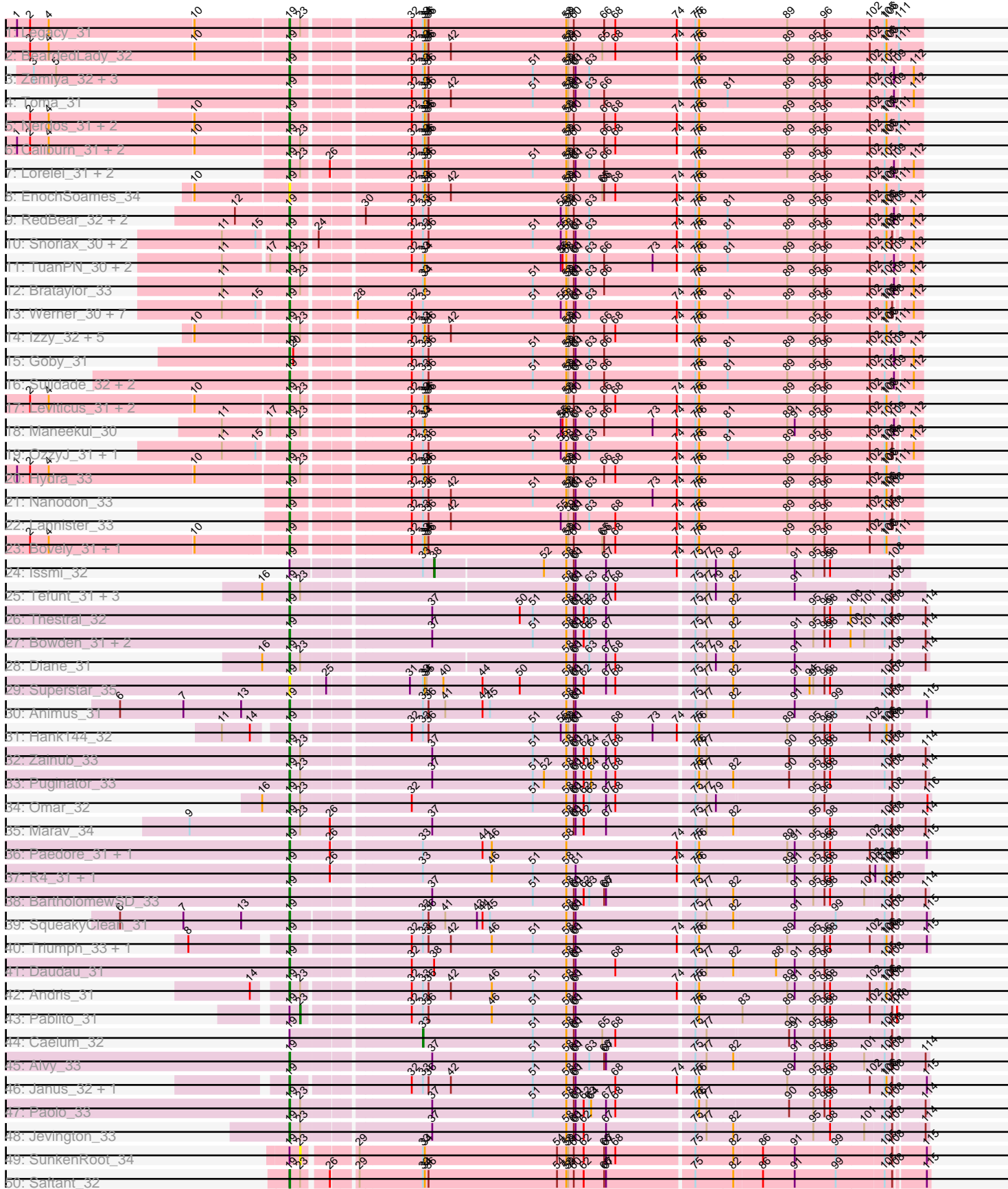


Pham 294554



Pham 294554



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 294554 Report

This analysis was run 04/18/26 on database version 643.

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 294554 has 118 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Legacy\_31
- Track 2 : BeardedLady\_32
- Track 3 : Zemlya\_32, Celeste\_31, Danzina\_32, Dattran\_32
- Track 4 : Toma\_31
- Track 5 : Nerdos\_31, Esperer\_31, SunsetPointe\_31
- Track 6 : Caliburn\_31, Ozzie\_31, Unstoppable\_31
- Track 7 : Lorelei\_31, Nabi\_31, Rana\_31
- Track 8 : EnochSoames\_34
- Track 9 : RedBear\_32, South40\_31, Katalie\_31
- Track 10 : Snorlax\_30, Chucky\_30, TagePhighter\_31
- Track 11 : TuanPN\_30, Yasdnii\_30, Ejemplo\_30
- Track 12 : Brataylor\_33
- Track 13 : Werner\_30, Hippo\_30, Dwayne\_30, BarryBee\_32, SarahRose\_30, Triste\_30, Whatever\_30, Emaanora\_32
- Track 14 : Izzy\_32, Rusticus\_32, Jash\_32, BryanRecycles\_32, Eddasa\_32, Oliynyk\_32
- Track 15 : Goby\_31
- Track 16 : Sujidade\_32, Godpower\_32, Lika\_31
- Track 17 : Leviticus\_31, Phettuccine\_31, Aaronocolus\_31
- Track 18 : Maneekul\_30
- Track 19 : OzzyJ\_31, Asten\_30
- Track 20 : Hydra\_33
- Track 21 : Nanodon\_33
- Track 22 : Lannister\_33
- Track 23 : Bovely\_31, Indigo\_30
- Track 24 : Issmi\_32
- Track 25 : Tefunt\_31, Haizum\_31, Nishikigoi\_31, Amethyst\_31
- Track 26 : Thestral\_32
- Track 27 : Bowden\_31, TinaBelcher\_31, TrvxScott\_30
- Track 28 : Diane\_31
- Track 29 : Superstar\_35
- Track 30 : Animus\_31
- Track 31 : Hank144\_32

- Track 32 : Zainub\_33
- Track 33 : Puginator\_33
- Track 34 : Omar\_32
- Track 35 : Marav\_34
- Track 36 : Paedore\_31, Loofah\_32
- Track 37 : R4\_31, ELB20\_30
- Track 38 : BartholomewSD\_33
- Track 39 : SqueakyClean\_31
- Track 40 : Triumph\_33, Axiom\_32
- Track 41 : Daudau\_31
- Track 42 : Andris\_31
- Track 43 : Pablito\_31
- Track 44 : Caelum\_32
- Track 45 : Alvy\_33
- Track 46 : Janus\_32, GirlDinner\_31
- Track 47 : Paolo\_33
- Track 48 : Jevington\_33
- Track 49 : SunkenRoot\_34
- Track 50 : Saftant\_32
- Track 51 : Sudan\_32, Dexers\_31, Alsaber\_33, Kaine\_32
- Track 52 : ZamZam\_32
- Track 53 : Yosif\_34
- Track 54 : Celery\_35
- Track 55 : Pavo\_33
- Track 56 : ElGato\_33, Provolone\_33
- Track 57 : phiCAM\_31
- Track 58 : Jhitchelle\_31
- Track 59 : Conan\_33
- Track 60 : Speedwell\_37
- Track 61 : Amela\_32
- Track 62 : Verabelle\_34
- Track 63 : Vanseggelen\_37
- Track 64 : Verse\_32
- Track 65 : GreenWeasel\_33, phiHau3\_33
- Track 66 : BroPlease\_32
- Track 67 : Celia\_33, Urza\_33, Itza\_33
- Track 68 : VieEnRose\_33
- Track 69 : DS6A\_69

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

The start number called the most often in the published annotations is 19, it was called in 105 of the 111 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• Aaronocolus\_31, Alsaber\_33, Alvy\_33, Amethyst\_31, Andris\_31, Animus\_31, Asten\_30, Axiom\_32, BarryBee\_32, BartholomewSD\_33, BeardedLady\_32, Bovely\_31, Bowden\_31, Brataylor\_33, BroPlease\_32, BryanRecycles\_32, Caliburn\_31, Celeste\_31, Celia\_33, Chucky\_30, Conan\_33, Danzina\_32, Dattran\_32, Daudau\_31, Dexers\_31, Diane\_31, Dwayne\_30, ELB20\_30, Eddasa\_32,

Ejemplo\_30, ElGato\_33, Emaanora\_32, EnochSoames\_34, Esperer\_31, GirlDinner\_31, Goby\_31, Godpower\_32, GreenWeasel\_33, Haizum\_31, Hank144\_32, Hippo\_30, Hydra\_33, Indigo\_30, Itza\_33, Izzy\_32, Janus\_32, Jash\_32, Jevington\_33, Jhitchelle\_31, Kaine\_32, Katalie\_31, Lannister\_33, Legacy\_31, Leviticus\_31, Lika\_31, Loofah\_32, Lorelei\_31, Maneekul\_30, Marav\_34, Nabi\_31, Nanodon\_33, Nerdos\_31, Nishikigoi\_31, Oliynyk\_32, Omar\_32, Ozzie\_31, OzzyJ\_31, Paedore\_31, Paolo\_33, Phettuccine\_31, Provolone\_33, Puginator\_33, R4\_31, Rana\_31, RedBear\_32, Rusticus\_32, Saftant\_32, SarahRose\_30, Snorlax\_30, South40\_31, Speedwell\_37, SqueakyClean\_31, Sudan\_32, Sujidade\_32, SunsetPointe\_31, Superstar\_35, TagePhighter\_31, Tefunt\_31, Thestral\_32, TinaBelcher\_31, Toma\_31, Triste\_30, Triumph\_33, TrvxScott\_30, TuanPN\_30, Unstoppable\_31, Urza\_33, Verse\_32, VieEnRose\_33, Werner\_30, Whatever\_30, Yasdnil\_30, Yosif\_34, Zainub\_33, ZamZam\_32, Zemlya\_32, phiHau3\_33,

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

- Amela\_32, Caelum\_32, Celery\_35, Issmi\_32, Pablito\_31, Pavo\_33, SunkenRoot\_34, Vanseggen\_37, Verabelle\_34, phiCAM\_31,

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

- DS6A\_69,

### Summary by start number:

Start 19:

- Found in 117 of 118 ( 99.2% ) of genes in pham
- Manual Annotations of this start: 105 of 111
- Called 91.5% of time when present
- Phage (with cluster) where this start called: Aaronocolus\_31 (BD1), Alsaber\_33 (BD3), Alvy\_33 (BD2), Amethyst\_31 (BD2), Andris\_31 (BD2), Animus\_31 (BD2), Asten\_30 (BD1), Axiom\_32 (BD2), BarryBee\_32 (BD1), BartholomewSD\_33 (BD2), BeardedLady\_32 (BD1), Bovely\_31 (BD1), Bowden\_31 (BD2), Brataylor\_33 (BD1), BroPlease\_32 (BD4), BryanRecycles\_32 (BD1), Caliburn\_31 (BD1), Celeste\_31 (BD1), Celia\_33 (BD6), Chucky\_30 (BD1), Conan\_33 (BD3), Danzina\_32 (BD1), Dattran\_32 (BD1), Daudau\_31 (BD2), Dexers\_31 (BD3), Diane\_31 (BD2), Dwayne\_30 (BD1), ELB20\_30 (BD2), Eddasa\_32 (BD1), Ejemplo\_30 (BD1), ElGato\_33 (BD3), Emaanora\_32 (BD1), EnochSoames\_34 (BD1), Esperer\_31 (BD1), GirlDinner\_31 (BD2), Goby\_31 (BD1), Godpower\_32 (BD1), GreenWeasel\_33 (BD4), Haizum\_31 (BD2), Hank144\_32 (BD2), Hippo\_30 (BD1), Hydra\_33 (BD1), Indigo\_30 (BD1), Itza\_33 (BD6), Izzy\_32 (BD1), Janus\_32 (BD2), Jash\_32 (BD1), Jevington\_33 (BD2), Jhitchelle\_31 (BD3), Kaine\_32 (BD3), Katalie\_31 (BD1), Lannister\_33 (BD1), Legacy\_31 (BD1), Leviticus\_31 (BD1), Lika\_31 (BD1), Loofah\_32 (BD2), Lorelei\_31 (BD1), Maneekul\_30 (BD1), Marav\_34 (BD2), Nabi\_31 (BD1), Nanodon\_33 (BD1), Nerdos\_31 (BD1), Nishikigoi\_31 (BD2), Oliynyk\_32 (BD1), Omar\_32 (BD2), Ozzie\_31 (BD1), OzzyJ\_31 (BD1), Paedore\_31 (BD2), Paolo\_33 (BD2), Phettuccine\_31 (BD1), Provolone\_33 (BD3), Puginator\_33 (BD2), R4\_31 (BD2), Rana\_31 (BD1), RedBear\_32 (BD1), Rusticus\_32 (BD1), Saftant\_32 (BD3), SarahRose\_30 (BD1), Snorlax\_30 (BD1), South40\_31 (BD1), Speedwell\_37 (BD3), SqueakyClean\_31 (BD2), Sudan\_32 (BD3), Sujidade\_32 (BD1), SunsetPointe\_31 (BD1), Superstar\_35 (BD2), TagePhighter\_31 (BD1), Tefunt\_31 (BD2), Thestral\_32 (BD2), TinaBelcher\_31 (BD2), Toma\_31 (BD1), Triste\_30 (BD1), Triumph\_33 (BD2), TrvxScott\_30 (BD2), TuanPN\_30 (BD1), Unstoppable\_31 (BD1), Urza\_33 (BD6), Verse\_32 (BD3), VieEnRose\_33 (BD6), Werner\_30 (BD1), Whatever\_30 (BD1), Yasdnil\_30 (BD1), Yosif\_34 (BD3), Zainub\_33 (BD2), ZamZam\_32 (BD3), Zemlya\_32 (BD1),

phiHau3\_33 (BD4),

Start 22:

- Found in 1 of 118 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 111
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DS6A\_69 (singleton),

Start 23:

- Found in 59 of 118 ( 50.0% ) of genes in pham
- Manual Annotations of this start: 3 of 111
- Called 11.9% of time when present
- Phage (with cluster) where this start called: Amela\_32 (BD3), Pablito\_31 (BD2), Pavo\_33 (BD3), SunkenRoot\_34 (BD3), Vanseggelen\_37 (BD3), Verabelle\_34 (BD3), phiCAM\_31 (BD3),

Start 26:

- Found in 27 of 118 ( 22.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 3.7% of time when present
- Phage (with cluster) where this start called: Celery\_35 (BD3),

Start 33:

- Found in 96 of 118 ( 81.4% ) of genes in pham
- Manual Annotations of this start: 1 of 111
- Called 1.0% of time when present
- Phage (with cluster) where this start called: Caelum\_32 (BD2),

Start 38:

- Found in 2 of 118 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 1 of 111
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Issmi\_32 (BD2),

### **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 19 was manually annotated 55 times for cluster BD1.

Info for manual annotations of cluster BD2:

- Start number 19 was manually annotated 30 times for cluster BD2.
- Start number 23 was manually annotated 1 time for cluster BD2.
- Start number 33 was manually annotated 1 time for cluster BD2.
- Start number 38 was manually annotated 1 time for cluster BD2.

Info for manual annotations of cluster BD3:

- Start number 19 was manually annotated 13 times for cluster BD3.
- Start number 23 was manually annotated 2 times for cluster BD3.

Info for manual annotations of cluster BD4:

- Start number 19 was manually annotated 3 times for cluster BD4.

Info for manual annotations of cluster BD6:

•Start number 19 was manually annotated 4 times for cluster BD6.

### **Gene Information:**

Gene: Aaronocolus\_31 Start: 23527, Stop: 24504, Start Num: 19

Candidate Starts for Aaronocolus\_31:

(2, 23125), (4, 23155), (10, 23386), (Start: 19 @23527 has 105 MA's), (Start: 23 @23542 has 3 MA's), (32, 23695), (Start: 33 @23713 has 1 MA's), (34, 23716), (35, 23719), (36, 23722), (58, 23944), (59, 23947), (60, 23956), (66, 24004), (68, 24022), (74, 24121), (75, 24142), (76, 24148), (89, 24289), (95, 24331), (96, 24349), (102, 24421), (105, 24445), (106, 24448), (111, 24466),

Gene: Alsaber\_33 Start: 25382, Stop: 26350, Start Num: 19

Candidate Starts for Alsaber\_33:

(Start: 19 @25382 has 105 MA's), (Start: 23 @25397 has 3 MA's), (26, 25433), (29, 25466), (Start: 33 @25565 has 1 MA's), (40, 25598), (42, 25610), (46, 25676), (51, 25742), (58, 25796), (59, 25799), (60, 25808), (68, 25874), (75, 25994), (82, 26054), (86, 26096), (91, 26147), (99, 26213), (105, 26288), (108, 26300), (115, 26345),

Gene: Alvy\_33 Start: 24823, Stop: 25797, Start Num: 19

Candidate Starts for Alvy\_33:

(Start: 19 @24823 has 105 MA's), (37, 25030), (51, 25192), (58, 25246), (60, 25258), (61, 25261), (63, 25282), (66, 25306), (67, 25309), (75, 25444), (77, 25462), (82, 25504), (91, 25597), (95, 25627), (96, 25645), (98, 25654), (101, 25708), (105, 25738), (108, 25750), (114, 25792),

Gene: Amela\_32 Start: 26230, Stop: 27183, Start Num: 23

Candidate Starts for Amela\_32:

(Start: 19 @26215 has 105 MA's), (Start: 23 @26230 has 3 MA's), (26, 26266), (29, 26299), (Start: 33 @26398 has 1 MA's), (34, 26401), (36, 26407), (54, 26614), (58, 26629), (59, 26632), (60, 26641), (62, 26656), (66, 26689), (67, 26692), (68, 26707), (75, 26827), (82, 26887), (86, 26929), (91, 26980), (99, 27046), (105, 27121), (108, 27133), (115, 27178),

Gene: Amethyst\_31 Start: 24241, Stop: 25203, Start Num: 19

Candidate Starts for Amethyst\_31:

(16, 24199), (Start: 19 @24241 has 105 MA's), (Start: 23 @24256 has 3 MA's), (58, 24658), (60, 24670), (61, 24673), (63, 24694), (67, 24721), (68, 24736), (75, 24856), (77, 24874), (79, 24889), (82, 24916), (91, 25009), (108, 25162),

Gene: Andris\_31 Start: 24271, Stop: 25218, Start Num: 19

Candidate Starts for Andris\_31:

(14, 24229), (Start: 19 @24271 has 105 MA's), (Start: 23 @24286 has 3 MA's), (32, 24439), (Start: 33 @24457 has 1 MA's), (36, 24466), (42, 24502), (46, 24568), (51, 24634), (58, 24688), (60, 24700), (61, 24703), (74, 24865), (75, 24886), (76, 24892), (89, 25033), (91, 25045), (95, 25075), (96, 25093), (98, 25102), (102, 25165), (105, 25189), (106, 25192), (108, 25201),

Gene: Animus\_31 Start: 24726, Stop: 25700, Start Num: 19

Candidate Starts for Animus\_31:

(6, 24453), (7, 24555), (13, 24648), (Start: 19 @24726 has 105 MA's), (Start: 33 @24915 has 1 MA's), (36, 24924), (41, 24951), (44, 25011), (45, 25023), (58, 25146), (60, 25158), (61, 25161), (75, 25344), (77, 25362), (82, 25404), (91, 25497), (99, 25563), (105, 25638), (108, 25650), (115, 25695),

Gene: Asten\_30 Start: 23760, Stop: 24728, Start Num: 19

Candidate Starts for Asten\_30:

(11, 23664), (15, 23718), (Start: 19 @23760 has 105 MA's), (32, 23928), (Start: 33 @23946 has 1 MA's), (36, 23955), (51, 24123), (55, 24168), (58, 24177), (60, 24189), (61, 24192), (63, 24213), (74, 24354), (75, 24375), (76, 24381), (81, 24426), (89, 24522), (95, 24564), (96, 24582), (102, 24654), (105, 24678), (106, 24681), (108, 24690), (112, 24714),

Gene: Axiom\_32 Start: 24442, Stop: 25422, Start Num: 19

Candidate Starts for Axiom\_32:

(8, 24301), (Start: 19 @24442 has 105 MA's), (32, 24610), (Start: 33 @24628 has 1 MA's), (36, 24637), (42, 24673), (46, 24739), (51, 24805), (58, 24859), (60, 24871), (61, 24874), (74, 25036), (75, 25057), (76, 25063), (89, 25204), (95, 25246), (96, 25264), (98, 25273), (102, 25336), (105, 25360), (106, 25363), (108, 25372), (115, 25417),

Gene: BarryBee\_32 Start: 23770, Stop: 24738, Start Num: 19

Candidate Starts for BarryBee\_32:

(11, 23674), (15, 23728), (Start: 19 @23770 has 105 MA's), (28, 23854), (32, 23938), (Start: 33 @23956 has 1 MA's), (51, 24133), (55, 24178), (58, 24187), (60, 24199), (61, 24202), (63, 24223), (74, 24364), (75, 24385), (76, 24391), (81, 24436), (89, 24532), (95, 24574), (96, 24592), (102, 24664), (105, 24688), (106, 24691), (108, 24700), (112, 24724),

Gene: BartholomewSD\_33 Start: 24823, Stop: 25797, Start Num: 19

Candidate Starts for BartholomewSD\_33:

(Start: 19 @24823 has 105 MA's), (37, 25030), (51, 25192), (58, 25246), (60, 25258), (61, 25261), (62, 25273), (63, 25282), (66, 25306), (67, 25309), (75, 25444), (77, 25462), (82, 25504), (91, 25597), (95, 25627), (96, 25645), (98, 25654), (101, 25708), (105, 25738), (108, 25750), (114, 25792),

Gene: BeardedLady\_32 Start: 23780, Stop: 24757, Start Num: 19

Candidate Starts for BeardedLady\_32:

(2, 23378), (4, 23408), (10, 23639), (Start: 19 @23780 has 105 MA's), (32, 23948), (Start: 33 @23966 has 1 MA's), (34, 23969), (35, 23972), (36, 23975), (42, 24011), (58, 24197), (59, 24200), (60, 24209), (65, 24254), (68, 24275), (74, 24374), (75, 24395), (76, 24401), (89, 24542), (95, 24584), (96, 24602), (102, 24674), (105, 24698), (106, 24701), (111, 24719),

Gene: Bovely\_31 Start: 23533, Stop: 24510, Start Num: 19

Candidate Starts for Bovely\_31:

(2, 23131), (4, 23161), (10, 23392), (Start: 19 @23533 has 105 MA's), (32, 23701), (Start: 33 @23719 has 1 MA's), (34, 23722), (35, 23725), (36, 23728), (58, 23950), (59, 23953), (60, 23962), (65, 24007), (66, 24010), (68, 24028), (74, 24127), (75, 24148), (76, 24154), (89, 24295), (95, 24337), (96, 24355), (102, 24427), (105, 24451), (106, 24454), (111, 24472),

Gene: Bowden\_31 Start: 24738, Stop: 25712, Start Num: 19

Candidate Starts for Bowden\_31:

(Start: 19 @24738 has 105 MA's), (37, 24945), (51, 25107), (58, 25161), (60, 25173), (61, 25176), (62, 25188), (63, 25197), (67, 25224), (75, 25359), (77, 25377), (82, 25419), (91, 25512), (95, 25542), (96, 25560), (98, 25569), (100, 25602), (101, 25623), (105, 25653), (108, 25665), (114, 25707),

Gene: Brataylor\_33 Start: 24724, Stop: 25695, Start Num: 19

Candidate Starts for Brataylor\_33:

(11, 24622), (Start: 19 @24724 has 105 MA's), (Start: 23 @24739 has 3 MA's), (Start: 33 @24910 has 1 MA's), (34, 24913), (51, 25087), (58, 25141), (59, 25144), (60, 25153), (61, 25156), (63, 25177), (66, 25201), (75, 25339), (76, 25345), (89, 25486), (95, 25528), (96, 25546), (102, 25618), (105, 25642),

(109, 25657), (112, 25681),

Gene: BroPlease\_32 Start: 24157, Stop: 25122, Start Num: 19

Candidate Starts for BroPlease\_32:

(17, 24127), (Start: 19 @24157 has 105 MA's), (Start: 33 @24343 has 1 MA's), (34, 24346), (41, 24379), (51, 24520), (52, 24538), (58, 24574), (61, 24589), (62, 24601), (63, 24610), (65, 24631), (66, 24634), (70, 24673), (74, 24751), (75, 24772), (79, 24805), (87, 24877), (99, 24991), (105, 25069), (108, 25081),

Gene: BryanRecycles\_32 Start: 23884, Stop: 24861, Start Num: 19

Candidate Starts for BryanRecycles\_32:

(10, 23743), (Start: 19 @23884 has 105 MA's), (Start: 23 @23899 has 3 MA's), (32, 24052), (Start: 33 @24070 has 1 MA's), (34, 24073), (36, 24079), (42, 24115), (58, 24301), (59, 24304), (60, 24313), (66, 24361), (68, 24379), (74, 24478), (75, 24499), (76, 24505), (95, 24688), (96, 24706), (102, 24778), (105, 24802), (106, 24805), (111, 24823),

Gene: Caelum\_32 Start: 24614, Stop: 25366, Start Num: 33

Candidate Starts for Caelum\_32:

(Start: 19 @24422 has 105 MA's), (Start: 33 @24614 has 1 MA's), (51, 24791), (58, 24845), (60, 24857), (61, 24860), (65, 24902), (68, 24923), (75, 25043), (77, 25061), (90, 25187), (91, 25196), (95, 25226), (96, 25244), (98, 25253), (105, 25337), (108, 25349),

Gene: Caliburn\_31 Start: 23510, Stop: 24487, Start Num: 19

Candidate Starts for Caliburn\_31:

(1, 23087), (2, 23108), (4, 23138), (10, 23369), (Start: 19 @23510 has 105 MA's), (Start: 23 @23525 has 3 MA's), (32, 23678), (Start: 33 @23696 has 1 MA's), (34, 23699), (35, 23702), (36, 23705), (58, 23927), (59, 23930), (60, 23939), (66, 23987), (68, 24005), (74, 24104), (75, 24125), (76, 24131), (89, 24272), (95, 24314), (96, 24332), (102, 24404), (105, 24428), (106, 24431), (111, 24449),

Gene: Celery\_35 Start: 25368, Stop: 26285, Start Num: 26

Candidate Starts for Celery\_35:

(Start: 19 @25317 has 105 MA's), (Start: 23 @25332 has 3 MA's), (26, 25368), (29, 25401), (Start: 33 @25500 has 1 MA's), (34, 25503), (36, 25509), (54, 25716), (58, 25731), (59, 25734), (60, 25743), (62, 25758), (66, 25791), (67, 25794), (68, 25809), (75, 25929), (82, 25989), (86, 26031), (91, 26082), (99, 26148), (105, 26223), (108, 26235), (115, 26280),

Gene: Celeste\_31 Start: 24193, Stop: 25164, Start Num: 19

Candidate Starts for Celeste\_31:

(3, 23785), (5, 23821), (Start: 19 @24193 has 105 MA's), (32, 24361), (Start: 33 @24379 has 1 MA's), (34, 24382), (36, 24388), (51, 24556), (58, 24610), (59, 24613), (60, 24622), (61, 24625), (63, 24646), (75, 24808), (76, 24814), (89, 24955), (95, 24997), (96, 25015), (102, 25087), (105, 25111), (109, 25126), (112, 25150),

Gene: Celia\_33 Start: 24606, Stop: 25559, Start Num: 19

Candidate Starts for Celia\_33:

(Start: 19 @24606 has 105 MA's), (Start: 23 @24621 has 3 MA's), (26, 24657), (39, 24810), (48, 24921), (57, 25017), (58, 25020), (60, 25032), (63, 25056), (67, 25083), (75, 25227), (81, 25278), (93, 25407),

Gene: Chucky\_30 Start: 23774, Stop: 24742, Start Num: 19

Candidate Starts for Chucky\_30:

(11, 23678), (15, 23732), (Start: 19 @23774 has 105 MA's), (24, 23810), (32, 23942), (Start: 33 @23960 has 1 MA's), (36, 23969), (51, 24137), (55, 24182), (58, 24191), (60, 24203), (61, 24206), (63,

24227), (74, 24368), (75, 24389), (76, 24395), (81, 24440), (89, 24536), (95, 24578), (96, 24596), (102, 24668), (105, 24692), (106, 24695), (108, 24704), (112, 24728),

Gene: Conan\_33 Start: 25278, Stop: 26246, Start Num: 19

Candidate Starts for Conan\_33:

(Start: 19 @25278 has 105 MA's), (Start: 23 @25293 has 3 MA's), (26, 25329), (29, 25362), (Start: 33 @25461 has 1 MA's), (34, 25464), (36, 25470), (43, 25548), (51, 25638), (58, 25692), (59, 25695), (60, 25704), (62, 25719), (66, 25752), (67, 25755), (68, 25770), (75, 25890), (82, 25950), (86, 25992), (91, 26043), (99, 26109), (105, 26184), (108, 26196), (115, 26241),

Gene: DS6A\_69 Start: 44787, Stop: 45914, Start Num: 22

Candidate Starts for DS6A\_69:

(21, 44781), (Start: 22 @44787 has 1 MA's), (27, 44880), (Start: 33 @44988 has 1 MA's), (47, 45102), (49, 45126), (53, 45189), (69, 45303), (71, 45321), (72, 45345), (73, 45351), (78, 45432), (80, 45459), (84, 45492), (85, 45504), (89, 45555), (92, 45582), (97, 45618), (101, 45675), (104, 45702), (107, 45714), (117, 45849), (118, 45876), (119, 45897), (120, 45906),

Gene: Danzina\_32 Start: 24494, Stop: 25465, Start Num: 19

Candidate Starts for Danzina\_32:

(3, 24086), (5, 24122), (Start: 19 @24494 has 105 MA's), (32, 24662), (Start: 33 @24680 has 1 MA's), (34, 24683), (36, 24689), (51, 24857), (58, 24911), (59, 24914), (60, 24923), (61, 24926), (63, 24947), (75, 25109), (76, 25115), (89, 25256), (95, 25298), (96, 25316), (102, 25388), (105, 25412), (109, 25427), (112, 25451),

Gene: Dattran\_32 Start: 24300, Stop: 25271, Start Num: 19

Candidate Starts for Dattran\_32:

(3, 23892), (5, 23928), (Start: 19 @24300 has 105 MA's), (32, 24468), (Start: 33 @24486 has 1 MA's), (34, 24489), (36, 24495), (51, 24663), (58, 24717), (59, 24720), (60, 24729), (61, 24732), (63, 24753), (75, 24915), (76, 24921), (89, 25062), (95, 25104), (96, 25122), (102, 25194), (105, 25218), (109, 25233), (112, 25257),

Gene: Daudau\_31 Start: 24490, Stop: 25434, Start Num: 19

Candidate Starts for Daudau\_31:

(Start: 19 @24490 has 105 MA's), (32, 24664), (Start: 38 @24700 has 1 MA's), (58, 24913), (60, 24925), (61, 24928), (68, 24991), (75, 25111), (77, 25129), (82, 25171), (88, 25234), (91, 25264), (95, 25294), (96, 25312), (105, 25405), (108, 25417),

Gene: Dexers\_31 Start: 25304, Stop: 26272, Start Num: 19

Candidate Starts for Dexers\_31:

(Start: 19 @25304 has 105 MA's), (Start: 23 @25319 has 3 MA's), (26, 25355), (29, 25388), (Start: 33 @25487 has 1 MA's), (40, 25520), (42, 25532), (46, 25598), (51, 25664), (58, 25718), (59, 25721), (60, 25730), (68, 25796), (75, 25916), (82, 25976), (86, 26018), (91, 26069), (99, 26135), (105, 26210), (108, 26222), (115, 26267),

Gene: Diane\_31 Start: 24584, Stop: 25552, Start Num: 19

Candidate Starts for Diane\_31:

(16, 24542), (Start: 19 @24584 has 105 MA's), (Start: 23 @24599 has 3 MA's), (58, 25001), (60, 25013), (61, 25016), (63, 25037), (67, 25064), (68, 25079), (75, 25199), (77, 25217), (79, 25232), (82, 25259), (91, 25352), (108, 25505), (114, 25547),

Gene: Dwayne\_30 Start: 23761, Stop: 24729, Start Num: 19

Candidate Starts for Dwayne\_30:

(11, 23665), (15, 23719), (Start: 19 @23761 has 105 MA's), (28, 23845), (32, 23929), (Start: 33 @23947 has 1 MA's), (51, 24124), (55, 24169), (58, 24178), (60, 24190), (61, 24193), (63, 24214), (74, 24355), (75, 24376), (76, 24382), (81, 24427), (89, 24523), (95, 24565), (96, 24583), (102, 24655), (105, 24679), (106, 24682), (108, 24691), (112, 24715),

Gene: ELB20\_30 Start: 24870, Stop: 25844, Start Num: 19

Candidate Starts for ELB20\_30:

(Start: 19 @24870 has 105 MA's), (26, 24930), (Start: 33 @25062 has 1 MA's), (46, 25173), (51, 25239), (58, 25293), (61, 25308), (74, 25470), (75, 25491), (76, 25497), (89, 25638), (91, 25650), (95, 25680), (96, 25698), (98, 25707), (102, 25770), (103, 25779), (105, 25794), (106, 25797), (108, 25806),

Gene: Eddasa\_32 Start: 23884, Stop: 24861, Start Num: 19

Candidate Starts for Eddasa\_32:

(10, 23743), (Start: 19 @23884 has 105 MA's), (Start: 23 @23899 has 3 MA's), (32, 24052), (Start: 33 @24070 has 1 MA's), (34, 24073), (36, 24079), (42, 24115), (58, 24301), (59, 24304), (60, 24313), (66, 24361), (68, 24379), (74, 24478), (75, 24499), (76, 24505), (95, 24688), (96, 24706), (102, 24778), (105, 24802), (106, 24805), (111, 24823),

Gene: Ejemplo\_30 Start: 23814, Stop: 24785, Start Num: 19

Candidate Starts for Ejemplo\_30:

(11, 23718), (17, 23787), (Start: 19 @23814 has 105 MA's), (Start: 23 @23829 has 3 MA's), (32, 23982), (Start: 33 @24000 has 1 MA's), (34, 24003), (55, 24222), (56, 24225), (58, 24231), (60, 24243), (61, 24246), (63, 24267), (66, 24291), (73, 24369), (74, 24408), (75, 24429), (76, 24435), (81, 24480), (89, 24576), (95, 24618), (96, 24636), (102, 24708), (105, 24732), (109, 24747), (112, 24771),

Gene: ElGato\_33 Start: 24942, Stop: 25910, Start Num: 19

Candidate Starts for ElGato\_33:

(Start: 19 @24942 has 105 MA's), (Start: 23 @24957 has 3 MA's), (26, 24993), (29, 25026), (Start: 33 @25125 has 1 MA's), (34, 25128), (36, 25134), (51, 25302), (58, 25356), (59, 25359), (60, 25368), (62, 25383), (66, 25416), (67, 25419), (68, 25434), (75, 25554), (82, 25614), (86, 25656), (91, 25707), (99, 25773), (105, 25848), (108, 25860), (115, 25905),

Gene: Emaanora\_32 Start: 23719, Stop: 24687, Start Num: 19

Candidate Starts for Emaanora\_32:

(11, 23623), (15, 23677), (Start: 19 @23719 has 105 MA's), (28, 23803), (32, 23887), (Start: 33 @23905 has 1 MA's), (51, 24082), (55, 24127), (58, 24136), (60, 24148), (61, 24151), (63, 24172), (74, 24313), (75, 24334), (76, 24340), (81, 24385), (89, 24481), (95, 24523), (96, 24541), (102, 24613), (105, 24637), (106, 24640), (108, 24649), (112, 24673),

Gene: EnochSoames\_34 Start: 23879, Stop: 24856, Start Num: 19

Candidate Starts for EnochSoames\_34:

(10, 23738), (Start: 19 @23879 has 105 MA's), (32, 24047), (Start: 33 @24065 has 1 MA's), (34, 24068), (36, 24074), (42, 24110), (58, 24296), (59, 24299), (60, 24308), (65, 24353), (66, 24356), (68, 24374), (74, 24473), (75, 24494), (76, 24500), (95, 24683), (96, 24701), (102, 24773), (105, 24797), (106, 24800), (111, 24818),

Gene: Esperer\_31 Start: 23346, Stop: 24323, Start Num: 19

Candidate Starts for Esperer\_31:

(2, 22944), (4, 22974), (10, 23205), (Start: 19 @23346 has 105 MA's), (32, 23514), (Start: 33 @23532 has 1 MA's), (34, 23535), (35, 23538), (36, 23541), (58, 23763), (59, 23766), (60, 23775), (66, 23823), (68, 23841), (74, 23940), (75, 23961), (76, 23967), (89, 24108), (95, 24150), (96, 24168), (102, 24240), (105, 24264), (106, 24267), (111, 24285),

Gene: GirlDinner\_31 Start: 24223, Stop: 25203, Start Num: 19

Candidate Starts for GirlDinner\_31:

(Start: 19 @24223 has 105 MA's), (32, 24391), (Start: 33 @24409 has 1 MA's), (36, 24418), (42, 24454), (51, 24586), (58, 24640), (60, 24652), (61, 24655), (68, 24718), (74, 24817), (75, 24838), (76, 24844), (89, 24985), (95, 25027), (96, 25045), (98, 25054), (102, 25117), (105, 25141), (106, 25144), (108, 25153), (115, 25198),

Gene: Goby\_31 Start: 24321, Stop: 25292, Start Num: 19

Candidate Starts for Goby\_31:

(Start: 19 @24321 has 105 MA's), (20, 24327), (32, 24489), (Start: 33 @24507 has 1 MA's), (36, 24516), (51, 24684), (58, 24738), (59, 24741), (60, 24750), (61, 24753), (63, 24774), (66, 24798), (75, 24936), (76, 24942), (81, 24987), (89, 25083), (95, 25125), (96, 25143), (102, 25215), (105, 25239), (109, 25254), (112, 25278),

Gene: Godpower\_32 Start: 24315, Stop: 25286, Start Num: 19

Candidate Starts for Godpower\_32:

(Start: 19 @24315 has 105 MA's), (32, 24483), (Start: 33 @24501 has 1 MA's), (36, 24510), (51, 24678), (58, 24732), (59, 24735), (60, 24744), (61, 24747), (63, 24768), (66, 24792), (75, 24930), (76, 24936), (81, 24981), (89, 25077), (95, 25119), (96, 25137), (102, 25209), (105, 25233), (109, 25248), (112, 25272),

Gene: GreenWeasel\_33 Start: 24166, Stop: 25131, Start Num: 19

Candidate Starts for GreenWeasel\_33:

(17, 24136), (Start: 19 @24166 has 105 MA's), (Start: 33 @24352 has 1 MA's), (34, 24355), (41, 24388), (51, 24529), (52, 24547), (58, 24583), (61, 24598), (62, 24610), (63, 24619), (65, 24640), (66, 24643), (70, 24682), (74, 24760), (75, 24781), (79, 24814), (82, 24841), (87, 24886), (99, 25000), (105, 25078), (108, 25090),

Gene: Haizum\_31 Start: 24258, Stop: 25220, Start Num: 19

Candidate Starts for Haizum\_31:

(16, 24216), (Start: 19 @24258 has 105 MA's), (Start: 23 @24273 has 3 MA's), (58, 24675), (60, 24687), (61, 24690), (63, 24711), (67, 24738), (68, 24753), (75, 24873), (77, 24891), (79, 24906), (82, 24933), (91, 25026), (108, 25179),

Gene: Hank144\_32 Start: 24639, Stop: 25586, Start Num: 19

Candidate Starts for Hank144\_32:

(11, 24549), (14, 24594), (Start: 19 @24639 has 105 MA's), (32, 24807), (Start: 33 @24825 has 1 MA's), (36, 24834), (51, 25002), (55, 25047), (58, 25056), (59, 25059), (60, 25068), (61, 25071), (68, 25134), (73, 25194), (74, 25233), (75, 25254), (76, 25260), (89, 25401), (95, 25443), (96, 25461), (98, 25470), (102, 25533), (105, 25557), (106, 25560), (108, 25569),

Gene: Hippo\_30 Start: 23770, Stop: 24738, Start Num: 19

Candidate Starts for Hippo\_30:

(11, 23674), (15, 23728), (Start: 19 @23770 has 105 MA's), (28, 23854), (32, 23938), (Start: 33 @23956 has 1 MA's), (51, 24133), (55, 24178), (58, 24187), (60, 24199), (61, 24202), (63, 24223), (74, 24364), (75, 24385), (76, 24391), (81, 24436), (89, 24532), (95, 24574), (96, 24592), (102, 24664), (105, 24688), (106, 24691), (108, 24700), (112, 24724),

Gene: Hydra\_33 Start: 24058, Stop: 25035, Start Num: 19

Candidate Starts for Hydra\_33:

(1, 23635), (2, 23656), (4, 23686), (10, 23917), (Start: 19 @24058 has 105 MA's), (Start: 23 @24073 has 3 MA's), (32, 24226), (Start: 33 @24244 has 1 MA's), (34, 24247), (36, 24253), (58, 24475), (59,

24478), (60, 24487), (66, 24535), (68, 24553), (74, 24652), (75, 24673), (76, 24679), (89, 24820), (95, 24862), (96, 24880), (102, 24952), (105, 24976), (106, 24979), (111, 24997),

Gene: Indigo\_30 Start: 23526, Stop: 24503, Start Num: 19

Candidate Starts for Indigo\_30:

(2, 23124), (4, 23154), (10, 23385), (Start: 19 @23526 has 105 MA's), (32, 23694), (Start: 33 @23712 has 1 MA's), (34, 23715), (35, 23718), (36, 23721), (58, 23943), (59, 23946), (60, 23955), (65, 24000), (66, 24003), (68, 24021), (74, 24120), (75, 24141), (76, 24147), (89, 24288), (95, 24330), (96, 24348), (102, 24420), (105, 24444), (106, 24447), (111, 24465),

Gene: Issmi\_32 Start: 25370, Stop: 26098, Start Num: 38

Candidate Starts for Issmi\_32:

(Start: 19 @25163 has 105 MA's), (Start: 33 @25352 has 1 MA's), (Start: 38 @25370 has 1 MA's), (52, 25541), (58, 25577), (60, 25589), (61, 25592), (67, 25640), (74, 25754), (75, 25775), (77, 25793), (79, 25808), (82, 25835), (91, 25928), (95, 25958), (96, 25976), (98, 25985), (108, 26081),

Gene: Itza\_33 Start: 24520, Stop: 25473, Start Num: 19

Candidate Starts for Itza\_33:

(Start: 19 @24520 has 105 MA's), (Start: 23 @24535 has 3 MA's), (26, 24571), (39, 24724), (48, 24835), (57, 24931), (58, 24934), (60, 24946), (63, 24970), (67, 24997), (75, 25141), (81, 25192), (93, 25321),

Gene: Izzy\_32 Start: 23931, Stop: 24908, Start Num: 19

Candidate Starts for Izzy\_32:

(10, 23790), (Start: 19 @23931 has 105 MA's), (Start: 23 @23946 has 3 MA's), (32, 24099), (Start: 33 @24117 has 1 MA's), (34, 24120), (36, 24126), (42, 24162), (58, 24348), (59, 24351), (60, 24360), (66, 24408), (68, 24426), (74, 24525), (75, 24546), (76, 24552), (95, 24735), (96, 24753), (102, 24825), (105, 24849), (106, 24852), (111, 24870),

Gene: Janus\_32 Start: 24561, Stop: 25541, Start Num: 19

Candidate Starts for Janus\_32:

(Start: 19 @24561 has 105 MA's), (32, 24729), (Start: 33 @24747 has 1 MA's), (36, 24756), (42, 24792), (51, 24924), (58, 24978), (60, 24990), (61, 24993), (68, 25056), (74, 25155), (75, 25176), (76, 25182), (89, 25323), (95, 25365), (96, 25383), (98, 25392), (102, 25455), (105, 25479), (106, 25482), (108, 25491), (115, 25536),

Gene: Jash\_32 Start: 23884, Stop: 24861, Start Num: 19

Candidate Starts for Jash\_32:

(10, 23743), (Start: 19 @23884 has 105 MA's), (Start: 23 @23899 has 3 MA's), (32, 24052), (Start: 33 @24070 has 1 MA's), (34, 24073), (36, 24079), (42, 24115), (58, 24301), (59, 24304), (60, 24313), (66, 24361), (68, 24379), (74, 24478), (75, 24499), (76, 24505), (95, 24688), (96, 24706), (102, 24778), (105, 24802), (106, 24805), (111, 24823),

Gene: Jevington\_33 Start: 24924, Stop: 25898, Start Num: 19

Candidate Starts for Jevington\_33:

(Start: 19 @24924 has 105 MA's), (Start: 23 @24939 has 3 MA's), (37, 25131), (58, 25347), (60, 25359), (61, 25362), (62, 25374), (67, 25410), (75, 25545), (77, 25563), (82, 25605), (95, 25728), (98, 25755), (101, 25809), (105, 25839), (108, 25851), (114, 25893),

Gene: Jhitchelle\_31 Start: 24831, Stop: 25790, Start Num: 19

Candidate Starts for Jhitchelle\_31:

(Start: 19 @24831 has 105 MA's), (Start: 23 @24846 has 3 MA's), (26, 24882), (29, 24915), (Start: 33 @25014 has 1 MA's), (34, 25017), (36, 25023), (54, 25230), (58, 25245), (59, 25248), (60, 25257), (62,

25272), (66, 25305), (67, 25308), (68, 25323), (75, 25443), (82, 25503), (86, 25545), (91, 25596), (99, 25662), (105, 25737), (108, 25749),

Gene: Kaine\_32 Start: 25091, Stop: 26059, Start Num: 19

Candidate Starts for Kaine\_32:

(Start: 19 @25091 has 105 MA's), (Start: 23 @25106 has 3 MA's), (26, 25142), (29, 25175), (Start: 33 @25274 has 1 MA's), (40, 25307), (42, 25319), (46, 25385), (51, 25451), (58, 25505), (59, 25508), (60, 25517), (68, 25583), (75, 25703), (82, 25763), (86, 25805), (91, 25856), (99, 25922), (105, 25997), (108, 26009), (115, 26054),

Gene: Katalie\_31 Start: 24057, Stop: 25028, Start Num: 19

Candidate Starts for Katalie\_31:

(12, 23976), (Start: 19 @24057 has 105 MA's), (30, 24153), (32, 24225), (Start: 33 @24243 has 1 MA's), (36, 24252), (55, 24465), (58, 24474), (59, 24477), (60, 24486), (63, 24510), (74, 24651), (75, 24672), (76, 24678), (81, 24723), (89, 24819), (95, 24861), (96, 24879), (102, 24951), (105, 24975), (106, 24978), (109, 24990), (112, 25014),

Gene: Lannister\_33 Start: 24536, Stop: 25504, Start Num: 19

Candidate Starts for Lannister\_33:

(Start: 19 @24536 has 105 MA's), (32, 24704), (Start: 33 @24722 has 1 MA's), (36, 24731), (42, 24767), (55, 24944), (59, 24956), (60, 24965), (61, 24968), (63, 24989), (68, 25031), (74, 25130), (75, 25151), (76, 25157), (89, 25298), (95, 25340), (96, 25358), (102, 25430), (105, 25454), (108, 25466),

Gene: Legacy\_31 Start: 23501, Stop: 24478, Start Num: 19

Candidate Starts for Legacy\_31:

(1, 23078), (2, 23099), (4, 23129), (10, 23360), (Start: 19 @23501 has 105 MA's), (Start: 23 @23516 has 3 MA's), (32, 23669), (Start: 33 @23687 has 1 MA's), (34, 23690), (35, 23693), (36, 23696), (58, 23918), (59, 23921), (60, 23930), (66, 23978), (68, 23996), (74, 24095), (75, 24116), (76, 24122), (89, 24263), (96, 24323), (102, 24395), (105, 24419), (106, 24422), (111, 24440),

Gene: Leviticus\_31 Start: 23530, Stop: 24507, Start Num: 19

Candidate Starts for Leviticus\_31:

(2, 23128), (4, 23158), (10, 23389), (Start: 19 @23530 has 105 MA's), (Start: 23 @23545 has 3 MA's), (32, 23698), (Start: 33 @23716 has 1 MA's), (34, 23719), (35, 23722), (36, 23725), (58, 23947), (59, 23950), (60, 23959), (66, 24007), (68, 24025), (74, 24124), (75, 24145), (76, 24151), (89, 24292), (95, 24334), (96, 24352), (102, 24424), (105, 24448), (106, 24451), (111, 24469),

Gene: Lika\_31 Start: 24319, Stop: 25290, Start Num: 19

Candidate Starts for Lika\_31:

(Start: 19 @24319 has 105 MA's), (32, 24487), (Start: 33 @24505 has 1 MA's), (36, 24514), (51, 24682), (58, 24736), (59, 24739), (60, 24748), (61, 24751), (63, 24772), (66, 24796), (75, 24934), (76, 24940), (81, 24985), (89, 25081), (95, 25123), (96, 25141), (102, 25213), (105, 25237), (109, 25252), (112, 25276),

Gene: Loofah\_32 Start: 24761, Stop: 25747, Start Num: 19

Candidate Starts for Loofah\_32:

(Start: 19 @24761 has 105 MA's), (26, 24821), (Start: 33 @24953 has 1 MA's), (44, 25049), (46, 25064), (58, 25184), (74, 25361), (75, 25382), (76, 25388), (89, 25529), (91, 25541), (95, 25571), (96, 25589), (98, 25598), (102, 25661), (105, 25685), (108, 25697), (115, 25742),

Gene: Lorelei\_31 Start: 24259, Stop: 25230, Start Num: 19

Candidate Starts for Lorelei\_31:

(Start: 19 @24259 has 105 MA's), (Start: 23 @24274 has 3 MA's), (26, 24313), (32, 24427), (Start: 33 @24445 has 1 MA's), (34, 24448), (36, 24454), (51, 24622), (58, 24676), (59, 24679), (60, 24688), (61, 24691), (63, 24712), (66, 24736), (75, 24874), (76, 24880), (89, 25021), (95, 25063), (96, 25081), (102, 25153), (105, 25177), (109, 25192), (112, 25216),

Gene: Maneekul\_30 Start: 23785, Stop: 24756, Start Num: 19

Candidate Starts for Maneekul\_30:

(11, 23689), (17, 23758), (Start: 19 @23785 has 105 MA's), (Start: 23 @23800 has 3 MA's), (32, 23953), (Start: 33 @23971 has 1 MA's), (34, 23974), (55, 24193), (56, 24196), (58, 24202), (60, 24214), (61, 24217), (63, 24238), (66, 24262), (73, 24340), (74, 24379), (75, 24400), (76, 24406), (81, 24451), (89, 24547), (91, 24559), (95, 24589), (96, 24607), (102, 24679), (105, 24703), (109, 24718), (112, 24742),

Gene: Marav\_34 Start: 25254, Stop: 26228, Start Num: 19

Candidate Starts for Marav\_34:

(9, 25095), (Start: 19 @25254 has 105 MA's), (Start: 23 @25269 has 3 MA's), (26, 25314), (37, 25461), (58, 25677), (60, 25689), (61, 25692), (62, 25704), (67, 25740), (75, 25875), (77, 25893), (82, 25935), (95, 26058), (98, 26085), (105, 26169), (108, 26181), (114, 26223),

Gene: Nabi\_31 Start: 24259, Stop: 25230, Start Num: 19

Candidate Starts for Nabi\_31:

(Start: 19 @24259 has 105 MA's), (Start: 23 @24274 has 3 MA's), (26, 24313), (32, 24427), (Start: 33 @24445 has 1 MA's), (34, 24448), (36, 24454), (51, 24622), (58, 24676), (59, 24679), (60, 24688), (61, 24691), (63, 24712), (66, 24736), (75, 24874), (76, 24880), (89, 25021), (95, 25063), (96, 25081), (102, 25153), (105, 25177), (109, 25192), (112, 25216),

Gene: Nanodon\_33 Start: 24148, Stop: 25116, Start Num: 19

Candidate Starts for Nanodon\_33:

(Start: 19 @24148 has 105 MA's), (32, 24316), (Start: 33 @24334 has 1 MA's), (36, 24343), (42, 24379), (51, 24511), (58, 24565), (59, 24568), (60, 24577), (61, 24580), (63, 24601), (73, 24703), (74, 24742), (75, 24763), (76, 24769), (89, 24910), (95, 24952), (96, 24970), (102, 25042), (105, 25066), (106, 25069), (108, 25078),

Gene: Nerdos\_31 Start: 23524, Stop: 24501, Start Num: 19

Candidate Starts for Nerdos\_31:

(2, 23122), (4, 23152), (10, 23383), (Start: 19 @23524 has 105 MA's), (32, 23692), (Start: 33 @23710 has 1 MA's), (34, 23713), (35, 23716), (36, 23719), (58, 23941), (59, 23944), (60, 23953), (66, 24001), (68, 24019), (74, 24118), (75, 24139), (76, 24145), (89, 24286), (95, 24328), (96, 24346), (102, 24418), (105, 24442), (106, 24445), (111, 24463),

Gene: Nishikigoi\_31 Start: 24258, Stop: 25220, Start Num: 19

Candidate Starts for Nishikigoi\_31:

(16, 24216), (Start: 19 @24258 has 105 MA's), (Start: 23 @24273 has 3 MA's), (58, 24675), (60, 24687), (61, 24690), (63, 24711), (67, 24738), (68, 24753), (75, 24873), (77, 24891), (79, 24906), (82, 24933), (91, 25026), (108, 25179),

Gene: Oliynyk\_32 Start: 23884, Stop: 24861, Start Num: 19

Candidate Starts for Oliynyk\_32:

(10, 23743), (Start: 19 @23884 has 105 MA's), (Start: 23 @23899 has 3 MA's), (32, 24052), (Start: 33 @24070 has 1 MA's), (34, 24073), (36, 24079), (42, 24115), (58, 24301), (59, 24304), (60, 24313), (66, 24361), (68, 24379), (74, 24478), (75, 24499), (76, 24505), (95, 24688), (96, 24706), (102, 24778), (105, 24802), (106, 24805), (111, 24823),

Gene: Omar\_32 Start: 24520, Stop: 25497, Start Num: 19

Candidate Starts for Omar\_32:

(16, 24478), (Start: 19 @24520 has 105 MA's), (Start: 23 @24535 has 3 MA's), (32, 24694), (51, 24889), (58, 24943), (60, 24955), (61, 24958), (62, 24970), (63, 24979), (67, 25006), (68, 25021), (75, 25141), (77, 25159), (79, 25174), (95, 25324), (96, 25342), (108, 25447), (116, 25492),

Gene: Ozzie\_31 Start: 23510, Stop: 24487, Start Num: 19

Candidate Starts for Ozzie\_31:

(1, 23087), (2, 23108), (4, 23138), (10, 23369), (Start: 19 @23510 has 105 MA's), (Start: 23 @23525 has 3 MA's), (32, 23678), (Start: 33 @23696 has 1 MA's), (34, 23699), (35, 23702), (36, 23705), (58, 23927), (59, 23930), (60, 23939), (66, 23987), (68, 24005), (74, 24104), (75, 24125), (76, 24131), (89, 24272), (95, 24314), (96, 24332), (102, 24404), (105, 24428), (106, 24431), (111, 24449),

Gene: OzzyJ\_31 Start: 23761, Stop: 24729, Start Num: 19

Candidate Starts for OzzyJ\_31:

(11, 23665), (15, 23719), (Start: 19 @23761 has 105 MA's), (32, 23929), (Start: 33 @23947 has 1 MA's), (36, 23956), (51, 24124), (55, 24169), (58, 24178), (60, 24190), (61, 24193), (63, 24214), (74, 24355), (75, 24376), (76, 24382), (81, 24427), (89, 24523), (95, 24565), (96, 24583), (102, 24655), (105, 24679), (106, 24682), (108, 24691), (112, 24715),

Gene: Pablito\_31 Start: 24154, Stop: 25086, Start Num: 23

Candidate Starts for Pablito\_31:

(Start: 19 @24139 has 105 MA's), (Start: 23 @24154 has 3 MA's), (32, 24307), (Start: 33 @24325 has 1 MA's), (36, 24334), (46, 24436), (51, 24502), (58, 24556), (60, 24568), (61, 24571), (75, 24754), (76, 24760), (83, 24829), (89, 24901), (95, 24943), (96, 24961), (98, 24970), (102, 25033), (105, 25057), (108, 25069), (110, 25072),

Gene: Paedore\_31 Start: 24746, Stop: 25732, Start Num: 19

Candidate Starts for Paedore\_31:

(Start: 19 @24746 has 105 MA's), (26, 24806), (Start: 33 @24938 has 1 MA's), (44, 25034), (46, 25049), (58, 25169), (74, 25346), (75, 25367), (76, 25373), (89, 25514), (91, 25526), (95, 25556), (96, 25574), (98, 25583), (102, 25646), (105, 25670), (108, 25682), (115, 25727),

Gene: Paolo\_33 Start: 25087, Stop: 26064, Start Num: 19

Candidate Starts for Paolo\_33:

(Start: 19 @25087 has 105 MA's), (Start: 23 @25102 has 3 MA's), (37, 25294), (51, 25456), (58, 25510), (60, 25522), (61, 25525), (62, 25537), (63, 25546), (64, 25549), (67, 25573), (68, 25588), (75, 25708), (76, 25714), (77, 25726), (90, 25855), (95, 25894), (96, 25912), (98, 25921), (105, 26005), (108, 26017), (114, 26059),

Gene: Pavo\_33 Start: 25566, Stop: 26519, Start Num: 23

Candidate Starts for Pavo\_33:

(Start: 19 @25551 has 105 MA's), (Start: 23 @25566 has 3 MA's), (26, 25602), (29, 25635), (Start: 33 @25734 has 1 MA's), (34, 25737), (36, 25743), (51, 25911), (58, 25965), (59, 25968), (60, 25977), (62, 25992), (66, 26025), (67, 26028), (68, 26043), (75, 26163), (82, 26223), (86, 26265), (91, 26316), (99, 26382), (105, 26457), (108, 26469), (115, 26514),

Gene: Phettuccine\_31 Start: 23526, Stop: 24503, Start Num: 19

Candidate Starts for Phettuccine\_31:

(2, 23124), (4, 23154), (10, 23385), (Start: 19 @23526 has 105 MA's), (Start: 23 @23541 has 3 MA's), (32, 23694), (Start: 33 @23712 has 1 MA's), (34, 23715), (35, 23718), (36, 23721), (58, 23943), (59, 23946), (60, 23955), (66, 24003), (68, 24021), (74, 24120), (75, 24141), (76, 24147), (89, 24288), (95, 24330), (96, 24348), (102, 24420), (105, 24444), (106, 24447), (111, 24465),

Gene: Provolone\_33 Start: 24933, Stop: 25901, Start Num: 19

Candidate Starts for Provolone\_33:

(Start: 19 @24933 has 105 MA's), (Start: 23 @24948 has 3 MA's), (26, 24984), (29, 25017), (Start: 33 @25116 has 1 MA's), (34, 25119), (36, 25125), (51, 25293), (58, 25347), (59, 25350), (60, 25359), (62, 25374), (66, 25407), (67, 25410), (68, 25425), (75, 25545), (82, 25605), (86, 25647), (91, 25698), (99, 25764), (105, 25839), (108, 25851), (115, 25896),

Gene: Puginator\_33 Start: 25108, Stop: 26082, Start Num: 19

Candidate Starts for Puginator\_33:

(Start: 19 @25108 has 105 MA's), (Start: 23 @25123 has 3 MA's), (37, 25315), (51, 25477), (52, 25495), (58, 25531), (60, 25543), (61, 25546), (62, 25558), (64, 25570), (67, 25594), (68, 25609), (75, 25729), (76, 25735), (77, 25747), (82, 25789), (90, 25873), (95, 25912), (96, 25930), (98, 25939), (105, 26023), (108, 26035), (114, 26077),

Gene: R4\_31 Start: 24880, Stop: 25854, Start Num: 19

Candidate Starts for R4\_31:

(Start: 19 @24880 has 105 MA's), (26, 24940), (Start: 33 @25072 has 1 MA's), (46, 25183), (51, 25249), (58, 25303), (61, 25318), (74, 25480), (75, 25501), (76, 25507), (89, 25648), (91, 25660), (95, 25690), (96, 25708), (98, 25717), (102, 25780), (103, 25789), (105, 25804), (106, 25807), (108, 25816),

Gene: Rana\_31 Start: 24259, Stop: 25230, Start Num: 19

Candidate Starts for Rana\_31:

(Start: 19 @24259 has 105 MA's), (Start: 23 @24274 has 3 MA's), (26, 24313), (32, 24427), (Start: 33 @24445 has 1 MA's), (34, 24448), (36, 24454), (51, 24622), (58, 24676), (59, 24679), (60, 24688), (61, 24691), (63, 24712), (66, 24736), (75, 24874), (76, 24880), (89, 25021), (95, 25063), (96, 25081), (102, 25153), (105, 25177), (109, 25192), (112, 25216),

Gene: RedBear\_32 Start: 24057, Stop: 25028, Start Num: 19

Candidate Starts for RedBear\_32:

(12, 23976), (Start: 19 @24057 has 105 MA's), (30, 24153), (32, 24225), (Start: 33 @24243 has 1 MA's), (36, 24252), (55, 24465), (58, 24474), (59, 24477), (60, 24486), (63, 24510), (74, 24651), (75, 24672), (76, 24678), (81, 24723), (89, 24819), (95, 24861), (96, 24879), (102, 24951), (105, 24975), (106, 24978), (109, 24990), (112, 25014),

Gene: Rusticus\_32 Start: 23884, Stop: 24861, Start Num: 19

Candidate Starts for Rusticus\_32:

(10, 23743), (Start: 19 @23884 has 105 MA's), (Start: 23 @23899 has 3 MA's), (32, 24052), (Start: 33 @24070 has 1 MA's), (34, 24073), (36, 24079), (42, 24115), (58, 24301), (59, 24304), (60, 24313), (66, 24361), (68, 24379), (74, 24478), (75, 24499), (76, 24505), (95, 24688), (96, 24706), (102, 24778), (105, 24802), (106, 24805), (111, 24823),

Gene: Saftant\_32 Start: 25497, Stop: 26465, Start Num: 19

Candidate Starts for Saftant\_32:

(Start: 19 @25497 has 105 MA's), (Start: 23 @25512 has 3 MA's), (26, 25548), (29, 25581), (Start: 33 @25680 has 1 MA's), (34, 25683), (36, 25689), (54, 25896), (58, 25911), (59, 25914), (60, 25923), (62, 25938), (66, 25971), (67, 25974), (75, 26109), (82, 26169), (86, 26211), (91, 26262), (99, 26328), (105, 26403), (108, 26415), (115, 26460),

Gene: SarahRose\_30 Start: 23770, Stop: 24738, Start Num: 19

Candidate Starts for SarahRose\_30:

(11, 23674), (15, 23728), (Start: 19 @23770 has 105 MA's), (28, 23854), (32, 23938), (Start: 33 @23956 has 1 MA's), (51, 24133), (55, 24178), (58, 24187), (60, 24199), (61, 24202), (63, 24223), (74, 24364), (75, 24385), (76, 24391), (81, 24436), (89, 24532), (95, 24574), (96, 24592), (102, 24664), (105, 24688), (106, 24691), (108, 24700), (112, 24724),

Gene: Snorlax\_30 Start: 23773, Stop: 24741, Start Num: 19

Candidate Starts for Snorlax\_30:

(11, 23677), (15, 23731), (Start: 19 @23773 has 105 MA's), (24, 23809), (32, 23941), (Start: 33 @23959 has 1 MA's), (36, 23968), (51, 24136), (55, 24181), (58, 24190), (60, 24202), (61, 24205), (63, 24226), (74, 24367), (75, 24388), (76, 24394), (81, 24439), (89, 24535), (95, 24577), (96, 24595), (102, 24667), (105, 24691), (106, 24694), (108, 24703), (112, 24727),

Gene: South40\_31 Start: 24057, Stop: 25028, Start Num: 19

Candidate Starts for South40\_31:

(12, 23976), (Start: 19 @24057 has 105 MA's), (30, 24153), (32, 24225), (Start: 33 @24243 has 1 MA's), (36, 24252), (55, 24465), (58, 24474), (59, 24477), (60, 24486), (63, 24510), (74, 24651), (75, 24672), (76, 24678), (81, 24723), (89, 24819), (95, 24861), (96, 24879), (102, 24951), (105, 24975), (106, 24978), (109, 24990), (112, 25014),

Gene: Speedwell\_37 Start: 26819, Stop: 27787, Start Num: 19

Candidate Starts for Speedwell\_37:

(Start: 19 @26819 has 105 MA's), (Start: 23 @26834 has 3 MA's), (29, 26903), (Start: 33 @27002 has 1 MA's), (34, 27005), (36, 27011), (54, 27218), (58, 27233), (59, 27236), (60, 27245), (62, 27260), (66, 27293), (67, 27296), (68, 27311), (75, 27431), (82, 27491), (86, 27533), (91, 27584), (99, 27650), (105, 27725), (108, 27737), (113, 27776), (115, 27782),

Gene: SqueakyClean\_31 Start: 24658, Stop: 25632, Start Num: 19

Candidate Starts for SqueakyClean\_31:

(6, 24385), (7, 24487), (13, 24580), (Start: 19 @24658 has 105 MA's), (Start: 33 @24847 has 1 MA's), (36, 24856), (41, 24883), (43, 24934), (44, 24943), (45, 24955), (58, 25078), (60, 25090), (61, 25093), (75, 25276), (77, 25294), (82, 25336), (91, 25429), (99, 25495), (105, 25570), (108, 25582), (115, 25627),

Gene: Sudan\_32 Start: 25378, Stop: 26346, Start Num: 19

Candidate Starts for Sudan\_32:

(Start: 19 @25378 has 105 MA's), (Start: 23 @25393 has 3 MA's), (26, 25429), (29, 25462), (Start: 33 @25561 has 1 MA's), (40, 25594), (42, 25606), (46, 25672), (51, 25738), (58, 25792), (59, 25795), (60, 25804), (68, 25870), (75, 25990), (82, 26050), (86, 26092), (91, 26143), (99, 26209), (105, 26284), (108, 26296), (115, 26341),

Gene: Sujidade\_32 Start: 24604, Stop: 25575, Start Num: 19

Candidate Starts for Sujidade\_32:

(Start: 19 @24604 has 105 MA's), (32, 24772), (Start: 33 @24790 has 1 MA's), (36, 24799), (51, 24967), (58, 25021), (59, 25024), (60, 25033), (61, 25036), (63, 25057), (66, 25081), (75, 25219), (76, 25225), (81, 25270), (89, 25366), (95, 25408), (96, 25426), (102, 25498), (105, 25522), (109, 25537), (112, 25561),

Gene: SunkenRoot\_34 Start: 26030, Stop: 26983, Start Num: 23

Candidate Starts for SunkenRoot\_34:

(Start: 19 @26015 has 105 MA's), (Start: 23 @26030 has 3 MA's), (29, 26099), (Start: 33 @26198 has 1 MA's), (34, 26201), (54, 26414), (58, 26429), (59, 26432), (60, 26441), (62, 26456), (66, 26489), (67, 26492), (68, 26507), (75, 26627), (82, 26687), (86, 26729), (91, 26780), (99, 26846), (105, 26921), (108, 26933), (115, 26978),

Gene: SunsetPointe\_31 Start: 23517, Stop: 24494, Start Num: 19

Candidate Starts for SunsetPointe\_31:

(2, 23115), (4, 23145), (10, 23376), (Start: 19 @23517 has 105 MA's), (32, 23685), (Start: 33 @23703 has 1 MA's), (34, 23706), (35, 23709), (36, 23712), (58, 23934), (59, 23937), (60, 23946), (66, 23994), (68, 24012), (74, 24111), (75, 24132), (76, 24138), (89, 24279), (95, 24321), (96, 24339), (102, 24411), (105, 24435), (106, 24438), (111, 24456),

Gene: Superstar\_35 Start: 25700, Stop: 26641, Start Num: 19

Candidate Starts for Superstar\_35:

(Start: 19 @25700 has 105 MA's), (25, 25751), (31, 25868), (Start: 33 @25889 has 1 MA's), (34, 25892), (35, 25895), (40, 25922), (44, 25985), (50, 26045), (58, 26120), (60, 26132), (61, 26135), (62, 26147), (67, 26183), (68, 26198), (75, 26318), (77, 26336), (82, 26378), (91, 26471), (94, 26495), (95, 26501), (96, 26519), (98, 26528), (105, 26612), (108, 26624),

Gene: TagePighther\_31 Start: 23773, Stop: 24741, Start Num: 19

Candidate Starts for TagePighther\_31:

(11, 23677), (15, 23731), (Start: 19 @23773 has 105 MA's), (24, 23809), (32, 23941), (Start: 33 @23959 has 1 MA's), (36, 23968), (51, 24136), (55, 24181), (58, 24190), (60, 24202), (61, 24205), (63, 24226), (74, 24367), (75, 24388), (76, 24394), (81, 24439), (89, 24535), (95, 24577), (96, 24595), (102, 24667), (105, 24691), (106, 24694), (108, 24703), (112, 24727),

Gene: Tefunt\_31 Start: 24261, Stop: 25223, Start Num: 19

Candidate Starts for Tefunt\_31:

(16, 24219), (Start: 19 @24261 has 105 MA's), (Start: 23 @24276 has 3 MA's), (58, 24678), (60, 24690), (61, 24693), (63, 24714), (67, 24741), (68, 24756), (75, 24876), (77, 24894), (79, 24909), (82, 24936), (91, 25029), (108, 25182),

Gene: Thestral\_32 Start: 24724, Stop: 25698, Start Num: 19

Candidate Starts for Thestral\_32:

(Start: 19 @24724 has 105 MA's), (37, 24931), (50, 25072), (51, 25093), (58, 25147), (60, 25159), (61, 25162), (62, 25174), (63, 25183), (67, 25210), (75, 25345), (77, 25363), (82, 25405), (95, 25528), (96, 25546), (98, 25555), (100, 25588), (101, 25609), (105, 25639), (108, 25651), (114, 25693),

Gene: TinaBelcher\_31 Start: 24671, Stop: 25645, Start Num: 19

Candidate Starts for TinaBelcher\_31:

(Start: 19 @24671 has 105 MA's), (37, 24878), (51, 25040), (58, 25094), (60, 25106), (61, 25109), (62, 25121), (63, 25130), (67, 25157), (75, 25292), (77, 25310), (82, 25352), (91, 25445), (95, 25475), (96, 25493), (98, 25502), (100, 25535), (101, 25556), (105, 25586), (108, 25598), (114, 25640),

Gene: Toma\_31 Start: 24321, Stop: 25292, Start Num: 19

Candidate Starts for Toma\_31:

(Start: 19 @24321 has 105 MA's), (32, 24489), (Start: 33 @24507 has 1 MA's), (34, 24510), (36, 24516), (42, 24552), (51, 24684), (58, 24738), (59, 24741), (60, 24750), (61, 24753), (63, 24774), (66, 24798), (75, 24936), (76, 24942), (81, 24987), (89, 25083), (95, 25125), (96, 25143), (102, 25215), (105, 25239), (109, 25254), (112, 25278),

Gene: Triste\_30 Start: 23761, Stop: 24729, Start Num: 19

Candidate Starts for Triste\_30:

(11, 23665), (15, 23719), (Start: 19 @23761 has 105 MA's), (28, 23845), (32, 23929), (Start: 33 @23947 has 1 MA's), (51, 24124), (55, 24169), (58, 24178), (60, 24190), (61, 24193), (63, 24214), (74, 24355), (75, 24376), (76, 24382), (81, 24427), (89, 24523), (95, 24565), (96, 24583), (102, 24655), (105, 24679), (106, 24682), (108, 24691), (112, 24715),

Gene: Triumph\_33 Start: 24459, Stop: 25439, Start Num: 19

Candidate Starts for Triumph\_33:

(8, 24318), (Start: 19 @24459 has 105 MA's), (32, 24627), (Start: 33 @24645 has 1 MA's), (36, 24654), (42, 24690), (46, 24756), (51, 24822), (58, 24876), (60, 24888), (61, 24891), (74, 25053), (75, 25074), (76, 25080), (89, 25221), (95, 25263), (96, 25281), (98, 25290), (102, 25353), (105, 25377), (106, 25380), (108, 25389), (115, 25434),

Gene: TrvxScott\_30 Start: 24717, Stop: 25691, Start Num: 19

Candidate Starts for TrvxScott\_30:

(Start: 19 @24717 has 105 MA's), (37, 24924), (51, 25086), (58, 25140), (60, 25152), (61, 25155), (62, 25167), (63, 25176), (67, 25203), (75, 25338), (77, 25356), (82, 25398), (91, 25491), (95, 25521), (96, 25539), (98, 25548), (100, 25581), (101, 25602), (105, 25632), (108, 25644), (114, 25686),

Gene: TuanPN\_30 Start: 23814, Stop: 24785, Start Num: 19

Candidate Starts for TuanPN\_30:

(11, 23718), (17, 23787), (Start: 19 @23814 has 105 MA's), (Start: 23 @23829 has 3 MA's), (32, 23982), (Start: 33 @24000 has 1 MA's), (34, 24003), (55, 24222), (56, 24225), (58, 24231), (60, 24243), (61, 24246), (63, 24267), (66, 24291), (73, 24369), (74, 24408), (75, 24429), (76, 24435), (81, 24480), (89, 24576), (95, 24618), (96, 24636), (102, 24708), (105, 24732), (109, 24747), (112, 24771),

Gene: Unstoppable\_31 Start: 23521, Stop: 24498, Start Num: 19

Candidate Starts for Unstoppable\_31:

(1, 23098), (2, 23119), (4, 23149), (10, 23380), (Start: 19 @23521 has 105 MA's), (Start: 23 @23536 has 3 MA's), (32, 23689), (Start: 33 @23707 has 1 MA's), (34, 23710), (35, 23713), (36, 23716), (58, 23938), (59, 23941), (60, 23950), (66, 23998), (68, 24016), (74, 24115), (75, 24136), (76, 24142), (89, 24283), (95, 24325), (96, 24343), (102, 24415), (105, 24439), (106, 24442), (111, 24460),

Gene: Urza\_33 Start: 24541, Stop: 25494, Start Num: 19

Candidate Starts for Urza\_33:

(Start: 19 @24541 has 105 MA's), (Start: 23 @24556 has 3 MA's), (26, 24592), (39, 24745), (48, 24856), (57, 24952), (58, 24955), (60, 24967), (63, 24991), (67, 25018), (75, 25162), (81, 25213), (93, 25342),

Gene: Vanseggelen\_37 Start: 25079, Stop: 26032, Start Num: 23

Candidate Starts for Vanseggelen\_37:

(Start: 19 @25064 has 105 MA's), (Start: 23 @25079 has 3 MA's), (29, 25148), (Start: 33 @25247 has 1 MA's), (42, 25292), (46, 25358), (51, 25424), (58, 25478), (59, 25481), (60, 25490), (68, 25556), (75, 25676), (82, 25736), (86, 25778), (91, 25829), (99, 25895), (105, 25970), (108, 25982), (115, 26027),

Gene: Verabelle\_34 Start: 25483, Stop: 26436, Start Num: 23

Candidate Starts for Verabelle\_34:

(Start: 19 @25468 has 105 MA's), (Start: 23 @25483 has 3 MA's), (26, 25519), (29, 25552), (Start: 33 @25651 has 1 MA's), (34, 25654), (46, 25762), (51, 25828), (54, 25867), (58, 25882), (59, 25885), (60, 25894), (65, 25939), (68, 25960), (75, 26080), (82, 26140), (86, 26182), (99, 26299), (105, 26374), (108, 26386), (115, 26431),

Gene: Verse\_32 Start: 26209, Stop: 27177, Start Num: 19

Candidate Starts for Verse\_32:

(Start: 19 @26209 has 105 MA's), (Start: 23 @26224 has 3 MA's), (26, 26260), (29, 26293), (Start: 33 @26392 has 1 MA's), (34, 26395), (36, 26401), (54, 26608), (58, 26623), (59, 26626), (60, 26635), (62, 26650), (66, 26683), (67, 26686), (68, 26701), (75, 26821), (82, 26881), (86, 26923), (91, 26974), (99, 27040), (105, 27115), (108, 27127), (115, 27172),

Gene: VieEnRose\_33 Start: 24618, Stop: 25571, Start Num: 19

Candidate Starts for VieEnRose\_33:

(Start: 19 @24618 has 105 MA's), (Start: 23 @24633 has 3 MA's), (26, 24669), (39, 24822), (48, 24933), (57, 25029), (58, 25032), (60, 25044), (63, 25068), (67, 25095), (68, 25110), (75, 25239), (81, 25290), (93, 25419),

Gene: Werner\_30 Start: 23771, Stop: 24739, Start Num: 19

Candidate Starts for Werner\_30:

(11, 23675), (15, 23729), (Start: 19 @23771 has 105 MA's), (28, 23855), (32, 23939), (Start: 33 @23957 has 1 MA's), (51, 24134), (55, 24179), (58, 24188), (60, 24200), (61, 24203), (63, 24224), (74, 24365), (75, 24386), (76, 24392), (81, 24437), (89, 24533), (95, 24575), (96, 24593), (102, 24665), (105, 24689), (106, 24692), (108, 24701), (112, 24725),

Gene: Whatever\_30 Start: 23771, Stop: 24739, Start Num: 19

Candidate Starts for Whatever\_30:

(11, 23675), (15, 23729), (Start: 19 @23771 has 105 MA's), (28, 23855), (32, 23939), (Start: 33 @23957 has 1 MA's), (51, 24134), (55, 24179), (58, 24188), (60, 24200), (61, 24203), (63, 24224), (74, 24365), (75, 24386), (76, 24392), (81, 24437), (89, 24533), (95, 24575), (96, 24593), (102, 24665), (105, 24689), (106, 24692), (108, 24701), (112, 24725),

Gene: Yasdnil\_30 Start: 23813, Stop: 24784, Start Num: 19

Candidate Starts for Yasdnil\_30:

(11, 23717), (17, 23786), (Start: 19 @23813 has 105 MA's), (Start: 23 @23828 has 3 MA's), (32, 23981), (Start: 33 @23999 has 1 MA's), (34, 24002), (55, 24221), (56, 24224), (58, 24230), (60, 24242), (61, 24245), (63, 24266), (66, 24290), (73, 24368), (74, 24407), (75, 24428), (76, 24434), (81, 24479), (89, 24575), (95, 24617), (96, 24635), (102, 24707), (105, 24731), (109, 24746), (112, 24770),

Gene: Yosif\_34 Start: 25959, Stop: 26927, Start Num: 19

Candidate Starts for Yosif\_34:

(Start: 19 @25959 has 105 MA's), (Start: 23 @25974 has 3 MA's), (29, 26043), (Start: 33 @26142 has 1 MA's), (34, 26145), (36, 26151), (54, 26358), (58, 26373), (59, 26376), (60, 26385), (62, 26400), (75, 26571), (82, 26631), (91, 26724), (99, 26790), (100, 26814), (105, 26865), (108, 26877), (115, 26922),

Gene: Zainub\_33 Start: 25048, Stop: 26025, Start Num: 19

Candidate Starts for Zainub\_33:

(Start: 19 @25048 has 105 MA's), (Start: 23 @25063 has 3 MA's), (37, 25255), (51, 25417), (58, 25471), (60, 25483), (61, 25486), (62, 25498), (64, 25510), (67, 25534), (68, 25549), (75, 25669), (76, 25675), (77, 25687), (90, 25816), (95, 25855), (96, 25873), (98, 25882), (105, 25966), (108, 25978), (114, 26020),

Gene: ZamZam\_32 Start: 25490, Stop: 26443, Start Num: 19

Candidate Starts for ZamZam\_32:

(Start: 19 @25490 has 105 MA's), (Start: 23 @25505 has 3 MA's), (26, 25541), (29, 25574), (Start: 33 @25673 has 1 MA's), (40, 25706), (42, 25718), (46, 25784), (51, 25850), (58, 25904), (59, 25907), (60, 25916), (67, 25967), (68, 25982), (75, 26102), (82, 26162), (86, 26204), (91, 26255), (99, 26321), (105, 26396), (108, 26408),

Gene: Zemlya\_32 Start: 24300, Stop: 25271, Start Num: 19

Candidate Starts for Zemlya\_32:

(3, 23892), (5, 23928), (Start: 19 @24300 has 105 MA's), (32, 24468), (Start: 33 @24486 has 1 MA's), (34, 24489), (36, 24495), (51, 24663), (58, 24717), (59, 24720), (60, 24729), (61, 24732), (63, 24753), (75, 24915), (76, 24921), (89, 25062), (95, 25104), (96, 25122), (102, 25194), (105, 25218), (109,

25233), (112, 25257),

Gene: phiCAM\_31 Start: 27359, Stop: 28312, Start Num: 23

Candidate Starts for phiCAM\_31:

(18, 27335), (Start: 19 @27344 has 105 MA's), (Start: 23 @27359 has 3 MA's), (29, 27428), (Start: 33 @27527 has 1 MA's), (34, 27530), (36, 27536), (54, 27743), (58, 27758), (59, 27761), (60, 27770), (62, 27785), (66, 27818), (67, 27821), (68, 27836), (75, 27956), (82, 28016), (91, 28109), (99, 28175), (105, 28250), (108, 28262), (115, 28307),

Gene: phiHau3\_33 Start: 24132, Stop: 25097, Start Num: 19

Candidate Starts for phiHau3\_33:

(17, 24102), (Start: 19 @24132 has 105 MA's), (Start: 33 @24318 has 1 MA's), (34, 24321), (41, 24354), (51, 24495), (52, 24513), (58, 24549), (61, 24564), (62, 24576), (63, 24585), (65, 24606), (66, 24609), (70, 24648), (74, 24726), (75, 24747), (79, 24780), (82, 24807), (87, 24852), (99, 24966), (105, 25044), (108, 25056),