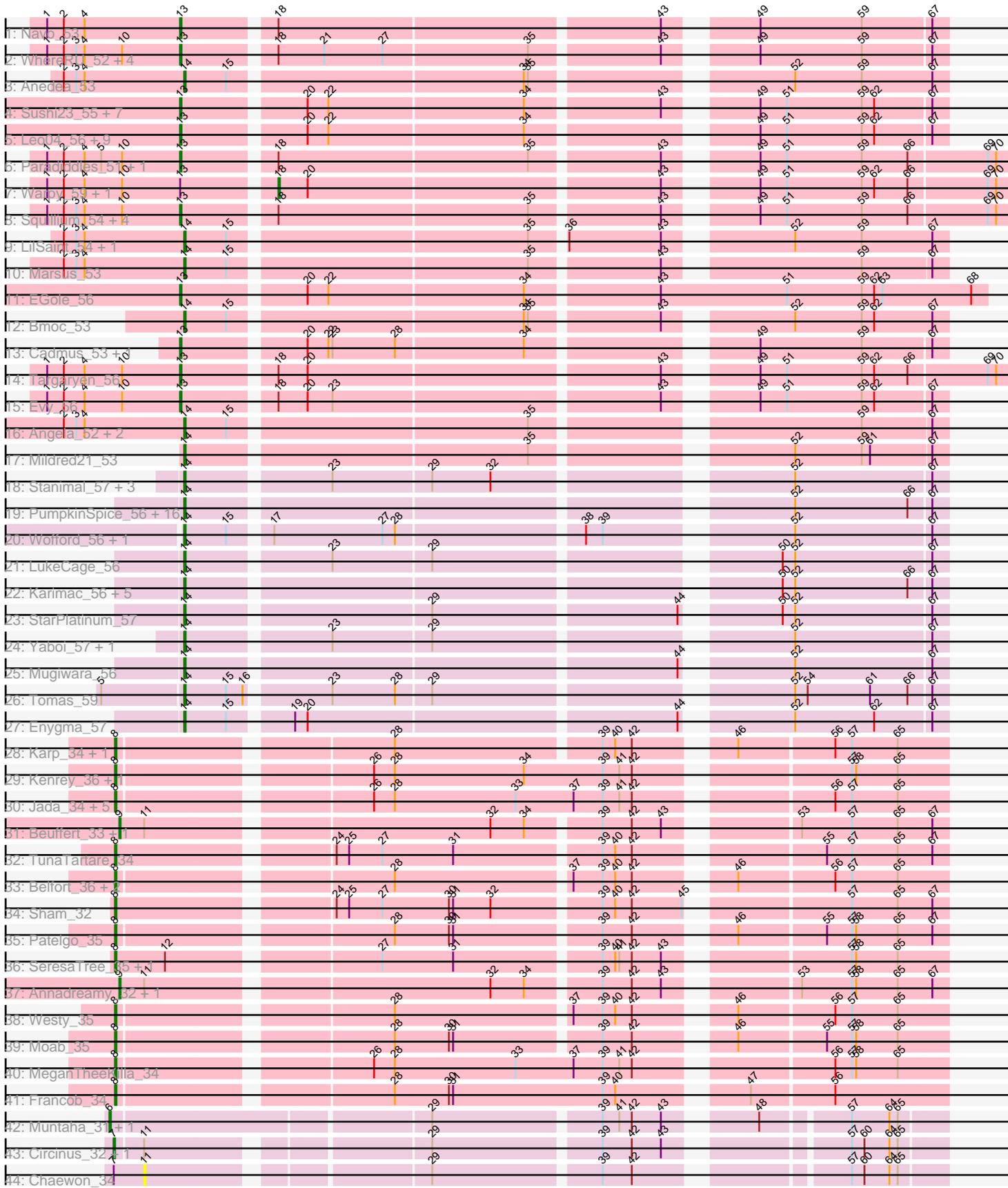


Pham 285405



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 285405 Report

This analysis was run 03/28/26 on database version 641.

Pham number 285405 has 114 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Navo\_53
- Track 2 : WhereRU\_52, Persimmon\_51, Bartholomune\_53, Braelyn\_54, Davielle\_52
- Track 3 : Anedea\_53
- Track 4 : Sushi23\_55, Teutsch\_55, Shuckle\_53, Scheme\_56, Larnav\_55, Tribute\_53, Peebs\_54, Pepperwood\_55
- Track 5 : Leo04\_56, Cross\_55, Watermoore\_55, Lululemon\_54, Samisti12\_55, BlueOtter\_55, Cursive\_53, HangryHippo\_55, Coogler\_55, PacManQ\_54
- Track 6 : Paradiddles\_51, NootNoot\_51
- Track 7 : Warpy\_59, Jay2Jay\_60
- Track 8 : Squillium\_54, Liandry\_54, Eliot67\_52, FreddyDRoo\_52, PinkiePie\_53
- Track 9 : LilSaint\_54, Riptide\_52
- Track 10 : Marsus\_53
- Track 11 : EGole\_56
- Track 12 : Bmoc\_53
- Track 13 : Cadmus\_53, Daubenski\_56
- Track 14 : Targaryen\_56
- Track 15 : Evy\_56
- Track 16 : Angela\_52, MulchMansion\_52, LilMartin\_52
- Track 17 : Mildred21\_53
- Track 18 : Stanimal\_57, Sollertia\_57, Genie2\_57, AngryGiraffe\_56
- Track 19 : PumpkinSpice\_56, Amabiko\_57, Rikishi\_57, Jollison\_56, Wipeout\_55, Birchlyn\_54, TomSawyer\_55, Gibbi\_61, Bordeaux\_55, MindFlayer\_55, Spelly\_57, Battuta\_55, Starbow\_55, Quaran19\_57, SaltySpittoon\_57, JimJam\_57, AcciDwight\_61
- Track 20 : Wofford\_56, Elmer\_59
- Track 21 : LukeCage\_56
- Track 22 : Karimac\_56, Brizzy\_56, KentuckyRacer\_57, IchabodCrane\_54, CeilingFan\_56, Spilled\_58
- Track 23 : StarPlatinum\_57
- Track 24 : Yaboi\_57, BoomerJR\_57
- Track 25 : Mugiwara\_56
- Track 26 : Tomas\_59
- Track 27 : Enygma\_57
- Track 28 : Karp\_34, Stigma\_35
- Track 29 : Kenrey\_36, Phredrick\_34
- Track 30 : Jada\_34, Maupel\_36, Gilson\_36, DeluluLabubu\_34, Emma1919\_36, Forrest\_36

- Track 31 : Beuffert\_33, Blueeyedbeauty\_34
- Track 32 : TunaTartare\_34
- Track 33 : Belfort\_36, Comrade\_35, SparkleGoddess\_35
- Track 34 : Sham\_32
- Track 35 : Patelgo\_35
- Track 36 : SeresaTree\_35, Faust\_35
- Track 37 : Annadreamy\_32, Limpid\_32
- Track 38 : Westy\_35
- Track 39 : Moab\_35
- Track 40 : MeganTheeKilla\_34
- Track 41 : Francob\_34
- Track 42 : Muntaha\_31, Wakanda\_31
- Track 43 : Circinus\_32, BillNye\_30
- Track 44 : Chaewon\_34

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

The start number called the most often in the published annotations is 14, it was called in 43 of the 107 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AcciDwight\_61, Amabiko\_57, Anedea\_53, Angela\_52, AngryGiraffe\_56, Battuta\_55, Birchlyn\_54, Bmoc\_53, BoomerJR\_57, Bordeaux\_55, Brizzy\_56, CeilingFan\_56, Elmer\_59, Enygma\_57, Genie2\_57, Gibbi\_61, IchabodCrane\_54, JimJam\_57, Jollison\_56, Karimac\_56, KentuckyRacer\_57, LilMartin\_52, LilSaint\_54, LukeCage\_56, Marsus\_53, Mildred21\_53, MindFlayer\_55, Mugiwara\_56, MulchMansion\_52, PumpkinSpice\_56, Quarant19\_57, Rikishi\_57, Riptide\_52, SaltySpittoon\_57, Sollertia\_57, Spelly\_57, Spilled\_58, Stanimal\_57, StarPlatinum\_57, Starbow\_55, TomSawyer\_55, Tomas\_59, Wipeout\_55, Wofford\_56, Yaboi\_57,

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

- 

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

- Annadreamy\_32, Bartholomune\_53, Belfort\_36, Beuffert\_33, BillNye\_30, BlueOtter\_55, Blueeyedbeauty\_34, Braelyn\_54, Cadmus\_53, Chaewon\_34, Circinus\_32, Comrade\_35, Coogler\_55, Cross\_55, Cursive\_53, Daubenski\_56, Davielle\_52, DeluluLabubu\_34, EGole\_56, Eliot67\_52, Emma1919\_36, Evy\_56, Faust\_35, Forrest\_36, Francob\_34, FreddyDRoo\_52, Gilson\_36, HangryHippo\_55, Jada\_34, Jay2Jay\_60, Karp\_34, Kenrey\_36, Larnav\_55, Leo04\_56, Liandry\_54, Limpid\_32, Lululemon\_54, Maupel\_36, MeganTheeKilla\_34, Moab\_35, Muntaha\_31, Navo\_53, NootNoot\_51, PacManQ\_54, Paradiddles\_51, Patelgo\_35, Peebs\_54, Pepperwood\_55, Persimmon\_51, Phredrick\_34, PinkiePie\_53, Samisti12\_55, Scheme\_56, SeresaTree\_35, Sham\_32, Shuckle\_53, SparkleGoddess\_35, Squillium\_54, Stigma\_35, Sushi23\_55, Targaryen\_56, Teutsch\_55, Tribute\_53, TunaTartare\_34, Wakanda\_31, Warpy\_59, Watermoore\_55, Westy\_35, WhereRU\_52,

**Summary by start number:**

Start 6:

- Found in 2 of 114 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 2 of 107
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Muntaha\_31 (BK2), Wakanda\_31 (BK2),

Start 7:

- Found in 3 of 114 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 2 of 107
- Called 66.7% of time when present
- Phage (with cluster) where this start called: BillNye\_30 (BK2), Circinus\_32 (BK2),

Start 8:

- Found in 22 of 114 ( 19.3% ) of genes in pham
- Manual Annotations of this start: 20 of 107
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Belfort\_36 (BK1), Comrade\_35 (BK1), DeluluLabubu\_34 (BK1), Emma1919\_36 (BK1), Faust\_35 (BK1), Forrest\_36 (BK1), Francob\_34 (BK1), Gilson\_36 (BK1), Jada\_34 (BK1), Karp\_34 (BK1), Kenrey\_36 (BK1), Maupel\_36 (BK1), MeganTheeKilla\_34 (BK1), Moab\_35 (BK1), Patelgo\_35 (BK1), Phredrick\_34 (BK1), SeresaTree\_35 (BK1), Sham\_32 (BK1), SparkleGoddess\_35 (BK1), Stigma\_35 (BK1), TunaTartare\_34 (BK1), Westy\_35 (BK1),

Start 9:

- Found in 4 of 114 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 4 of 107
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Annadreamy\_32 (BK1), Beuffert\_33 (BK1), Blueeyedbeauty\_34 (BK1), Limpid\_32 (BK1),

Start 11:

- Found in 7 of 114 ( 6.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 14.3% of time when present
- Phage (with cluster) where this start called: Chaewon\_34 (BK2),

Start 13:

- Found in 38 of 114 ( 33.3% ) of genes in pham
- Manual Annotations of this start: 34 of 107
- Called 94.7% of time when present
- Phage (with cluster) where this start called: Bartholomune\_53 (BE1), BlueOtter\_55 (BE1), Braelyn\_54 (BE1), Cadmus\_53 (BE1), Coogler\_55 (BE1), Cross\_55 (BE1), Cursive\_53 (BE1), Daubenski\_56 (BE1), Davielle\_52 (BE1), EGole\_56 (BE1), Eliot67\_52 (BE1), Evy\_56 (BE1), FreddyDRoo\_52 (BE1), HangryHippo\_55 (BE1), Larnav\_55 (BE1), Leo04\_56 (BE1), Liandry\_54 (BE1), Lululemon\_54 (BE1), Navo\_53 (BE1), NootNoot\_51 (BE1), PacManQ\_54 (BE1), Paradiddles\_51 (BE1), Peebs\_54 (BE1), Pepperwood\_55 (BE1), Persimmon\_51 (BE1), PinkiePie\_53 (BE1), Samisti12\_55 (BE1), Scheme\_56 (BE1), Shuckle\_53 (BE1), Squillium\_54 (BE1), Sushi23\_55 (BE1), Targaryen\_56 (BE1), Teutsch\_55 (BE1), Tribute\_53 (BE1), Watermoore\_55 (BE1), WhereRU\_52 (BE1),

Start 14:

- Found in 45 of 114 ( 39.5% ) of genes in pham
- Manual Annotations of this start: 43 of 107
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AcciDwight\_61 (BE2), Amabiko\_57 (BE2), Anedeia\_53 (BE1), Angela\_52 (BE1), AngryGiraffe\_56 (BE2), Battuta\_55 (BE2), Birchlyn\_54 (BE2), Bmoc\_53 (BE1), BoomerJR\_57 (BE2), Bordeaux\_55 (BE2), Brizzy\_56 (BE2), CeilingFan\_56 (BE2), Elmer\_59 (BE2), Enygma\_57 (BE2), Genie2\_57 (BE2), Gibbi\_61 (BE2), IchabodCrane\_54 (BE2), JimJam\_57 (BE2), Jollison\_56 (BE2), Karimac\_56 (BE2), KentuckyRacer\_57 (BE2), LilMartin\_52 (BE1), LilSaint\_54 (BE1), LukeCage\_56 (BE2), Marsus\_53 (BE1), Mildred21\_53 (BE1), MindFlayer\_55 (BE2), Mugiwara\_56 (BE2), MulchMansion\_52 (BE1), PumpkinSpice\_56 (BE2), Quarant19\_57 (BE2), Rikishi\_57 (BE2), Riptide\_52 (BE1), SaltySpittoon\_57 (BE2), Sollertia\_57 (BE2), Spelly\_57 (BE2), Spilled\_58 (BE2), Stanimal\_57 (BE2), StarPlatinum\_57 (BE2), Starbow\_55 (BE2), TomSawyer\_55 (BE2), Tomas\_59 (BE2), Wipeout\_55 (BE2), Wofford\_56 (BE2), Yaboi\_57 (BE2),

Start 18:

- Found in 17 of 114 ( 14.9% ) of genes in pham
- Manual Annotations of this start: 2 of 107
- Called 11.8% of time when present
- Phage (with cluster) where this start called: Jay2Jay\_60 (BE1), Warpy\_59 (BE1),

### **Summary by clusters:**

There are 4 clusters represented in this pham: BE2, BE1, BK1, BK2,

Info for manual annotations of cluster BE1:

- Start number 13 was manually annotated 34 times for cluster BE1.
- Start number 14 was manually annotated 9 times for cluster BE1.
- Start number 18 was manually annotated 2 times for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 14 was manually annotated 34 times for cluster BE2.

Info for manual annotations of cluster BK1:

- Start number 8 was manually annotated 20 times for cluster BK1.
- Start number 9 was manually annotated 4 times for cluster BK1.

Info for manual annotations of cluster BK2:

- Start number 6 was manually annotated 2 times for cluster BK2.
- Start number 7 was manually annotated 2 times for cluster BK2.

### **Gene Information:**

Gene: AcciDwight\_61 Start: 31676, Stop: 32179, Start Num: 14

Candidate Starts for AcciDwight\_61:

(Start: 14 @31676 has 43 MA's), (52, 32072), (66, 32153), (67, 32168),

Gene: Amabiko\_57 Start: 31721, Stop: 32224, Start Num: 14

Candidate Starts for Amabiko\_57:

(Start: 14 @31721 has 43 MA's), (52, 32117), (66, 32198), (67, 32213),

Gene: Anedea\_53 Start: 31253, Stop: 31759, Start Num: 14

Candidate Starts for Anedea\_53:

(2, 31166), (3, 31175), (4, 31181), (Start: 14 @31253 has 43 MA's), (15, 31283), (34, 31484), (35, 31487), (52, 31649), (59, 31697), (67, 31748),

Gene: Angela\_52 Start: 30731, Stop: 31234, Start Num: 14

Candidate Starts for Angela\_52:

(2, 30644), (3, 30653), (4, 30659), (Start: 14 @30731 has 43 MA's), (15, 30761), (35, 30965), (59, 31175), (67, 31223),

Gene: AngryGiraffe\_56 Start: 31695, Stop: 32198, Start Num: 14

Candidate Starts for AngryGiraffe\_56:

(Start: 14 @31695 has 43 MA's), (23, 31791), (29, 31860), (32, 31902), (52, 32091), (67, 32187),

Gene: Annadreamy\_32 Start: 20312, Stop: 20857, Start Num: 9

Candidate Starts for Annadreamy\_32:

(Start: 9 @20312 has 4 MA's), (11, 20330), (32, 20561), (34, 20585), (39, 20633), (42, 20654), (43, 20675), (53, 20753), (57, 20789), (58, 20792), (65, 20822), (67, 20846),

Gene: Bartholomune\_53 Start: 31042, Stop: 31548, Start Num: 13

Candidate Starts for Bartholomune\_53:

(1, 30946), (2, 30958), (3, 30967), (4, 30973), (10, 31000), (Start: 13 @31042 has 34 MA's), (Start: 18 @31102 has 2 MA's), (21, 31135), (27, 31177), (35, 31279), (43, 31366), (49, 31417), (59, 31489), (67, 31537),

Gene: Battuta\_55 Start: 31695, Stop: 32198, Start Num: 14

Candidate Starts for Battuta\_55:

(Start: 14 @31695 has 43 MA's), (52, 32091), (66, 32172), (67, 32187),

Gene: Belfort\_36 Start: 22825, Stop: 23370, Start Num: 8

Candidate Starts for Belfort\_36:

(Start: 8 @22825 has 20 MA's), (28, 23005), (37, 23125), (39, 23146), (40, 23155), (42, 23167), (46, 23224), (56, 23290), (57, 23302), (65, 23335),

Gene: Beuffert\_33 Start: 21407, Stop: 21952, Start Num: 9

Candidate Starts for Beuffert\_33:

(Start: 9 @21407 has 4 MA's), (11, 21425), (32, 21656), (34, 21680), (39, 21728), (42, 21749), (43, 21770), (53, 21848), (57, 21884), (65, 21917), (67, 21941),

Gene: BillNye\_30 Start: 23720, Stop: 24247, Start Num: 7

Candidate Starts for BillNye\_30:

(Start: 7 @23720 has 2 MA's), (11, 23738), (29, 23918), (39, 24032), (42, 24053), (43, 24074), (57, 24182), (60, 24191), (64, 24209), (65, 24215),

Gene: Birchlyn\_54 Start: 29578, Stop: 30081, Start Num: 14

Candidate Starts for Birchlyn\_54:

(Start: 14 @29578 has 43 MA's), (52, 29974), (66, 30055), (67, 30070),

Gene: BlueOtter\_55 Start: 32406, Stop: 32912, Start Num: 13

Candidate Starts for BlueOtter\_55:

(Start: 13 @32406 has 34 MA's), (20, 32487), (22, 32502), (34, 32640), (49, 32781), (51, 32799), (59, 32853), (62, 32862), (67, 32901),

Gene: Blueeyedbeauty\_34 Start: 20804, Stop: 21349, Start Num: 9

Candidate Starts for Blueeyedbeauty\_34:

(Start: 9 @20804 has 4 MA's), (11, 20822), (32, 21053), (34, 21077), (39, 21125), (42, 21146), (43, 21167), (53, 21245), (57, 21281), (65, 21314), (67, 21338),

Gene: Bmoc\_53 Start: 31038, Stop: 31544, Start Num: 14

Candidate Starts for Bmoc\_53:

(Start: 14 @31038 has 43 MA's), (15, 31068), (34, 31269), (35, 31272), (43, 31359), (52, 31434), (59, 31482), (62, 31491), (67, 31533),

Gene: BoomerJR\_57 Start: 31584, Stop: 32087, Start Num: 14

Candidate Starts for BoomerJR\_57:

(Start: 14 @31584 has 43 MA's), (23, 31680), (29, 31749), (52, 31980), (67, 32076),

Gene: Bordeaux\_55 Start: 31850, Stop: 32353, Start Num: 14

Candidate Starts for Bordeaux\_55:

(Start: 14 @31850 has 43 MA's), (52, 32246), (66, 32327), (67, 32342),

Gene: Braelyn\_54 Start: 31809, Stop: 32315, Start Num: 13

Candidate Starts for Braelyn\_54:

(1, 31713), (2, 31725), (3, 31734), (4, 31740), (10, 31767), (Start: 13 @31809 has 34 MA's), (Start: 18 @31869 has 2 MA's), (21, 31902), (27, 31944), (35, 32046), (43, 32133), (49, 32184), (59, 32256), (67, 32304),

Gene: Brizzy\_56 Start: 31369, Stop: 31872, Start Num: 14

Candidate Starts for Brizzy\_56:

(Start: 14 @31369 has 43 MA's), (50, 31756), (52, 31765), (66, 31846), (67, 31861),

Gene: Cadmus\_53 Start: 31388, Stop: 31894, Start Num: 13

Candidate Starts for Cadmus\_53:

(Start: 13 @31388 has 34 MA's), (20, 31469), (22, 31484), (23, 31487), (28, 31532), (34, 31622), (49, 31763), (59, 31835), (67, 31883),

Gene: CeilingFan\_56 Start: 31610, Stop: 32113, Start Num: 14

Candidate Starts for CeilingFan\_56:

(Start: 14 @31610 has 43 MA's), (50, 31997), (52, 32006), (66, 32087), (67, 32102),

Gene: Chaewon\_34 Start: 23866, Stop: 24375, Start Num: 11

Candidate Starts for Chaewon\_34:

(Start: 7 @23845 has 2 MA's), (11, 23866), (29, 24046), (39, 24160), (42, 24181), (57, 24310), (60, 24319), (64, 24337), (65, 24343),

Gene: Circinus\_32 Start: 23856, Stop: 24383, Start Num: 7

Candidate Starts for Circinus\_32:

(Start: 7 @23856 has 2 MA's), (11, 23874), (29, 24054), (39, 24168), (42, 24189), (43, 24210), (57, 24318), (60, 24327), (64, 24345), (65, 24351),

Gene: Comrade\_35 Start: 22440, Stop: 22985, Start Num: 8

Candidate Starts for Comrade\_35:

(Start: 8 @22440 has 20 MA's), (28, 22620), (37, 22740), (39, 22761), (40, 22770), (42, 22782), (46, 22839), (56, 22905), (57, 22917), (65, 22950),

Gene: Coogler\_55 Start: 32432, Stop: 32938, Start Num: 13

Candidate Starts for Coogler\_55:

(Start: 13 @32432 has 34 MA's), (20, 32513), (22, 32528), (34, 32666), (49, 32807), (51, 32825), (59, 32879), (62, 32888), (67, 32927),

Gene: Cross\_55 Start: 32407, Stop: 32913, Start Num: 13

Candidate Starts for Cross\_55:

(Start: 13 @32407 has 34 MA's), (20, 32488), (22, 32503), (34, 32641), (49, 32782), (51, 32800), (59, 32854), (62, 32863), (67, 32902),

Gene: Cursive\_53 Start: 31932, Stop: 32438, Start Num: 13

Candidate Starts for Cursive\_53:

(Start: 13 @31932 has 34 MA's), (20, 32013), (22, 32028), (34, 32166), (49, 32307), (51, 32325), (59, 32379), (62, 32388), (67, 32427),

Gene: Daubenski\_56 Start: 32152, Stop: 32658, Start Num: 13

Candidate Starts for Daubenski\_56:

(Start: 13 @32152 has 34 MA's), (20, 32233), (22, 32248), (23, 32251), (28, 32296), (34, 32386), (49, 32527), (59, 32599), (67, 32647),

Gene: Davielle\_52 Start: 31226, Stop: 31732, Start Num: 13

Candidate Starts for Davielle\_52:

(1, 31130), (2, 31142), (3, 31151), (4, 31157), (10, 31184), (Start: 13 @31226 has 34 MA's), (Start: 18 @31286 has 2 MA's), (21, 31319), (27, 31361), (35, 31463), (43, 31550), (49, 31601), (59, 31673), (67, 31721),

Gene: DeluluLabubu\_34 Start: 20523, Stop: 21077, Start Num: 8

Candidate Starts for DeluluLabubu\_34:

(Start: 8 @20523 has 20 MA's), (26, 20688), (28, 20703), (33, 20790), (37, 20832), (39, 20853), (41, 20865), (42, 20874), (56, 20997), (57, 21009), (65, 21042),

Gene: EGole\_56 Start: 33311, Stop: 33868, Start Num: 13

Candidate Starts for EGole\_56:

(Start: 13 @33311 has 34 MA's), (20, 33392), (22, 33407), (34, 33545), (43, 33635), (51, 33725), (59, 33779), (62, 33788), (63, 33794), (68, 33857),

Gene: Eliot67\_52 Start: 31039, Stop: 31590, Start Num: 13

Candidate Starts for Eliot67\_52:

(1, 30943), (2, 30955), (3, 30964), (4, 30970), (10, 30997), (Start: 13 @31039 has 34 MA's), (Start: 18 @31099 has 2 MA's), (35, 31276), (43, 31363), (49, 31414), (51, 31432), (59, 31486), (66, 31519), (69, 31573), (70, 31579),

Gene: Elmer\_59 Start: 32757, Stop: 33260, Start Num: 14

Candidate Starts for Elmer\_59:

(Start: 14 @32757 has 43 MA's), (15, 32787), (17, 32811), (27, 32889), (28, 32898), (38, 33024), (39, 33036), (52, 33153), (67, 33249),

Gene: Emma1919\_36 Start: 21218, Stop: 21772, Start Num: 8

Candidate Starts for Emma1919\_36:

(Start: 8 @21218 has 20 MA's), (26, 21383), (28, 21398), (33, 21485), (37, 21527), (39, 21548), (41, 21560), (42, 21569), (56, 21692), (57, 21704), (65, 21737),

Gene: Enygma\_57 Start: 33532, Stop: 34035, Start Num: 14

Candidate Starts for Enygma\_57:

(Start: 14 @33532 has 43 MA's), (15, 33562), (19, 33601), (20, 33610), (44, 33865), (52, 33928), (62, 33985), (67, 34024),

Gene: Evy\_56 Start: 32408, Stop: 32914, Start Num: 13

Candidate Starts for Evy\_56:

(1, 32312), (2, 32324), (4, 32339), (10, 32366), (Start: 13 @32408 has 34 MA's), (Start: 18 @32468 has 2 MA's), (20, 32489), (23, 32507), (43, 32732), (49, 32783), (51, 32801), (59, 32855), (62, 32864), (67, 32903),

Gene: Faust\_35 Start: 21811, Stop: 22359, Start Num: 8

Candidate Starts for Faust\_35:

(Start: 8 @21811 has 20 MA's), (12, 21847), (27, 21985), (31, 22036), (39, 22135), (40, 22144), (41, 22147), (42, 22156), (43, 22177), (57, 22291), (58, 22294), (65, 22324),

Gene: Forrest\_36 Start: 21341, Stop: 21895, Start Num: 8

Candidate Starts for Forrest\_36:

(Start: 8 @21341 has 20 MA's), (26, 21506), (28, 21521), (33, 21608), (37, 21650), (39, 21671), (41, 21683), (42, 21692), (56, 21815), (57, 21827), (65, 21860),

Gene: Francob\_34 Start: 21349, Stop: 21903, Start Num: 8

Candidate Starts for Francob\_34:

(Start: 8 @21349 has 20 MA's), (28, 21529), (30, 21568), (31, 21571), (39, 21679), (40, 21688), (47, 21766), (56, 21823),

Gene: FreddyDRoo\_52 Start: 31039, Stop: 31590, Start Num: 13

Candidate Starts for FreddyDRoo\_52:

(1, 30943), (2, 30955), (3, 30964), (4, 30970), (10, 30997), (Start: 13 @31039 has 34 MA's), (Start: 18 @31099 has 2 MA's), (35, 31276), (43, 31363), (49, 31414), (51, 31432), (59, 31486), (66, 31519), (69, 31573), (70, 31579),

Gene: Genie2\_57 Start: 31698, Stop: 32201, Start Num: 14

Candidate Starts for Genie2\_57:

(Start: 14 @31698 has 43 MA's), (23, 31794), (29, 31863), (32, 31905), (52, 32094), (67, 32190),

Gene: Gibbi\_61 Start: 31833, Stop: 32336, Start Num: 14

Candidate Starts for Gibbi\_61:

(Start: 14 @31833 has 43 MA's), (52, 32229), (66, 32310), (67, 32325),

Gene: Gilson\_36 Start: 21171, Stop: 21725, Start Num: 8

Candidate Starts for Gilson\_36:

(Start: 8 @21171 has 20 MA's), (26, 21336), (28, 21351), (33, 21438), (37, 21480), (39, 21501), (41, 21513), (42, 21522), (56, 21645), (57, 21657), (65, 21690),

Gene: HangryHippo\_55 Start: 32406, Stop: 32912, Start Num: 13

Candidate Starts for HangryHippo\_55:

(Start: 13 @32406 has 34 MA's), (20, 32487), (22, 32502), (34, 32640), (49, 32781), (51, 32799), (59, 32853), (62, 32862), (67, 32901),

Gene: IchabodCrane\_54 Start: 31422, Stop: 31925, Start Num: 14

Candidate Starts for IchabodCrane\_54:

(Start: 14 @31422 has 43 MA's), (50, 31809), (52, 31818), (66, 31899), (67, 31914),

Gene: Jada\_34 Start: 20523, Stop: 21077, Start Num: 8

Candidate Starts for Jada\_34:

(Start: 8 @20523 has 20 MA's), (26, 20688), (28, 20703), (33, 20790), (37, 20832), (39, 20853), (41, 20865), (42, 20874), (56, 20997), (57, 21009), (65, 21042),

Gene: Jay2Jay\_60 Start: 33276, Stop: 33767, Start Num: 18

Candidate Starts for Jay2Jay\_60:

(1, 33120), (2, 33132), (4, 33147), (10, 33174), (Start: 13 @33216 has 34 MA's), (Start: 18 @33276 has 2 MA's), (20, 33297), (43, 33540), (49, 33591), (51, 33609), (59, 33663), (62, 33672), (66, 33696), (69, 33750), (70, 33756),

Gene: JimJam\_57 Start: 31796, Stop: 32299, Start Num: 14

Candidate Starts for JimJam\_57:

(Start: 14 @31796 has 43 MA's), (52, 32192), (66, 32273), (67, 32288),

Gene: Jollison\_56 Start: 31678, Stop: 32181, Start Num: 14

Candidate Starts for Jollison\_56:

(Start: 14 @31678 has 43 MA's), (52, 32074), (66, 32155), (67, 32170),

Gene: Karimac\_56 Start: 31827, Stop: 32330, Start Num: 14

Candidate Starts for Karimac\_56:

(Start: 14 @31827 has 43 MA's), (50, 32214), (52, 32223), (66, 32304), (67, 32319),

Gene: Karp\_34 Start: 22040, Stop: 22585, Start Num: 8

Candidate Starts for Karp\_34:

(Start: 8 @22040 has 20 MA's), (28, 22220), (39, 22361), (40, 22370), (42, 22382), (46, 22439), (56, 22505), (57, 22517), (65, 22550),

Gene: Kenrey\_36 Start: 21220, Stop: 21774, Start Num: 8

Candidate Starts for Kenrey\_36:

(Start: 8 @21220 has 20 MA's), (26, 21385), (28, 21400), (34, 21493), (39, 21550), (41, 21562), (42, 21571), (57, 21706), (58, 21709), (65, 21739),

Gene: KentuckyRacer\_57 Start: 31611, Stop: 32114, Start Num: 14

Candidate Starts for KentuckyRacer\_57:

(Start: 14 @31611 has 43 MA's), (50, 31998), (52, 32007), (66, 32088), (67, 32103),

Gene: Larnav\_55 Start: 32391, Stop: 32897, Start Num: 13

Candidate Starts for Larnav\_55:

(Start: 13 @32391 has 34 MA's), (20, 32472), (22, 32487), (34, 32625), (43, 32715), (49, 32766), (51, 32784), (59, 32838), (62, 32847), (67, 32886),

Gene: Leo04\_56 Start: 32906, Stop: 33412, Start Num: 13

Candidate Starts for Leo04\_56:

(Start: 13 @32906 has 34 MA's), (20, 32987), (22, 33002), (34, 33140), (49, 33281), (51, 33299), (59, 33353), (62, 33362), (67, 33401),

Gene: Liandry\_54 Start: 31746, Stop: 32297, Start Num: 13

Candidate Starts for Liandry\_54:

(1, 31650), (2, 31662), (3, 31671), (4, 31677), (10, 31704), (Start: 13 @31746 has 34 MA's), (Start: 18 @31806 has 2 MA's), (35, 31983), (43, 32070), (49, 32121), (51, 32139), (59, 32193), (66, 32226), (69, 32280), (70, 32286),

Gene: LilMartin\_52 Start: 30679, Stop: 31182, Start Num: 14

Candidate Starts for LilMartin\_52:

(2, 30592), (3, 30601), (4, 30607), (Start: 14 @30679 has 43 MA's), (15, 30709), (35, 30913), (59, 31123), (67, 31171),

Gene: LilSaint\_54 Start: 30925, Stop: 31431, Start Num: 14

Candidate Starts for LilSaint\_54:

(2, 30838), (3, 30847), (4, 30853), (Start: 14 @30925 has 43 MA's), (15, 30955), (35, 31159), (36, 31180), (43, 31246), (52, 31321), (59, 31369), (67, 31420),

Gene: Limpid\_32 Start: 20311, Stop: 20856, Start Num: 9

Candidate Starts for Limpid\_32:

(Start: 9 @20311 has 4 MA's), (11, 20329), (32, 20560), (34, 20584), (39, 20632), (42, 20653), (43, 20674), (53, 20752), (57, 20788), (58, 20791), (65, 20821), (67, 20845),

Gene: LukeCage\_56 Start: 31578, Stop: 32081, Start Num: 14

Candidate Starts for LukeCage\_56:

(Start: 14 @31578 has 43 MA's), (23, 31674), (29, 31743), (50, 31965), (52, 31974), (67, 32070),

Gene: Lululemon\_54 Start: 31787, Stop: 32293, Start Num: 13

Candidate Starts for Lululemon\_54:

(Start: 13 @31787 has 34 MA's), (20, 31868), (22, 31883), (34, 32021), (49, 32162), (51, 32180), (59, 32234), (62, 32243), (67, 32282),

Gene: Marsus\_53 Start: 30951, Stop: 31454, Start Num: 14

Candidate Starts for Marsus\_53:

(2, 30864), (3, 30873), (4, 30879), (Start: 14 @30951 has 43 MA's), (15, 30981), (35, 31185), (43, 31272), (59, 31395), (67, 31443),

Gene: Maupel\_36 Start: 21171, Stop: 21725, Start Num: 8

Candidate Starts for Maupel\_36:

(Start: 8 @21171 has 20 MA's), (26, 21336), (28, 21351), (33, 21438), (37, 21480), (39, 21501), (41, 21513), (42, 21522), (56, 21645), (57, 21657), (65, 21690),

Gene: MeganTheeKilla\_34 Start: 20532, Stop: 21086, Start Num: 8

Candidate Starts for MeganTheeKilla\_34:

(Start: 8 @20532 has 20 MA's), (26, 20697), (28, 20712), (33, 20799), (37, 20841), (39, 20862), (41, 20874), (42, 20883), (56, 21006), (57, 21018), (58, 21021), (65, 21051),

Gene: Mildred21\_53 Start: 30872, Stop: 31375, Start Num: 14

Candidate Starts for Mildred21\_53:

(Start: 14 @30872 has 43 MA's), (35, 31106), (52, 31268), (59, 31316), (61, 31322), (67, 31364),

Gene: MindFlayer\_55 Start: 31329, Stop: 31832, Start Num: 14

Candidate Starts for MindFlayer\_55:

(Start: 14 @31329 has 43 MA's), (52, 31725), (66, 31806), (67, 31821),

Gene: Moab\_35 Start: 22371, Stop: 22916, Start Num: 8

Candidate Starts for Moab\_35:

(Start: 8 @22371 has 20 MA's), (28, 22551), (30, 22590), (31, 22593), (39, 22692), (42, 22713), (46, 22770), (55, 22830), (57, 22848), (58, 22851), (65, 22881),

Gene: Mugiwara\_56 Start: 32077, Stop: 32580, Start Num: 14

Candidate Starts for Mugiwara\_56:

(Start: 14 @32077 has 43 MA's), (44, 32410), (52, 32473), (67, 32569),

Gene: MulchMansion\_52 Start: 30679, Stop: 31182, Start Num: 14

Candidate Starts for MulchMansion\_52:

(2, 30592), (3, 30601), (4, 30607), (Start: 14 @30679 has 43 MA's), (15, 30709), (35, 30913), (59, 31123), (67, 31171),

Gene: Muntaha\_31 Start: 22171, Stop: 22716, Start Num: 6

Candidate Starts for Muntaha\_31:

(Start: 6 @22171 has 2 MA's), (29, 22387), (39, 22501), (41, 22513), (42, 22522), (43, 22543), (48, 22594), (57, 22651), (64, 22678), (65, 22684),

Gene: Navo\_53 Start: 31704, Stop: 32210, Start Num: 13

Candidate Starts for Navo\_53:

(1, 31608), (2, 31620), (4, 31635), (Start: 13 @31704 has 34 MA's), (Start: 18 @31764 has 2 MA's), (43, 32028), (49, 32079), (59, 32151), (67, 32199),

Gene: NootNoot\_51 Start: 30660, Stop: 31211, Start Num: 13

Candidate Starts for NootNoot\_51:

(1, 30564), (2, 30576), (4, 30591), (5, 30603), (10, 30618), (Start: 13 @30660 has 34 MA's), (Start: 18 @30720 has 2 MA's), (35, 30897), (43, 30984), (49, 31035), (51, 31053), (59, 31107), (66, 31140), (69, 31194), (70, 31200),

Gene: PacManQ\_54 Start: 31787, Stop: 32293, Start Num: 13

Candidate Starts for PacManQ\_54:

(Start: 13 @31787 has 34 MA's), (20, 31868), (22, 31883), (34, 32021), (49, 32162), (51, 32180), (59, 32234), (62, 32243), (67, 32282),

Gene: Paradiddles\_51 Start: 30921, Stop: 31472, Start Num: 13

Candidate Starts for Paradiddles\_51:

(1, 30825), (2, 30837), (4, 30852), (5, 30864), (10, 30879), (Start: 13 @30921 has 34 MA's), (Start: 18 @30981 has 2 MA's), (35, 31158), (43, 31245), (49, 31296), (51, 31314), (59, 31368), (66, 31401), (69, 31455), (70, 31461),

Gene: Patelgo\_35 Start: 22561, Stop: 23106, Start Num: 8

Candidate Starts for Patelgo\_35:

(Start: 8 @22561 has 20 MA's), (28, 22741), (30, 22780), (31, 22783), (39, 22882), (42, 22903), (46, 22960), (55, 23020), (57, 23038), (58, 23041), (65, 23071), (67, 23095),

Gene: Peebs\_54 Start: 32144, Stop: 32650, Start Num: 13

Candidate Starts for Peebs\_54:

(Start: 13 @32144 has 34 MA's), (20, 32225), (22, 32240), (34, 32378), (43, 32468), (49, 32519), (51, 32537), (59, 32591), (62, 32600), (67, 32639),

Gene: Pepperwood\_55 Start: 32277, Stop: 32783, Start Num: 13

Candidate Starts for Pepperwood\_55:

(Start: 13 @32277 has 34 MA's), (20, 32358), (22, 32373), (34, 32511), (43, 32601), (49, 32652), (51, 32670), (59, 32724), (62, 32733), (67, 32772),

Gene: Persimmon\_51 Start: 30635, Stop: 31141, Start Num: 13

Candidate Starts for Persimmon\_51:

(1, 30539), (2, 30551), (3, 30560), (4, 30566), (10, 30593), (Start: 13 @30635 has 34 MA's), (Start: 18 @30695 has 2 MA's), (21, 30728), (27, 30770), (35, 30872), (43, 30959), (49, 31010), (59, 31082), (67, 31130),

Gene: Phredrick\_34 Start: 20426, Stop: 20980, Start Num: 8

Candidate Starts for Phredrick\_34:

(Start: 8 @20426 has 20 MA's), (26, 20591), (28, 20606), (34, 20699), (39, 20756), (41, 20768), (42, 20777), (57, 20912), (58, 20915), (65, 20945),

Gene: PinkiePie\_53 Start: 31746, Stop: 32297, Start Num: 13

Candidate Starts for PinkiePie\_53:

(1, 31650), (2, 31662), (3, 31671), (4, 31677), (10, 31704), (Start: 13 @31746 has 34 MA's), (Start: 18 @31806 has 2 MA's), (35, 31983), (43, 32070), (49, 32121), (51, 32139), (59, 32193), (66, 32226), (69, 32280), (70, 32286),

Gene: PumpkinSpice\_56 Start: 31721, Stop: 32224, Start Num: 14

Candidate Starts for PumpkinSpice\_56:

(Start: 14 @31721 has 43 MA's), (52, 32117), (66, 32198), (67, 32213),

Gene: Quaran19\_57 Start: 31712, Stop: 32215, Start Num: 14

Candidate Starts for Quaran19\_57:

(Start: 14 @31712 has 43 MA's), (52, 32108), (66, 32189), (67, 32204),

Gene: Rikishi\_57 Start: 31627, Stop: 32130, Start Num: 14

Candidate Starts for Rikishi\_57:

(Start: 14 @31627 has 43 MA's), (52, 32023), (66, 32104), (67, 32119),

Gene: Riptide\_52 Start: 30474, Stop: 30980, Start Num: 14

Candidate Starts for Riptide\_52:

(2, 30387), (3, 30396), (4, 30402), (Start: 14 @30474 has 43 MA's), (15, 30504), (35, 30708), (36, 30729), (43, 30795), (52, 30870), (59, 30918), (67, 30969),

Gene: SaltySpittoon\_57 Start: 31721, Stop: 32224, Start Num: 14

Candidate Starts for SaltySpittoon\_57:

(Start: 14 @31721 has 43 MA's), (52, 32117), (66, 32198), (67, 32213),

Gene: Samisti12\_55 Start: 33580, Stop: 34086, Start Num: 13

Candidate Starts for Samisti12\_55:

(Start: 13 @33580 has 34 MA's), (20, 33661), (22, 33676), (34, 33814), (49, 33955), (51, 33973), (59, 34027), (62, 34036), (67, 34075),

Gene: Scheme\_56 Start: 32991, Stop: 33497, Start Num: 13

Candidate Starts for Scheme\_56:

(Start: 13 @32991 has 34 MA's), (20, 33072), (22, 33087), (34, 33225), (43, 33315), (49, 33366), (51, 33384), (59, 33438), (62, 33447), (67, 33486),

Gene: SeresaTree\_35 Start: 21201, Stop: 21749, Start Num: 8

Candidate Starts for SeresaTree\_35:

(Start: 8 @21201 has 20 MA's), (12, 21237), (27, 21375), (31, 21426), (39, 21525), (40, 21534), (41, 21537), (42, 21546), (43, 21567), (57, 21681), (58, 21684), (65, 21714),

Gene: Sham\_32 Start: 22298, Stop: 22846, Start Num: 8

Candidate Starts for Sham\_32:

(Start: 8 @22298 has 20 MA's), (24, 22439), (25, 22448), (27, 22472), (30, 22520), (31, 22523), (32, 22550), (39, 22622), (40, 22631), (42, 22643), (45, 22679), (57, 22778), (65, 22811), (67, 22835),

Gene: Shuckle\_53 Start: 32597, Stop: 33103, Start Num: 13

Candidate Starts for Shuckle\_53:

(Start: 13 @32597 has 34 MA's), (20, 32678), (22, 32693), (34, 32831), (43, 32921), (49, 32972), (51, 32990), (59, 33044), (62, 33053), (67, 33092),

Gene: Sollertia\_57 Start: 31698, Stop: 32201, Start Num: 14

Candidate Starts for Sollertia\_57:

(Start: 14 @31698 has 43 MA's), (23, 31794), (29, 31863), (32, 31905), (52, 32094), (67, 32190),

Gene: SparkleGoddess\_35 Start: 22442, Stop: 22987, Start Num: 8

Candidate Starts for SparkleGoddess\_35:

(Start: 8 @22442 has 20 MA's), (28, 22622), (37, 22742), (39, 22763), (40, 22772), (42, 22784), (46, 22841), (56, 22907), (57, 22919), (65, 22952),

Gene: Spelly\_57 Start: 31676, Stop: 32179, Start Num: 14

Candidate Starts for Spelly\_57:

(Start: 14 @31676 has 43 MA's), (52, 32072), (66, 32153), (67, 32168),

Gene: Spilled\_58 Start: 31793, Stop: 32296, Start Num: 14

Candidate Starts for Spilled\_58:

(Start: 14 @31793 has 43 MA's), (50, 32180), (52, 32189), (66, 32270), (67, 32285),

Gene: Squillium\_54 Start: 31747, Stop: 32298, Start Num: 13

Candidate Starts for Squillium\_54:

(1, 31651), (2, 31663), (3, 31672), (4, 31678), (10, 31705), (Start: 13 @31747 has 34 MA's), (Start: 18 @31807 has 2 MA's), (35, 31984), (43, 32071), (49, 32122), (51, 32140), (59, 32194), (66, 32227), (69, 32281), (70, 32287),

Gene: Stanimal\_57 Start: 31587, Stop: 32090, Start Num: 14

Candidate Starts for Stanimal\_57:

(Start: 14 @31587 has 43 MA's), (23, 31683), (29, 31752), (32, 31794), (52, 31983), (67, 32079),

Gene: StarPlatinum\_57 Start: 32221, Stop: 32724, Start Num: 14

Candidate Starts for StarPlatinum\_57:

(Start: 14 @32221 has 43 MA's), (29, 32386), (44, 32554), (50, 32608), (52, 32617), (67, 32713),

Gene: Starbow\_55 Start: 31697, Stop: 32200, Start Num: 14

Candidate Starts for Starbow\_55:

(Start: 14 @31697 has 43 MA's), (52, 32093), (66, 32174), (67, 32189),

Gene: Stigma\_35 Start: 22443, Stop: 22988, Start Num: 8

Candidate Starts for Stigma\_35:

(Start: 8 @22443 has 20 MA's), (28, 22623), (39, 22764), (40, 22773), (42, 22785), (46, 22842), (56, 22908), (57, 22920), (65, 22953),

Gene: Sushi23\_55 Start: 32502, Stop: 33008, Start Num: 13

Candidate Starts for Sushi23\_55:

(Start: 13 @32502 has 34 MA's), (20, 32583), (22, 32598), (34, 32736), (43, 32826), (49, 32877), (51, 32895), (59, 32949), (62, 32958), (67, 32997),

Gene: Targaryen\_56 Start: 33265, Stop: 33816, Start Num: 13

Candidate Starts for Targaryen\_56:

(1, 33169), (2, 33181), (4, 33196), (10, 33223), (Start: 13 @33265 has 34 MA's), (Start: 18 @33325 has 2 MA's), (20, 33346), (43, 33589), (49, 33640), (51, 33658), (59, 33712), (62, 33721), (66, 33745), (69, 33799), (70, 33805),

Gene: Teutsch\_55 Start: 32771, Stop: 33277, Start Num: 13

Candidate Starts for Teutsch\_55:

(Start: 13 @32771 has 34 MA's), (20, 32852), (22, 32867), (34, 33005), (43, 33095), (49, 33146), (51, 33164), (59, 33218), (62, 33227), (67, 33266),

Gene: TomSawyer\_55 Start: 31315, Stop: 31818, Start Num: 14

Candidate Starts for TomSawyer\_55:

(Start: 14 @31315 has 43 MA's), (52, 31711), (66, 31792), (67, 31807),

Gene: Tomas\_59 Start: 34046, Stop: 34549, Start Num: 14

Candidate Starts for Tomas\_59:

(5, 33989), (Start: 14 @34046 has 43 MA's), (15, 34076), (16, 34088), (23, 34142), (28, 34187), (29, 34211), (52, 34442), (54, 34451), (61, 34496), (66, 34523), (67, 34538),

Gene: Tribute\_53 Start: 31971, Stop: 32477, Start Num: 13

Candidate Starts for Tribute\_53:

(Start: 13 @31971 has 34 MA's), (20, 32052), (22, 32067), (34, 32205), (43, 32295), (49, 32346), (51, 32364), (59, 32418), (62, 32427), (67, 32466),

Gene: TunaTartare\_34 Start: 22591, Stop: 23139, Start Num: 8

Candidate Starts for TunaTartare\_34:

(Start: 8 @22591 has 20 MA's), (24, 22732), (25, 22741), (27, 22765), (31, 22816), (39, 22915), (40, 22924), (42, 22936), (55, 23053), (57, 23071), (65, 23104), (67, 23128),

Gene: Wakanda\_31 Start: 22109, Stop: 22654, Start Num: 6

Candidate Starts for Wakanda\_31:

(Start: 6 @22109 has 2 MA's), (29, 22325), (39, 22439), (41, 22451), (42, 22460), (43, 22481), (48, 22532), (57, 22589), (64, 22616), (65, 22622),

Gene: Warpy\_59 Start: 32789, Stop: 33280, Start Num: 18

Candidate Starts for Warpy\_59:

(1, 32633), (2, 32645), (4, 32660), (10, 32687), (Start: 13 @32729 has 34 MA's), (Start: 18 @32789 has 2 MA's), (20, 32810), (43, 33053), (49, 33104), (51, 33122), (59, 33176), (62, 33185), (66, 33209), (69, 33263), (70, 33269),

Gene: Watermoore\_55 Start: 32978, Stop: 33484, Start Num: 13

Candidate Starts for Watermoore\_55:

(Start: 13 @32978 has 34 MA's), (20, 33059), (22, 33074), (34, 33212), (49, 33353), (51, 33371), (59, 33425), (62, 33434), (67, 33473),

Gene: Westy\_35 Start: 22443, Stop: 22988, Start Num: 8

Candidate Starts for Westy\_35:

(Start: 8 @22443 has 20 MA's), (28, 22623), (37, 22743), (39, 22764), (40, 22773), (42, 22785), (46, 22842), (56, 22908), (57, 22920), (65, 22953),

Gene: WhereRU\_52 Start: 31226, Stop: 31732, Start Num: 13

Candidate Starts for WhereRU\_52:

(1, 31130), (2, 31142), (3, 31151), (4, 31157), (10, 31184), (Start: 13 @31226 has 34 MA's), (Start: 18 @31286 has 2 MA's), (21, 31319), (27, 31361), (35, 31463), (43, 31550), (49, 31601), (59, 31673), (67, 31721),

Gene: Wipeout\_55 Start: 32066, Stop: 32569, Start Num: 14

Candidate Starts for Wipeout\_55:

(Start: 14 @32066 has 43 MA's), (52, 32462), (66, 32543), (67, 32558),

Gene: Wofford\_56 Start: 32720, Stop: 33223, Start Num: 14

Candidate Starts for Wofford\_56:

(Start: 14 @32720 has 43 MA's), (15, 32750), (17, 32774), (27, 32852), (28, 32861), (38, 32987), (39, 32999), (52, 33116), (67, 33212),

Gene: Yaboi\_57 Start: 31675, Stop: 32178, Start Num: 14

Candidate Starts for Yaboi\_57:

(Start: 14 @31675 has 43 MA's), (23, 31771), (29, 31840), (52, 32071), (67, 32167),