 25122), (24, 25140), (30, 25203), (40, 25440),

Gene: Esperer\_32 Start: 24451, Stop: 24951, Start Num: 13

Candidate Starts for Esperer\_32:

(Start: 13 @24451 has 89 MA's), (19, 24568), (20, 24580), (22, 24589), (24, 24607), (30, 24670), (40, 24907),

Gene: GirlDinner\_34 Start: 25320, Stop: 25802, Start Num: 13

Candidate Starts for GirlDinner\_34:

(5, 25257), (Start: 10 @25284 has 2 MA's), (Start: 13 @25320 has 89 MA's), (18, 25428), (23, 25467), (25, 25473), (30, 25533), (36, 25638), (38, 25713), (39, 25761), (40, 25764),

Gene: Goby\_32 Start: 25415, Stop: 25933, Start Num: 13

Candidate Starts for Goby\_32:

(Start: 13 @25415 has 89 MA's), (14, 25430), (25, 25571), (30, 25631), (37, 25802), (39, 25886), (40, 25889),

Gene: Godpower\_33 Start: 25410, Stop: 25928, Start Num: 13

Candidate Starts for Godpower\_33:

(Start: 13 @25410 has 89 MA's), (14, 25425), (30, 25626), (37, 25797), (39, 25881), (40, 25884),

Gene: GreenWeasel\_34 Start: 25179, Stop: 25667, Start Num: 12

Candidate Starts for GreenWeasel\_34:

(Start: 12 @25179 has 3 MA's), (39, 25623), (40, 25626),

Gene: Haizum\_32 Start: 25341, Stop: 25832, Start Num: 13

Candidate Starts for Haizum\_32:

(Start: 13 @25341 has 89 MA's), (17, 25437), (18, 25452), (24, 25494), (40, 25782),

Gene: Hank144\_34 Start: 25734, Stop: 26216, Start Num: 13

Candidate Starts for Hank144\_34:



(Start: 13 @25734 has 89 MA's), (17, 25830), (18, 25845), (24, 25887), (35, 26019), (39, 26175), (40, 26178),

Gene: Hippo\_31 Start: 24864, Stop: 25376, Start Num: 13

Candidate Starts for Hippo\_31:

(Start: 13 @24864 has 89 MA's), (15, 24918), (30, 25080), (33, 25149), (37, 25245), (38, 25281), (39, 25329), (40, 25332),

Gene: Hydra\_34 Start: 25163, Stop: 25663, Start Num: 13

Candidate Starts for Hydra\_34:

(Start: 13 @25163 has 89 MA's), (19, 25280), (20, 25292), (22, 25301), (24, 25319), (30, 25382), (40, 25619),

Gene: Indigo\_31 Start: 24631, Stop: 25131, Start Num: 13

Candidate Starts for Indigo\_31:

(Start: 13 @24631 has 89 MA's), (19, 24748), (20, 24760), (22, 24769), (24, 24787), (30, 24850), (40, 25087),

Gene: Issmi\_33 Start: 26172, Stop: 26657, Start Num: 13

Candidate Starts for Issmi\_33:

(Start: 13 @26172 has 89 MA's), (18, 26274), (25, 26319), (30, 26379), (31, 26382), (34, 26445), (40, 26610),

Gene: Itza\_34 Start: 25612, Stop: 26121, Start Num: 13

Candidate Starts for Itza\_34:

(5, 25549), (Start: 10 @25576 has 2 MA's), (Start: 13 @25612 has 89 MA's), (24, 25765), (27, 25783), (39, 26071), (40, 26074),

Gene: Izzy\_33 Start: 25036, Stop: 25536, Start Num: 13

Candidate Starts for Izzy\_33:

(Start: 13 @25036 has 89 MA's), (19, 25153), (20, 25165), (22, 25174), (24, 25192), (30, 25255), (40, 25492),

Gene: Janus\_33 Start: 25660, Stop: 26142, Start Num: 13

Candidate Starts for Janus\_33:

(Start: 13 @25660 has 89 MA's), (18, 25768), (23, 25807), (25, 25813), (30, 25873), (36, 25978), (38, 26053), (39, 26101), (40, 26104),

Gene: Jash\_33 Start: 24989, Stop: 25489, Start Num: 13

Candidate Starts for Jash\_33:

(Start: 13 @24989 has 89 MA's), (19, 25106), (20, 25118), (22, 25127), (24, 25145), (30, 25208), (40, 25445),

Gene: Jevington\_35 Start: 25940, Stop: 26440, Start Num: 13

Candidate Starts for Jevington\_35:

(Start: 13 @25940 has 89 MA's), (18, 26042), (25, 26087), (31, 26150), (40, 26387),

Gene: Katalie\_32 Start: 25155, Stop: 25667, Start Num: 13

Candidate Starts for Katalie\_32:

(Start: 13 @25155 has 89 MA's), (14, 25170), (16, 25212), (24, 25308), (30, 25371), (37, 25536), (39, 25620), (40, 25623),

Gene: Lannister\_34 Start: 25631, Stop: 26146, Start Num: 13

Candidate Starts for Lannister\_34:

(Start: 13 @25631 has 89 MA's), (14, 25646), (16, 25688), (24, 25784), (30, 25847), (37, 26015), (39, 26099), (40, 26102),

Gene: Legacy\_32 Start: 24606, Stop: 25106, Start Num: 13

Candidate Starts for Legacy\_32:

(Start: 13 @24606 has 89 MA's), (19, 24723), (20, 24735), (22, 24744), (24, 24762), (30, 24825), (40, 25062),

Gene: Leviticus\_32 Start: 24635, Stop: 25135, Start Num: 13

Candidate Starts for Leviticus\_32:

(Start: 13 @24635 has 89 MA's), (19, 24752), (20, 24764), (22, 24773), (24, 24791), (30, 24854), (40, 25091),

Gene: Lika\_32 Start: 25413, Stop: 25931, Start Num: 13

Candidate Starts for Lika\_32:

(Start: 13 @25413 has 89 MA's), (14, 25428), (30, 25629), (37, 25800), (39, 25884), (40, 25887),

Gene: Loofah\_33 Start: 25858, Stop: 26340, Start Num: 13

Candidate Starts for Loofah\_33:

(5, 25795), (Start: 10 @25822 has 2 MA's), (Start: 13 @25858 has 89 MA's), (18, 25960), (30, 26065), (40, 26296),

Gene: Lorelei\_32 Start: 25351, Stop: 25872, Start Num: 13

Candidate Starts for Lorelei\_32:

(Start: 13 @25351 has 89 MA's), (14, 25366), (16, 25408), (30, 25567), (32, 25615), (37, 25741), (39, 25825), (40, 25828),

Gene: Maneekul\_31 Start: 24882, Stop: 25397, Start Num: 13

Candidate Starts for Maneekul\_31:

(Start: 13 @24882 has 89 MA's), (15, 24936), (30, 25098), (33, 25167), (37, 25266), (39, 25350), (40, 25353),

Gene: Marav\_35 Start: 26270, Stop: 26764, Start Num: 13

Candidate Starts for Marav\_35:

(Start: 13 @26270 has 89 MA's), (18, 26372), (25, 26417), (31, 26480), (40, 26720),

Gene: Nabi\_32 Start: 25351, Stop: 25872, Start Num: 13

Candidate Starts for Nabi\_32:

(Start: 13 @25351 has 89 MA's), (14, 25366), (16, 25408), (30, 25567), (32, 25615), (37, 25741), (39, 25825), (40, 25828),

Gene: Nanodon\_34 Start: 25241, Stop: 25756, Start Num: 13

Candidate Starts for Nanodon\_34:

(Start: 13 @25241 has 89 MA's), (14, 25256), (16, 25298), (24, 25394), (30, 25457), (37, 25625), (40, 25712),

Gene: Nerdos\_32 Start: 24629, Stop: 25129, Start Num: 13

Candidate Starts for Nerdos\_32:

(Start: 13 @24629 has 89 MA's), (19, 24746), (20, 24758), (22, 24767), (24, 24785), (30, 24848), (40, 25085),

Gene: Nishikigoi\_32 Start: 25341, Stop: 25832, Start Num: 13

Candidate Starts for Nishikigoi\_32:

(Start: 13 @25341 has 89 MA's), (17, 25437), (18, 25452), (24, 25494), (40, 25782),

Gene: Oliynyk\_33 Start: 24989, Stop: 25489, Start Num: 13

Candidate Starts for Oliynyk\_33:

(Start: 13 @24989 has 89 MA's), (19, 25106), (20, 25118), (22, 25127), (24, 25145), (30, 25208), (40, 25445),

Gene: Omar\_33 Start: 25588, Stop: 26070, Start Num: 13

Candidate Starts for Omar\_33:

(Start: 13 @25588 has 89 MA's), (18, 25690), (25, 25735), (40, 26020),

Gene: Ozzie\_32 Start: 24615, Stop: 25115, Start Num: 13

Candidate Starts for Ozzie\_32:

(Start: 13 @24615 has 89 MA's), (19, 24732), (20, 24744), (22, 24753), (24, 24771), (30, 24834), (40, 25071),

Gene: OzzyJ\_32 Start: 24855, Stop: 25367, Start Num: 13

Candidate Starts for OzzyJ\_32:

(Start: 13 @24855 has 89 MA's), (15, 24909), (30, 25071), (33, 25140), (37, 25236), (38, 25272), (39, 25320), (40, 25323),

Gene: Pablito\_32 Start: 25234, Stop: 25719, Start Num: 13

Candidate Starts for Pablito\_32:

(Start: 13 @25234 has 89 MA's), (18, 25345), (24, 25387), (27, 25405), (30, 25450), (39, 25678), (40, 25681),

Gene: Paedore\_32 Start: 25843, Stop: 26325, Start Num: 13

Candidate Starts for Paedore\_32:

(5, 25780), (Start: 10 @25807 has 2 MA's), (Start: 13 @25843 has 89 MA's), (18, 25945), (30, 26050), (40, 26281),

Gene: Paolo\_36 Start: 26106, Stop: 26606, Start Num: 13

Candidate Starts for Paolo\_36:

(Start: 13 @26106 has 89 MA's), (18, 26208), (25, 26253), (30, 26313), (40, 26556),

Gene: Phettuccine\_32 Start: 24631, Stop: 25131, Start Num: 13

Candidate Starts for Phettuccine\_32:

(Start: 13 @24631 has 89 MA's), (19, 24748), (20, 24760), (22, 24769), (24, 24787), (30, 24850), (40, 25087),

Gene: Provolone\_34 Start: 26034, Stop: 26519, Start Num: 13

Candidate Starts for Provolone\_34:

(Start: 13 @26034 has 89 MA's), (19, 26148), (20, 26160), (24, 26187), (26, 26196), (39, 26472), (40, 26475),

Gene: Puginator\_36 Start: 26124, Stop: 26624, Start Num: 13

Candidate Starts for Puginator\_36:

(Start: 13 @26124 has 89 MA's), (18, 26226), (25, 26271), (40, 26574),

Gene: R4\_33 Start: 25978, Stop: 26460, Start Num: 13

Candidate Starts for R4\_33:

(Start: 13 @25978 has 89 MA's), (18, 26080), (30, 26185), (40, 26416),

Gene: Rana\_32 Start: 25351, Stop: 25872, Start Num: 13

Candidate Starts for Rana\_32:

(Start: 13 @25351 has 89 MA's), (14, 25366), (16, 25408), (30, 25567), (32, 25615), (37, 25741), (39, 25825), (40, 25828),

Gene: RedBear\_33 Start: 25155, Stop: 25667, Start Num: 13

Candidate Starts for RedBear\_33:

(Start: 13 @25155 has 89 MA's), (14, 25170), (16, 25212), (24, 25308), (30, 25371), (37, 25536), (39, 25620), (40, 25623),

Gene: Rusticus\_33 Start: 24989, Stop: 25489, Start Num: 13

Candidate Starts for Rusticus\_33:

(Start: 13 @24989 has 89 MA's), (19, 25106), (20, 25118), (22, 25127), (24, 25145), (30, 25208), (40, 25445),

Gene: Saftant\_33 Start: 26598, Stop: 27083, Start Num: 13

Candidate Starts for Saftant\_33:

(Start: 13 @26598 has 89 MA's), (18, 26709), (19, 26712), (20, 26724), (24, 26751), (26, 26760), (39, 27036), (40, 27039),

Gene: SarahRose\_31 Start: 24864, Stop: 25376, Start Num: 13

Candidate Starts for SarahRose\_31:

(Start: 13 @24864 has 89 MA's), (15, 24918), (30, 25080), (33, 25149), (37, 25245), (38, 25281), (39, 25329), (40, 25332),

Gene: Snorlax\_31 Start: 24867, Stop: 25379, Start Num: 13

Candidate Starts for Snorlax\_31:

(Start: 13 @24867 has 89 MA's), (15, 24921), (30, 25083), (33, 25152), (37, 25248), (38, 25284), (39, 25332), (40, 25335),

Gene: South40\_32 Start: 25155, Stop: 25667, Start Num: 13

Candidate Starts for South40\_32:

(Start: 13 @25155 has 89 MA's), (14, 25170), (16, 25212), (24, 25308), (30, 25371), (37, 25536), (39, 25620), (40, 25623),

Gene: SqueakyClean\_32 Start: 25751, Stop: 26233, Start Num: 13

Candidate Starts for SqueakyClean\_32:

(Start: 13 @25751 has 89 MA's), (18, 25859), (23, 25898), (25, 25904), (30, 25964), (36, 26069), (38, 26144), (39, 26192), (40, 26195),

Gene: Sujidade\_33 Start: 25698, Stop: 26216, Start Num: 13

Candidate Starts for Sujidade\_33:

(Start: 13 @25698 has 89 MA's), (14, 25713), (30, 25914), (37, 26085), (39, 26169), (40, 26172),

Gene: SunsetPointe\_32 Start: 24622, Stop: 25122, Start Num: 13

Candidate Starts for SunsetPointe\_32:

(Start: 13 @24622 has 89 MA's), (19, 24739), (20, 24751), (22, 24760), (24, 24778), (30, 24841), (40, 25078),

Gene: Superstar\_36 Start: 26780, Stop: 27262, Start Num: 13

Candidate Starts for Superstar\_36:

(11, 26759), (Start: 13 @26780 has 89 MA's), (16, 26837), (18, 26891), (23, 26930), (30, 26996), (34, 27059), (40, 27218),

Gene: TagePhighter\_33 Start: 24867, Stop: 25379, Start Num: 13

Candidate Starts for TagePhighter\_33:

(Start: 13 @24867 has 89 MA's), (15, 24921), (30, 25083), (33, 25152), (37, 25248), (38, 25284), (39, 25332), (40, 25335),

Gene: Tefunt\_32 Start: 25344, Stop: 25835, Start Num: 13

Candidate Starts for Tefunt\_32:

(Start: 13 @25344 has 89 MA's), (17, 25440), (18, 25455), (24, 25497), (40, 25785),

Gene: Thestral\_33 Start: 25740, Stop: 26228, Start Num: 13

Candidate Starts for Thestral\_33:

(Start: 13 @25740 has 89 MA's), (18, 25842), (25, 25887), (40, 26178),

Gene: TinaBelcher\_32 Start: 25687, Stop: 26175, Start Num: 13

Candidate Starts for TinaBelcher\_32:

(Start: 13 @25687 has 89 MA's), (18, 25789), (25, 25834), (40, 26125),

Gene: Toma\_32 Start: 25415, Stop: 25933, Start Num: 13

Candidate Starts for Toma\_32:

(Start: 13 @25415 has 89 MA's), (14, 25430), (25, 25571), (30, 25631), (37, 25802), (39, 25886), (40, 25889),

Gene: Triste\_31 Start: 24855, Stop: 25367, Start Num: 13

Candidate Starts for Triste\_31:

(Start: 13 @24855 has 89 MA's), (15, 24909), (30, 25071), (33, 25140), (37, 25236), (38, 25272), (39, 25320), (40, 25323),

Gene: Triumph\_34 Start: 25558, Stop: 26040, Start Num: 13

Candidate Starts for Triumph\_34:

(Start: 13 @25558 has 89 MA's), (18, 25666), (24, 25708), (40, 26002),

Gene: TrvxScott\_31 Start: 25733, Stop: 26221, Start Num: 13

Candidate Starts for TrvxScott\_31:

(Start: 13 @25733 has 89 MA's), (18, 25835), (40, 26171),

Gene: TuanPN\_31 Start: 24912, Stop: 25427, Start Num: 13

Candidate Starts for TuanPN\_31:

(Start: 13 @24912 has 89 MA's), (14, 24927), (30, 25128), (33, 25197), (37, 25296), (39, 25380), (40, 25383),

Gene: Unstoppable\_32 Start: 24626, Stop: 25126, Start Num: 13

Candidate Starts for Unstoppable\_32:

(Start: 13 @24626 has 89 MA's), (19, 24743), (20, 24755), (22, 24764), (24, 24782), (30, 24845), (40, 25082),

Gene: Urza\_34 Start: 25633, Stop: 26142, Start Num: 13

Candidate Starts for Urza\_34:

(5, 25570), (Start: 10 @25597 has 2 MA's), (Start: 13 @25633 has 89 MA's), (24, 25786), (27, 25804), (39, 26092), (40, 26095),

Gene: Vanseggelen\_38 Start: 26166, Stop: 26651, Start Num: 13

Candidate Starts for Vanseggelen\_38:

(Start: 13 @26166 has 89 MA's), (19, 26280), (20, 26292), (24, 26319), (26, 26328), (27, 26337), (39, 26604), (40, 26607),

Gene: Verabelle\_36 Start: 26569, Stop: 27051, Start Num: 13

Candidate Starts for Verabelle\_36:

(Start: 13 @26569 has 89 MA's), (19, 26683), (20, 26695), (26, 26731), (29, 26773), (40, 27007),

Gene: Verse\_33 Start: 27309, Stop: 27794, Start Num: 13

Candidate Starts for Verse\_33:

(Start: 13 @27309 has 89 MA's), (20, 27435), (24, 27462), (26, 27471), (39, 27747), (40, 27750),

Gene: VieEnRose\_34 Start: 25674, Stop: 26216, Start Num: 10

Candidate Starts for VieEnRose\_34:

(5, 25647), (Start: 10 @25674 has 2 MA's), (Start: 13 @25710 has 89 MA's), (24, 25863), (27, 25881), (39, 26166), (40, 26169),

Gene: Werner\_31 Start: 24865, Stop: 25377, Start Num: 13

Candidate Starts for Werner\_31:

(Start: 13 @24865 has 89 MA's), (15, 24919), (30, 25081), (33, 25150), (37, 25246), (38, 25282), (39, 25330), (40, 25333),

Gene: Whatever\_31 Start: 24865, Stop: 25377, Start Num: 13

Candidate Starts for Whatever\_31:

(Start: 13 @24865 has 89 MA's), (15, 24919), (30, 25081), (33, 25150), (37, 25246), (38, 25282), (39, 25330), (40, 25333),

Gene: Yasdnil\_31 Start: 24910, Stop: 25425, Start Num: 13

Candidate Starts for Yasdnil\_31:

(Start: 13 @24910 has 89 MA's), (14, 24925), (30, 25126), (33, 25195), (37, 25294), (39, 25378), (40, 25381),

Gene: Yosif\_35 Start: 27058, Stop: 27579, Start Num: 13

Candidate Starts for Yosif\_35:

(Start: 13 @27058 has 89 MA's), (14, 27082), (24, 27220), (40, 27532),

Gene: Zainub\_38 Start: 26067, Stop: 26567, Start Num: 13

Candidate Starts for Zainub\_38:

(Start: 13 @26067 has 89 MA's), (18, 26169), (25, 26214), (30, 26274), (40, 26517),

Gene: Zemlya\_33 Start: 25392, Stop: 25916, Start Num: 13

Candidate Starts for Zemlya\_33:

(Start: 13 @25392 has 89 MA's), (14, 25407), (30, 25608), (33, 25683), (37, 25785), (40, 25872),

Gene: phiCAM\_32 Start: 28560, Stop: 28925, Start Num: 19

Candidate Starts for phiCAM\_32:

(1, 28287), (2, 28305), (3, 28314), (4, 28377), (8, 28404), (Start: 13 @28446 has 89 MA's), (19, 28560), (20, 28572), (26, 28608), (39, 28878), (40, 28881),

Gene: phiHau3\_34 Start: 25145, Stop: 25633, Start Num: 12

Candidate Starts for phiHau3\_34:

(Start: 12 @25145 has 3 MA's), (39, 25589), (40, 25592),

