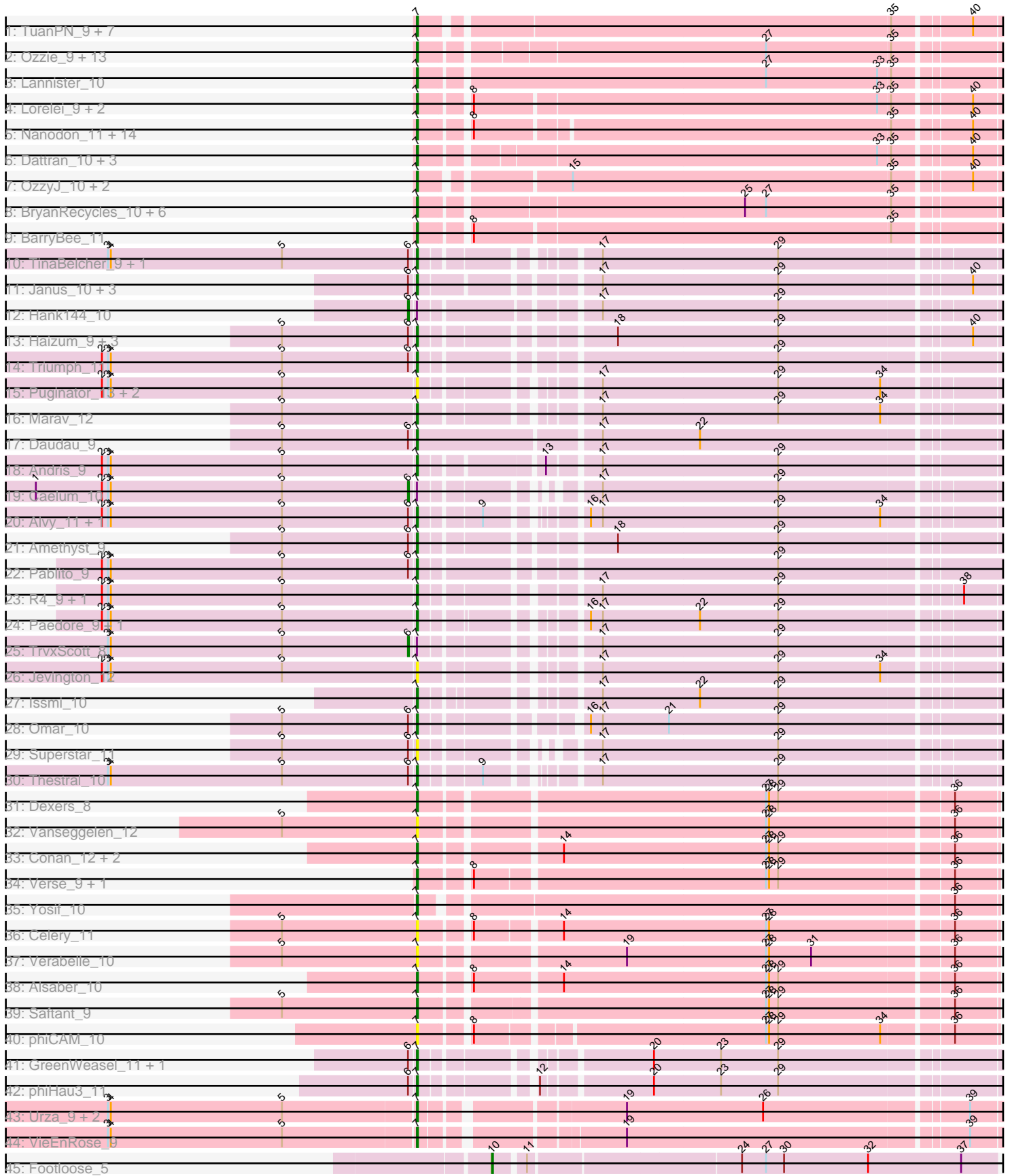


Pham 161734



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 161734 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 161734 has 110 members, 15 are drafts.

Phages represented in each track:

- Track 1 : TuanPN\_9, Yasdni1\_9, Zemlya\_10, Godpower\_10, Maneekul\_9, Celeste\_9, Ejemplo\_9, Lika\_9
- Track 2 : Ozzie\_9, Nerdos\_9, Leviticus\_9, Bovely\_9, Hydra\_11, Phettuccine\_9, Aaronocolus\_9, Unstoppable\_9, Legacy\_9, Indigo\_9, BeardedLady\_10, Esperer\_9, Caliburn\_9, SunsetPointe\_9
- Track 3 : Lannister\_10
- Track 4 : Lorelei\_9, Nabi\_9, Rana\_9
- Track 5 : Nanodon\_11, SarahRose\_9, Brataylor\_10, Chucky\_9, Snorlax\_9, Dwayne\_9, Emaanora\_10, Werner\_9, TagePhighter\_10, Katalie\_10, RedBear\_11, Sujidade\_10, Hippo\_9, South40\_10, Whatever\_9
- Track 6 : Dattran\_10, Toma\_9, Goby\_9, Danzina\_10
- Track 7 : OzzyJ\_10, Asten\_9, Triste\_9
- Track 8 : BryanRecycles\_10, Oliynyk\_10, Rusticus\_10, Eddasa\_10, EnochSoames\_10, Izzy\_10, Jash\_10
- Track 9 : BarryBee\_11
- Track 10 : TinaBelcher\_9, Bowden\_10
- Track 11 : Janus\_10, SqueakyClean\_10, GirlDinner\_10, Animus\_10
- Track 12 : Hank144\_10
- Track 13 : Haizum\_9, Tefunt\_9, Nishikigoi\_9, Diane\_9
- Track 14 : Triumph\_11
- Track 15 : Puginator\_13, Paolo\_12, Zainub\_14
- Track 16 : Marav\_12
- Track 17 : Daudau\_9
- Track 18 : Andris\_9
- Track 19 : Caelum\_10
- Track 20 : Alvy\_11, BartholomewSD\_11
- Track 21 : Amethyst\_9
- Track 22 : Pablito\_9
- Track 23 : R4\_9, ELB20\_08
- Track 24 : Paedore\_9, Loofah\_10
- Track 25 : TrvxScott\_8
- Track 26 : Jevington\_12
- Track 27 : Issmi\_10

- Track 28 : Omar\_10
- Track 29 : Superstar\_11
- Track 30 : Thestral\_10
- Track 31 : Dexers\_8
- Track 32 : Vanseggelen\_12
- Track 33 : Conan\_12, ElGato\_11, Provolone\_10
- Track 34 : Verse\_9, Amela\_9
- Track 35 : Yosif\_10
- Track 36 : Celery\_11
- Track 37 : Verabelle\_10
- Track 38 : Alsaber\_10
- Track 39 : Saftant\_9
- Track 40 : phiCAM\_10
- Track 41 : GreenWeasel\_11, BroPlease\_10
- Track 42 : phiHau3\_11
- Track 43 : Urza\_9, Celia\_9, Itza\_9
- Track 44 : VieEnRose\_9
- Track 45 : Footloose\_5

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

The start number called the most often in the published annotations is 7, it was called in 91 of the 95 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aaronocolus\_9, Alsaber\_10, Alvy\_11, Amela\_9, Amethyst\_9, Andris\_9, Animus\_10, Asten\_9, BarryBee\_11, BartholomewSD\_11, BeardedLady\_10, Bovely\_9, Bowden\_10, Brataylor\_10, BroPlease\_10, BryanRecycles\_10, Caliburn\_9, Celery\_11, Celeste\_9, Celia\_9, Chucky\_9, Conan\_12, Danzina\_10, Dattran\_10, Daudau\_9, Dexers\_8, Diane\_9, Dwayne\_9, ELB20\_08, Eddasa\_10, Ejemplo\_9, ElGato\_11, Emaanora\_10, EnochSoames\_10, Esperer\_9, GirlDinner\_10, Goby\_9, Godpower\_10, GreenWeasel\_11, Haizum\_9, Hippo\_9, Hydra\_11, Indigo\_9, Issmi\_10, Itza\_9, Izzy\_10, Janus\_10, Jash\_10, Jevington\_12, Katalie\_10, Lannister\_10, Legacy\_9, Leviticus\_9, Lika\_9, Loofah\_10, Lorelei\_9, Maneekul\_9, Marav\_12, Nabi\_9, Nanodon\_11, Nerdos\_9, Nishikigoi\_9, Oliynyk\_10, Omar\_10, Ozzie\_9, OzzyJ\_10, Pablito\_9, Paedore\_9, Paolo\_12, Phettuccine\_9, Provolone\_10, Puginator\_13, R4\_9, Rana\_9, RedBear\_11, Rusticus\_10, Saftant\_9, SarahRose\_9, Snorlax\_9, South40\_10, SqueakyClean\_10, Sujidade\_10, SunsetPointe\_9, Superstar\_11, TagePhighter\_10, Tefunt\_9, Thestral\_10, TinaBelcher\_9, Toma\_9, Triste\_9, Triumph\_11, TuanPN\_9, Unstoppable\_9, Urza\_9, Vanseggelen\_12, Verabelle\_10, Verse\_9, VieEnRose\_9, Werner\_9, Whatever\_9, Yasdnil\_9, Yosif\_10, Zainub\_14, Zemlya\_10, phiCAM\_10, phiHau3\_11,

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

- Caelum\_10, Hank144\_10, TrvxScott\_8,

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

- Footloose\_5,

**Summary by start number:**

Start 6:

- Found in 25 of 110 ( 22.7% ) of genes in pham
- Manual Annotations of this start: 3 of 95
- Called 12.0% of time when present
- Phage (with cluster) where this start called: Caelum\_10 (BD2), Hank144\_10 (BD2), TrvxScott\_8 (BD2),

Start 7:

- Found in 109 of 110 ( 99.1% ) of genes in pham
- Manual Annotations of this start: 91 of 95
- Called 97.2% of time when present
- Phage (with cluster) where this start called: Aaronocolus\_9 (BD1), Alsaber\_10 (BD3), Alvy\_11 (BD2), Amela\_9 (BD3), Amethyst\_9 (BD2), Andris\_9 (BD2), Animus\_10 (BD2), Asten\_9 (BD1), BarryBee\_11 (BD1), BartholomewSD\_11 (BD2), BeardedLady\_10 (BD1), Bovely\_9 (BD1), Bowden\_10 (BD2), Brataylor\_10 (BD1), BroPlease\_10 (BD4), BryanRecycles\_10 (BD1), Caliburn\_9 (BD1), Celery\_11 (BD3), Celeste\_9 (BD1), Celia\_9 (BD6), Chucky\_9 (BD1), Conan\_12 (BD3), Danzina\_10 (BD1), Dattran\_10 (BD1), Daudau\_9 (BD2), Dexers\_8 (BD3), Diane\_9 (BD2), Dwayne\_9 (BD1), ELB20\_08 (BD2), Eddasa\_10 (BD1), Ejemplo\_9 (BD1), ElGato\_11 (BD3), Emaanora\_10 (BD1), EnochSoames\_10 (BD1), Esperer\_9 (BD1), GirlDinner\_10 (BD2), Goby\_9 (BD1), Godpower\_10 (BD1), GreenWeasel\_11 (BD4), Haizum\_9 (BD2), Hippo\_9 (BD1), Hydra\_11 (BD1), Indigo\_9 (BD1), Issmi\_10 (BD2), Itza\_9 (BD6), Izzy\_10 (BD1), Janus\_10 (BD2), Jash\_10 (BD1), Jevington\_12 (BD2), Katalie\_10 (BD1), Lannister\_10 (BD1), Legacy\_9 (BD1), Leviticus\_9 (BD1), Lika\_9 (BD1), Loofah\_10 (BD2), Lorelei\_9 (BD1), Maneekul\_9 (BD1), Marav\_12 (BD2), Nabi\_9 (BD1), Nanodon\_11 (BD1), Nerdos\_9 (BD1), Nishikigoi\_9 (BD2), Oliynyk\_10 (BD1), Omar\_10 (BD2), Ozzie\_9 (BD1), OzzyJ\_10 (BD1), Pablito\_9 (BD2), Paedore\_9 (BD2), Paolo\_12 (BD2), Phettuccine\_9 (BD1), Provolone\_10 (BD3), Puginator\_13 (BD2), R4\_9 (BD2), Rana\_9 (BD1), RedBear\_11 (BD1), Rusticus\_10 (BD1), Saftant\_9 (BD3), SarahRose\_9 (BD1), Snorlax\_9 (BD1), South40\_10 (BD1), SqueakyClean\_10 (BD2), Sujidade\_10 (BD1), SunsetPointe\_9 (BD1), Superstar\_11 (BD2), TagePhighter\_10 (BD1), Tefunt\_9 (BD2), Thestral\_10 (BD2), TinaBelcher\_9 (BD2), Toma\_9 (BD1), Triste\_9 (BD1), Triumph\_11 (BD2), TuanPN\_9 (BD1), Unstoppable\_9 (BD1), Urza\_9 (BD6), Vanseggelen\_12 (BD3), Verabelle\_10 (BD3), Verse\_9 (BD3), VieEnRose\_9 (BD6), Werner\_9 (BD1), Whatever\_9 (BD1), Yasdnil\_9 (BD1), Yosif\_10 (BD3), Zainub\_14 (BD2), Zemlya\_10 (BD1), phiCAM\_10 (BD3), phiHau3\_11 (BD4),

Start 10:

- Found in 1 of 110 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Footloose\_5 (singleton),

**Summary by clusters:**

There are 6 clusters represented in this pham: singleton, BD4, BD6, BD1, BD3, BD2,

Info for manual annotations of cluster BD1:

- Start number 7 was manually annotated 54 times for cluster BD1.

Info for manual annotations of cluster BD2:

- Start number 6 was manually annotated 3 times for cluster BD2.
- Start number 7 was manually annotated 23 times for cluster BD2.

Info for manual annotations of cluster BD3:

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

Info for manual annotations of cluster BD4:

- Start number 7 was manually annotated 3 times for cluster BD4.

Info for manual annotations of cluster BD6:

- Start number 7 was manually annotated 4 times for cluster BD6.

### **Gene Information:**

Gene: Aaronocolus\_9 Start: 6636, Stop: 7181, Start Num: 7

Candidate Starts for Aaronocolus\_9:

(Start: 7 @6636 has 91 MA's), (27, 6960), (35, 7083),

Gene: Alsaber\_10 Start: 6736, Stop: 7278, Start Num: 7

Candidate Starts for Alsaber\_10:

(Start: 7 @6736 has 91 MA's), (8, 6778), (14, 6859), (27, 7060), (28, 7063), (29, 7072), (36, 7237),

Gene: Alvy\_11 Start: 6598, Stop: 7116, Start Num: 7

Candidate Starts for Alvy\_11:

(2, 6286), (3, 6292), (4, 6295), (5, 6466), (Start: 6 @6592 has 3 MA's), (Start: 7 @6598 has 91 MA's), (9, 6652), (16, 6724), (17, 6736), (29, 6910), (34, 7012),

Gene: Amela\_9 Start: 6795, Stop: 7334, Start Num: 7

Candidate Starts for Amela\_9:

(Start: 7 @6795 has 91 MA's), (8, 6837), (27, 7116), (28, 7119), (29, 7128), (36, 7293),

Gene: Amethyst\_9 Start: 6407, Stop: 6937, Start Num: 7

Candidate Starts for Amethyst\_9:

(5, 6275), (Start: 6 @6401 has 3 MA's), (Start: 7 @6407 has 91 MA's), (18, 6569), (29, 6728),

Gene: Andris\_9 Start: 6465, Stop: 6998, Start Num: 7

Candidate Starts for Andris\_9:

(2, 6153), (3, 6159), (4, 6162), (5, 6333), (Start: 7 @6465 has 91 MA's), (13, 6570), (17, 6615), (29, 6789),

Gene: Animus\_10 Start: 6815, Stop: 7348, Start Num: 7

Candidate Starts for Animus\_10:

(Start: 6 @6809 has 3 MA's), (Start: 7 @6815 has 91 MA's), (17, 6965), (29, 7139), (40, 7319),

Gene: Asten\_9 Start: 6604, Stop: 7146, Start Num: 7

Candidate Starts for Asten\_9:

(Start: 7 @6604 has 91 MA's), (15, 6733), (35, 7048), (40, 7117),

Gene: BarryBee\_11 Start: 6604, Stop: 7149, Start Num: 7

Candidate Starts for BarryBee\_11:

(Start: 7 @6604 has 91 MA's), (8, 6646), (35, 7051),

Gene: BartholomewSD\_11 Start: 6598, Stop: 7116, Start Num: 7

Candidate Starts for BartholomewSD\_11:

(2, 6286), (3, 6292), (4, 6295), (5, 6466), (Start: 6 @6592 has 3 MA's), (Start: 7 @6598 has 91 MA's), (9, 6652), (16, 6724), (17, 6736), (29, 6910), (34, 7012),

Gene: BeardedLady\_10 Start: 6883, Stop: 7428, Start Num: 7

Candidate Starts for BeardedLady\_10:

(Start: 7 @6883 has 91 MA's), (27, 7207), (35, 7330),

Gene: Bovely\_9 Start: 6642, Stop: 7187, Start Num: 7

Candidate Starts for Bovely\_9:

(Start: 7 @6642 has 91 MA's), (27, 6966), (35, 7089),

Gene: Bowden\_10 Start: 6509, Stop: 7030, Start Num: 7

Candidate Starts for Bowden\_10:

(3, 6203), (4, 6206), (5, 6377), (Start: 6 @6503 has 3 MA's), (Start: 7 @6509 has 91 MA's), (17, 6650), (29, 6824),

Gene: Brataylor\_10 Start: 6607, Stop: 7152, Start Num: 7

Candidate Starts for Brataylor\_10:

(Start: 7 @6607 has 91 MA's), (8, 6649), (35, 7054), (40, 7123),

Gene: BroPlease\_10 Start: 6713, Stop: 7237, Start Num: 7

Candidate Starts for BroPlease\_10:

(Start: 6 @6707 has 3 MA's), (Start: 7 @6713 has 91 MA's), (20, 6905), (23, 6971), (29, 7028),

Gene: BryanRecycles\_10 Start: 6796, Stop: 7344, Start Num: 7

Candidate Starts for BryanRecycles\_10:

(Start: 7 @6796 has 91 MA's), (25, 7102), (27, 7123), (35, 7246),

Gene: Caelum\_10 Start: 6369, Stop: 6884, Start Num: 6

Candidate Starts for Caelum\_10:

(1, 5997), (2, 6063), (3, 6069), (4, 6072), (5, 6243), (Start: 6 @6369 has 3 MA's), (Start: 7 @6375 has 91 MA's), (17, 6504), (29, 6678),

Gene: Caliburn\_9 Start: 6616, Stop: 7161, Start Num: 7

Candidate Starts for Caliburn\_9:

(Start: 7 @6616 has 91 MA's), (27, 6940), (35, 7063),

Gene: Celery\_11 Start: 6699, Stop: 7238, Start Num: 7

Candidate Starts for Celery\_11:

(5, 6564), (Start: 7 @6699 has 91 MA's), (8, 6741), (14, 6819), (27, 7020), (28, 7023), (36, 7197),

Gene: Celeste\_9 Start: 6606, Stop: 7151, Start Num: 7

Candidate Starts for Celeste\_9:

(Start: 7 @6606 has 91 MA's), (35, 7053), (40, 7122),

Gene: Celia\_9 Start: 6927, Stop: 7451, Start Num: 7

Candidate Starts for Celia\_9:

(3, 6624), (4, 6627), (5, 6798), (Start: 7 @6927 has 91 MA's), (19, 7092), (26, 7227), (39, 7419),

Gene: Chucky\_9 Start: 6605, Stop: 7150, Start Num: 7

Candidate Starts for Chucky\_9:

(Start: 7 @6605 has 91 MA's), (8, 6647), (35, 7052), (40, 7121),

Gene: Conan\_12 Start: 6446, Stop: 6988, Start Num: 7

Candidate Starts for Conan\_12:

(Start: 7 @6446 has 91 MA's), (14, 6569), (27, 6770), (28, 6773), (29, 6782), (36, 6947),

Gene: Danzina\_10 Start: 6804, Stop: 7349, Start Num: 7

Candidate Starts for Danzina\_10:

(Start: 7 @6804 has 91 MA's), (33, 7239), (35, 7251), (40, 7320),

Gene: Dattran\_10 Start: 6605, Stop: 7150, Start Num: 7

Candidate Starts for Dattran\_10:

(Start: 7 @6605 has 91 MA's), (33, 7040), (35, 7052), (40, 7121),

Gene: Daudau\_9 Start: 6400, Stop: 6954, Start Num: 7

Candidate Starts for Daudau\_9:

(5, 6268), (Start: 6 @6394 has 3 MA's), (Start: 7 @6400 has 91 MA's), (17, 6571), (22, 6667),

Gene: Dexers\_8 Start: 6439, Stop: 6981, Start Num: 7

Candidate Starts for Dexers\_8:

(Start: 7 @6439 has 91 MA's), (27, 6763), (28, 6766), (29, 6775), (36, 6940),

Gene: Diane\_9 Start: 6409, Stop: 6939, Start Num: 7

Candidate Starts for Diane\_9:

(5, 6277), (Start: 6 @6403 has 3 MA's), (Start: 7 @6409 has 91 MA's), (18, 6571), (29, 6730), (40, 6910),

Gene: Dwayne\_9 Start: 6605, Stop: 7150, Start Num: 7

Candidate Starts for Dwayne\_9:

(Start: 7 @6605 has 91 MA's), (8, 6647), (35, 7052), (40, 7121),

Gene: ELB20\_08 Start: 6466, Stop: 6990, Start Num: 7

Candidate Starts for ELB20\_08:

(2, 6154), (3, 6160), (4, 6163), (5, 6334), (Start: 7 @6466 has 91 MA's), (17, 6610), (29, 6784), (38, 6952),

Gene: Eddasa\_10 Start: 6796, Stop: 7344, Start Num: 7

Candidate Starts for Eddasa\_10:

(Start: 7 @6796 has 91 MA's), (25, 7102), (27, 7123), (35, 7246),

Gene: Ejemplo\_9 Start: 6608, Stop: 7153, Start Num: 7

Candidate Starts for Ejemplo\_9:

(Start: 7 @6608 has 91 MA's), (35, 7055), (40, 7124),

Gene: ElGato\_11 Start: 6449, Stop: 6991, Start Num: 7

Candidate Starts for ElGato\_11:

(Start: 7 @6449 has 91 MA's), (14, 6572), (27, 6773), (28, 6776), (29, 6785), (36, 6950),

Gene: Emaanora\_10 Start: 6604, Stop: 7149, Start Num: 7

Candidate Starts for Emaanora\_10:

(Start: 7 @6604 has 91 MA's), (8, 6646), (35, 7051), (40, 7120),

Gene: EnochSoames\_10 Start: 6792, Stop: 7340, Start Num: 7

Candidate Starts for EnochSoames\_10:

(Start: 7 @6792 has 91 MA's), (25, 7098), (27, 7119), (35, 7242),

Gene: Esperer\_9 Start: 6636, Stop: 7181, Start Num: 7

Candidate Starts for Esperer\_9:

(Start: 7 @6636 has 91 MA's), (27, 6960), (35, 7083),

Gene: Footloose\_5 Start: 4342, Stop: 4824, Start Num: 10

Candidate Starts for Footloose\_5:

(Start: 10 @4342 has 1 MA's), (11, 4369), (24, 4570), (27, 4594), (30, 4612), (32, 4696), (37, 4789),

Gene: GirlDinner\_10 Start: 6478, Stop: 7011, Start Num: 7

Candidate Starts for GirlDinner\_10:

(Start: 6 @6472 has 3 MA's), (Start: 7 @6478 has 91 MA's), (17, 6628), (29, 6802), (40, 6982),

Gene: Goby\_9 Start: 6605, Stop: 7150, Start Num: 7

Candidate Starts for Goby\_9:

(Start: 7 @6605 has 91 MA's), (33, 7040), (35, 7052), (40, 7121),

Gene: Godpower\_10 Start: 6608, Stop: 7147, Start Num: 7

Candidate Starts for Godpower\_10:

(Start: 7 @6608 has 91 MA's), (35, 7049), (40, 7118),

Gene: GreenWeasel\_11 Start: 6722, Stop: 7246, Start Num: 7

Candidate Starts for GreenWeasel\_11:

(Start: 6 @6716 has 3 MA's), (Start: 7 @6722 has 91 MA's), (20, 6914), (23, 6980), (29, 7037),

Gene: Haizum\_9 Start: 6438, Stop: 6968, Start Num: 7

Candidate Starts for Haizum\_9:

(5, 6306), (Start: 6 @6432 has 3 MA's), (Start: 7 @6438 has 91 MA's), (18, 6600), (29, 6759), (40, 6939),

Gene: Hank144\_10 Start: 6746, Stop: 7285, Start Num: 6

Candidate Starts for Hank144\_10:

(Start: 6 @6746 has 3 MA's), (Start: 7 @6752 has 91 MA's), (17, 6905), (29, 7079),

Gene: Hippo\_9 Start: 6604, Stop: 7149, Start Num: 7

Candidate Starts for Hippo\_9:

(Start: 7 @6604 has 91 MA's), (8, 6646), (35, 7051), (40, 7120),

Gene: Hydra\_11 Start: 7173, Stop: 7718, Start Num: 7

Candidate Starts for Hydra\_11:

(Start: 7 @7173 has 91 MA's), (27, 7497), (35, 7620),

Gene: Indigo\_9 Start: 6636, Stop: 7181, Start Num: 7

Candidate Starts for Indigo\_9:

(Start: 7 @6636 has 91 MA's), (27, 6960), (35, 7083),

Gene: Issmi\_10 Start: 6720, Stop: 7238, Start Num: 7

Candidate Starts for Issmi\_10:

(Start: 7 @6720 has 91 MA's), (17, 6858), (22, 6954), (29, 7032),



Gene: Itza\_9 Start: 6850, Stop: 7374, Start Num: 7  
Candidate Starts for Itza\_9:  
(3, 6547), (4, 6550), (5, 6721), (Start: 7 @6850 has 91 MA's), (19, 7015), (26, 7150), (39, 7342),

Gene: Izzy\_10 Start: 6843, Stop: 7391, Start Num: 7  
Candidate Starts for Izzy\_10:  
(Start: 7 @6843 has 91 MA's), (25, 7149), (27, 7170), (35, 7293),

Gene: Janus\_10 Start: 6815, Stop: 7348, Start Num: 7  
Candidate Starts for Janus\_10:  
(Start: 6 @6809 has 3 MA's), (Start: 7 @6815 has 91 MA's), (17, 6965), (29, 7139), (40, 7319),

Gene: Jash\_10 Start: 6796, Stop: 7344, Start Num: 7  
Candidate Starts for Jash\_10:  
(Start: 7 @6796 has 91 MA's), (25, 7102), (27, 7123), (35, 7246),

Gene: Jevington\_12 Start: 7004, Stop: 7528, Start Num: 7  
Candidate Starts for Jevington\_12:  
(2, 6692), (3, 6698), (4, 6701), (5, 6872), (Start: 7 @7004 has 91 MA's), (17, 7148), (29, 7322), (34, 7424),

Gene: Katalie\_10 Start: 6876, Stop: 7421, Start Num: 7  
Candidate Starts for Katalie\_10:  
(Start: 7 @6876 has 91 MA's), (8, 6918), (35, 7323), (40, 7392),

Gene: Lannister\_10 Start: 6609, Stop: 7163, Start Num: 7  
Candidate Starts for Lannister\_10:  
(Start: 7 @6609 has 91 MA's), (27, 6942), (33, 7053), (35, 7065),

Gene: Legacy\_9 Start: 6616, Stop: 7161, Start Num: 7  
Candidate Starts for Legacy\_9:  
(Start: 7 @6616 has 91 MA's), (27, 6940), (35, 7063),

Gene: Leviticus\_9 Start: 6636, Stop: 7181, Start Num: 7  
Candidate Starts for Leviticus\_9:  
(Start: 7 @6636 has 91 MA's), (27, 6960), (35, 7083),

Gene: Lika\_9 Start: 6609, Stop: 7148, Start Num: 7  
Candidate Starts for Lika\_9:  
(Start: 7 @6609 has 91 MA's), (35, 7050), (40, 7119),

Gene: Loofah\_10 Start: 6516, Stop: 7034, Start Num: 7  
Candidate Starts for Loofah\_10:  
(2, 6204), (3, 6210), (4, 6213), (5, 6384), (Start: 7 @6516 has 91 MA's), (16, 6642), (17, 6654), (22, 6750), (29, 6828),

Gene: Lorelei\_9 Start: 6602, Stop: 7147, Start Num: 7  
Candidate Starts for Lorelei\_9:  
(Start: 7 @6602 has 91 MA's), (8, 6644), (33, 7037), (35, 7049), (40, 7118),

Gene: Maneekul\_9 Start: 6607, Stop: 7152, Start Num: 7  
Candidate Starts for Maneekul\_9:  
(Start: 7 @6607 has 91 MA's), (35, 7054), (40, 7123),

Gene: Marav\_12 Start: 7354, Stop: 7878, Start Num: 7  
Candidate Starts for Marav\_12:  
(5, 7222), (Start: 7 @7354 has 91 MA's), (17, 7498), (29, 7672), (34, 7774),

Gene: Nabi\_9 Start: 6602, Stop: 7147, Start Num: 7  
Candidate Starts for Nabi\_9:  
(Start: 7 @6602 has 91 MA's), (8, 6644), (33, 7037), (35, 7049), (40, 7118),

Gene: Nanodon\_11 Start: 6798, Stop: 7337, Start Num: 7  
Candidate Starts for Nanodon\_11:  
(Start: 7 @6798 has 91 MA's), (8, 6840), (35, 7239), (40, 7308),

Gene: Nerdos\_9 Start: 6636, Stop: 7181, Start Num: 7  
Candidate Starts for Nerdos\_9:  
(Start: 7 @6636 has 91 MA's), (27, 6960), (35, 7083),

Gene: Nishikigoi\_9 Start: 6438, Stop: 6968, Start Num: 7  
Candidate Starts for Nishikigoi\_9:  
(5, 6306), (Start: 6 @6432 has 3 MA's), (Start: 7 @6438 has 91 MA's), (18, 6600), (29, 6759), (40, 6939),

Gene: Oliynyk\_10 Start: 6796, Stop: 7344, Start Num: 7  
Candidate Starts for Oliynyk\_10:  
(Start: 7 @6796 has 91 MA's), (25, 7102), (27, 7123), (35, 7246),

Gene: Omar\_10 Start: 6663, Stop: 7190, Start Num: 7  
Candidate Starts for Omar\_10:  
(5, 6531), (Start: 6 @6657 has 3 MA's), (Start: 7 @6663 has 91 MA's), (16, 6795), (17, 6807), (21, 6873), (29, 6981),

Gene: Ozzie\_9 Start: 6616, Stop: 7161, Start Num: 7  
Candidate Starts for Ozzie\_9:  
(Start: 7 @6616 has 91 MA's), (27, 6940), (35, 7063),

Gene: OzzyJ\_10 Start: 6605, Stop: 7147, Start Num: 7  
Candidate Starts for OzzyJ\_10:  
(Start: 7 @6605 has 91 MA's), (15, 6734), (35, 7049), (40, 7118),

Gene: Pablito\_9 Start: 6493, Stop: 7029, Start Num: 7  
Candidate Starts for Pablito\_9:  
(2, 6181), (3, 6187), (4, 6190), (5, 6361), (Start: 6 @6487 has 3 MA's), (Start: 7 @6493 has 91 MA's), (29, 6817),

Gene: Paedore\_9 Start: 6516, Stop: 7034, Start Num: 7  
Candidate Starts for Paedore\_9:  
(2, 6204), (3, 6210), (4, 6213), (5, 6384), (Start: 7 @6516 has 91 MA's), (16, 6642), (17, 6654), (22, 6750), (29, 6828),

Gene: Paolo\_12 Start: 7046, Stop: 7567, Start Num: 7  
Candidate Starts for Paolo\_12:  
(2, 6734), (3, 6740), (4, 6743), (5, 6914), (Start: 7 @7046 has 91 MA's), (17, 7187), (29, 7361), (34, 7463),

Gene: Phettuccine\_9 Start: 6636, Stop: 7181, Start Num: 7

Candidate Starts for Phettuccine\_9:

(Start: 7 @6636 has 91 MA's), (27, 6960), (35, 7083),

Gene: Provolone\_10 Start: 6449, Stop: 6991, Start Num: 7

Candidate Starts for Provolone\_10:

(Start: 7 @6449 has 91 MA's), (14, 6572), (27, 6773), (28, 6776), (29, 6785), (36, 6950),

Gene: Puginator\_13 Start: 6992, Stop: 7513, Start Num: 7

Candidate Starts for Puginator\_13:

(2, 6680), (3, 6686), (4, 6689), (5, 6860), (Start: 7 @6992 has 91 MA's), (17, 7133), (29, 7307), (34, 7409),

Gene: R4\_9 Start: 6477, Stop: 7001, Start Num: 7

Candidate Starts for R4\_9:

(2, 6165), (3, 6171), (4, 6174), (5, 6345), (Start: 7 @6477 has 91 MA's), (17, 6621), (29, 6795), (38, 6963),

Gene: Rana\_9 Start: 6602, Stop: 7147, Start Num: 7

Candidate Starts for Rana\_9:

(Start: 7 @6602 has 91 MA's), (8, 6644), (33, 7037), (35, 7049), (40, 7118),

Gene: RedBear\_11 Start: 6876, Stop: 7421, Start Num: 7

Candidate Starts for RedBear\_11:

(Start: 7 @6876 has 91 MA's), (8, 6918), (35, 7323), (40, 7392),

Gene: Rusticus\_10 Start: 6796, Stop: 7344, Start Num: 7

Candidate Starts for Rusticus\_10:

(Start: 7 @6796 has 91 MA's), (25, 7102), (27, 7123), (35, 7246),

Gene: Saftant\_9 Start: 6729, Stop: 7268, Start Num: 7

Candidate Starts for Saftant\_9:

(5, 6594), (Start: 7 @6729 has 91 MA's), (27, 7050), (28, 7053), (29, 7062), (36, 7227),

Gene: SarahRose\_9 Start: 6604, Stop: 7149, Start Num: 7

Candidate Starts for SarahRose\_9:

(Start: 7 @6604 has 91 MA's), (8, 6646), (35, 7051), (40, 7120),

Gene: Snorlax\_9 Start: 6604, Stop: 7149, Start Num: 7

Candidate Starts for Snorlax\_9:

(Start: 7 @6604 has 91 MA's), (8, 6646), (35, 7051), (40, 7120),

Gene: South40\_10 Start: 6876, Stop: 7421, Start Num: 7

Candidate Starts for South40\_10:

(Start: 7 @6876 has 91 MA's), (8, 6918), (35, 7323), (40, 7392),

Gene: SqueakyClean\_10 Start: 6741, Stop: 7274, Start Num: 7

Candidate Starts for SqueakyClean\_10:

(Start: 6 @6735 has 3 MA's), (Start: 7 @6741 has 91 MA's), (17, 6891), (29, 7065), (40, 7245),

Gene: Sujidade\_10 Start: 6900, Stop: 7445, Start Num: 7

Candidate Starts for Sujidade\_10:

(Start: 7 @6900 has 91 MA's), (8, 6942), (35, 7347), (40, 7416),

Gene: SunsetPointe\_9 Start: 6635, Stop: 7180, Start Num: 7

Candidate Starts for SunsetPointe\_9:

(Start: 7 @6635 has 91 MA's), (27, 6959), (35, 7082),

Gene: Superstar\_11 Start: 7579, Stop: 8088, Start Num: 7

Candidate Starts for Superstar\_11:

(5, 7447), (Start: 6 @7573 has 3 MA's), (Start: 7 @7579 has 91 MA's), (17, 7708), (29, 7882),

Gene: TagePhighter\_10 Start: 6604, Stop: 7149, Start Num: 7

Candidate Starts for TagePhighter\_10:

(Start: 7 @6604 has 91 MA's), (8, 6646), (35, 7051), (40, 7120),

Gene: Tefunt\_9 Start: 6438, Stop: 6968, Start Num: 7

Candidate Starts for Tefunt\_9:

(5, 6306), (Start: 6 @6432 has 3 MA's), (Start: 7 @6438 has 91 MA's), (18, 6600), (29, 6759), (40, 6939),

Gene: Thestral\_10 Start: 6515, Stop: 7033, Start Num: 7

Candidate Starts for Thestral\_10:

(3, 6209), (4, 6212), (5, 6383), (Start: 6 @6509 has 3 MA's), (Start: 7 @6515 has 91 MA's), (9, 6569), (17, 6653), (29, 6827),

Gene: TinaBelcher\_9 Start: 6460, Stop: 6981, Start Num: 7

Candidate Starts for TinaBelcher\_9:

(3, 6154), (4, 6157), (5, 6328), (Start: 6 @6454 has 3 MA's), (Start: 7 @6460 has 91 MA's), (17, 6601), (29, 6775),

Gene: Toma\_9 Start: 6605, Stop: 7150, Start Num: 7

Candidate Starts for Toma\_9:

(Start: 7 @6605 has 91 MA's), (33, 7040), (35, 7052), (40, 7121),

Gene: Triste\_9 Start: 6605, Stop: 7147, Start Num: 7

Candidate Starts for Triste\_9:

(Start: 7 @6605 has 91 MA's), (15, 6734), (35, 7049), (40, 7118),

Gene: Triumph\_11 Start: 6504, Stop: 7037, Start Num: 7

Candidate Starts for Triumph\_11:

(2, 6192), (3, 6198), (4, 6201), (5, 6372), (Start: 6 @6498 has 3 MA's), (Start: 7 @6504 has 91 MA's), (29, 6828),

Gene: TrvxScott\_8 Start: 6455, Stop: 6982, Start Num: 6

Candidate Starts for TrvxScott\_8:

(3, 6155), (4, 6158), (5, 6329), (Start: 6 @6455 has 3 MA's), (Start: 7 @6461 has 91 MA's), (17, 6602), (29, 6776),

Gene: TuanPN\_9 Start: 6608, Stop: 7153, Start Num: 7

Candidate Starts for TuanPN\_9:

(Start: 7 @6608 has 91 MA's), (35, 7055), (40, 7124),

Gene: Unstoppable\_9 Start: 6636, Stop: 7181, Start Num: 7

Candidate Starts for Unstoppable\_9:

(Start: 7 @6636 has 91 MA's), (27, 6960), (35, 7083),

Gene: Urza\_9 Start: 6850, Stop: 7386, Start Num: 7

Candidate Starts for Urza\_9:

(3, 6547), (4, 6550), (5, 6721), (Start: 7 @6850 has 91 MA's), (19, 7027), (26, 7162), (39, 7354),

Gene: Vanseggelen\_12 Start: 6357, Stop: 6899, Start Num: 7

Candidate Starts for Vanseggelen\_12:

(5, 6222), (Start: 7 @6357 has 91 MA's), (27, 6681), (28, 6684), (36, 6858),

Gene: Verabelle\_10 Start: 6722, Stop: 7264, Start Num: 7

Candidate Starts for Verabelle\_10:

(5, 6587), (Start: 7 @6722 has 91 MA's), (19, 6908), (27, 7046), (28, 7049), (31, 7091), (36, 7223),

Gene: Verse\_9 Start: 6789, Stop: 7328, Start Num: 7

Candidate Starts for Verse\_9:

(Start: 7 @6789 has 91 MA's), (8, 6831), (27, 7110), (28, 7113), (29, 7122), (36, 7287),

Gene: VieEnRose\_9 Start: 6924, Stop: 7457, Start Num: 7

Candidate Starts for VieEnRose\_9:

(3, 6621), (4, 6624), (5, 6795), (Start: 7 @6924 has 91 MA's), (19, 7098), (39, 7425),

Gene: Werner\_9 Start: 6605, Stop: 7150, Start Num: 7

Candidate Starts for Werner\_9:

(Start: 7 @6605 has 91 MA's), (8, 6647), (35, 7052), (40, 7121),

Gene: Whatever\_9 Start: 6605, Stop: 7150, Start Num: 7

Candidate Starts for Whatever\_9:

(Start: 7 @6605 has 91 MA's), (8, 6647), (35, 7052), (40, 7121),

Gene: Yasdni1\_9 Start: 6604, Stop: 7149, Start Num: 7

Candidate Starts for Yasdni1\_9:

(Start: 7 @6604 has 91 MA's), (35, 7051), (40, 7120),

Gene: Yosif\_10 Start: 7092, Stop: 7634, Start Num: 7

Candidate Starts for Yosif\_10:

(Start: 7 @7092 has 91 MA's), (36, 7593),

Gene: Zainub\_14 Start: 6992, Stop: 7513, Start Num: 7

Candidate Starts for Zainub\_14:

(2, 6680), (3, 6686), (4, 6689), (5, 6860), (Start: 7 @6992 has 91 MA's), (17, 7133), (29, 7307), (34, 7409),

Gene: Zemlya\_10 Start: 6604, Stop: 7149, Start Num: 7

Candidate Starts for Zemlya\_10:

(Start: 7 @6604 has 91 MA's), (35, 7051), (40, 7120),

Gene: phiCAM\_10 Start: 8461, Stop: 8991, Start Num: 7

Candidate Starts for phiCAM\_10:

(Start: 7 @8461 has 91 MA's), (8, 8503), (27, 8773), (28, 8776), (29, 8785), (34, 8887), (36, 8950),

Gene: phiHau3\_11 Start: 6678, Stop: 7202, Start Num: 7

Candidate Starts for phiHau3\_11:

(Start: 6 @6672 has 3 MA's), (Start: 7 @6678 has 91 MA's), (12, 6771), (20, 6870), (23, 6936), (29, 6993),