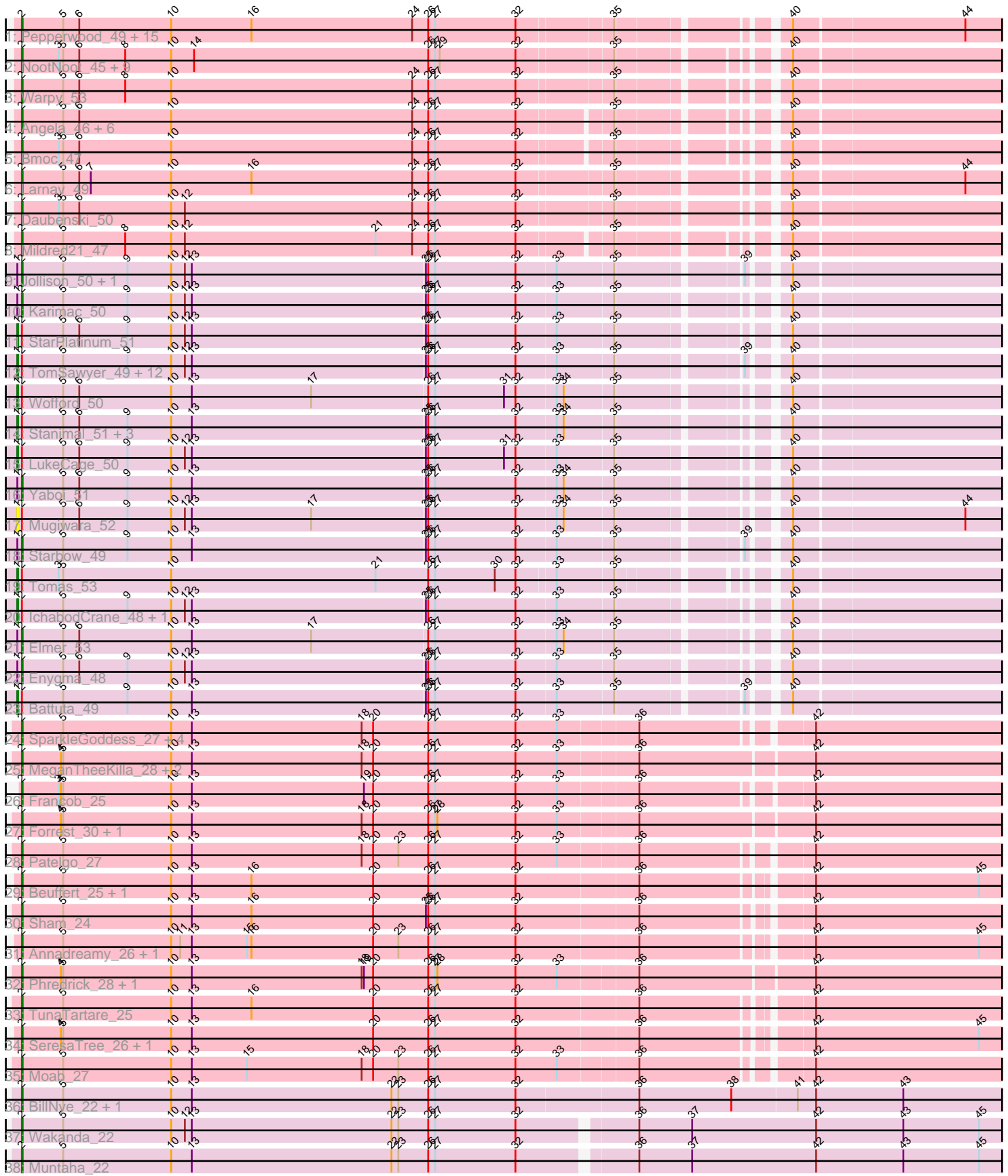


Pham 192473



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 192473 Report

This analysis was run 11/02/24 on database version 579.

Pham number 192473 has 97 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Pepperwood\_49, HangryHippo\_49, Tribute\_47, PacManQ\_48, Sushi23\_49, EGole\_50, Cross\_49, BlueOtter\_49, Peebs\_48, Scheme\_50, Watermoore\_49, Lululemon\_48, Samisti12\_49, Teutsch\_49, Cursive\_47, Leo04\_50
- Track 2 : NootNoot\_45, Liandry\_48, Persimmon\_45, Squillium\_48, Bartholomune\_47, PinkiePie\_47, Braelyn\_48, WhereRU\_46, Navo\_47, Paradiddles\_45
- Track 3 : Warpy\_53
- Track 4 : Angela\_46, Jay2Jay\_54, Evy\_50, MulchMansion\_46, Targaryen\_50, LilMartin\_46, Anedea\_47
- Track 5 : Bmoc\_47
- Track 6 : Larnav\_49
- Track 7 : Daubenski\_50
- Track 8 : Mildred21\_47
- Track 9 : Jollison\_50, Gibbi\_55
- Track 10 : Karimac\_50
- Track 11 : StarPlatinum\_51
- Track 12 : TomSawyer\_49, Wipeout\_49, KentuckyRacer\_51, Bordeaux\_49, Birchlyn\_48, JimJam\_51, Spelly\_51, MindFlayer\_49, Amabiko\_51, CeilingFan\_53, Quaran19\_51, PumpkinSpice\_50, SaltySpittoon\_51
- Track 13 : Wofford\_50
- Track 14 : Stanimal\_51, Sollertia\_51, Genie2\_51, BoomerJR\_51
- Track 15 : LukeCage\_50
- Track 16 : Yaboi\_51
- Track 17 : Mugiwara\_52
- Track 18 : Starbow\_49
- Track 19 : Tomas\_53
- Track 20 : IchabodCrane\_48, Spilled\_52
- Track 21 : Elmer\_53
- Track 22 : Enygma\_48
- Track 23 : Battuta\_49
- Track 24 : SparkleGoddess\_27, Belfort\_28, Stigma\_27, Comrade\_27, Karp\_26
- Track 25 : MeganTheeKilla\_28, Gilson\_30, Emma1919\_30
- Track 26 : Francob\_25
- Track 27 : Forrest\_30, Jada\_28
- Track 28 : Patelgo\_27
- Track 29 : Beuffert\_25, Blueeyedbeauty\_28
- Track 30 : Sham\_24

- Track 31 : Annadreamy\_26, Limpid\_26
- Track 32 : Phredrick\_28, Kenrey\_30
- Track 33 : TunaTartare\_25
- Track 34 : SeresaTree\_26, Faust\_26
- Track 35 : Moab\_27
- Track 36 : BillNye\_22, Circinus\_24
- Track 37 : Wakanda\_22
- Track 38 : Muntaha\_22

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

The start number called the most often in the published annotations is 2, it was called in 69 of the 92 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Anedea\_47, Angela\_46, Annadreamy\_26, Bartholomune\_47, Belfort\_28, Beuffert\_25, BillNye\_22, BlueOtter\_49, Blueeyedbeauty\_28, Bmoc\_47, Braelyn\_48, Circinus\_24, Comrade\_27, Cross\_49, Cursive\_47, Daubenski\_50, EGole\_50, Elmer\_53, Emma1919\_30, Enygma\_48, Evy\_50, Faust\_26, Forrest\_30, Francob\_25, Gibbi\_55, Gilson\_30, HangryHippo\_49, Jada\_28, Jay2Jay\_54, Jollison\_50, Karimac\_50, Karp\_26, Kenrey\_30, Larnav\_49, Leo04\_50, Liandry\_48, LilMartin\_46, Limpid\_26, Lululemon\_48, MeganTheeKilla\_28, Mildred21\_47, Moab\_27, MulchMansion\_46, Muntaha\_22, Navo\_47, NootNoot\_45, PacManQ\_48, Paradiddles\_45, Patelgo\_27, Peebs\_48, Pepperwood\_49, Persimmon\_45, Phredrick\_28, PinkiePie\_47, Samisti12\_49, Scheme\_50, SeresaTree\_26, Sham\_24, SparkleGoddess\_27, Squillium\_48, Starbow\_49, Stigma\_27, Sushi23\_49, Targaryen\_50, Teutsch\_49, Tribute\_47, TunaTartare\_25, Wakanda\_22, Warpy\_53, Watermoore\_49, WhereRU\_46, Yaboi\_51,

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

- Amabiko\_51, Battuta\_49, Birchlyn\_48, BoomerJR\_51, Bordeaux\_49, CeilingFan\_53, Genie2\_51, IchabodCrane\_48, JimJam\_51, KentuckyRacer\_51, LukeCage\_50, MindFlayer\_49, Mugiwara\_52, PumpkinSpice\_50, Quarant19\_51, SaltySpittoon\_51, Sollertia\_51, Spelly\_51, Spilled\_52, Stanimal\_51, StarPlatinum\_51, TomSawyer\_49, Tomas\_53, Wipeout\_49, Wofford\_50,

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

- 

**Summary by start number:**

Start 1:

- Found in 32 of 97 ( 33.0% ) of genes in pham
- Manual Annotations of this start: 23 of 92
- Called 78.1% of time when present
- Phage (with cluster) where this start called: Amabiko\_51 (BE2), Battuta\_49 (BE2), Birchlyn\_48 (BE2), BoomerJR\_51 (BE2), Bordeaux\_49 (BE2), CeilingFan\_53 (BE2), Genie2\_51 (BE2), IchabodCrane\_48 (BE2), JimJam\_51 (BE2), KentuckyRacer\_51 (BE2), LukeCage\_50 (BE2), MindFlayer\_49 (BE2), Mugiwara\_52 (BE2), PumpkinSpice\_50 (BE2), Quarant19\_51 (BE2), SaltySpittoon\_51 (BE2), Sollertia\_51

(BE2), Spelly\_51 (BE2), Spilled\_52 (BE2), Stanimal\_51 (BE2), StarPlatinum\_51 (BE2), TomSawyer\_49 (BE2), Tomas\_53 (BE2), Wipeout\_49 (BE2), Wofford\_50 (BE2),

#### Start 2:

- Found in 97 of 97 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 69 of 92
- Called 74.2% of time when present
- Phage (with cluster) where this start called: Anedea\_47 (BE1), Angela\_46 (BE1), Annadreamy\_26 (BK1), Bartholomune\_47 (BE1), Belfort\_28 (BK1), Beuffert\_25 (BK1), BillNye\_22 (BK2), BlueOtter\_49 (BE1), Blueeyedbeauty\_28 (BK1), Bmoc\_47 (BE1), Braelyn\_48 (BE1), Circinus\_24 (BK2), Comrade\_27 (BK1), Cross\_49 (BE1), Cursive\_47 (BE1), Daubenski\_50 (BE1), EGole\_50 (BE1), Elmer\_53 (BE2), Emma1919\_30 (BK1), Enygma\_48 (BE2), Evy\_50 (BE1), Faust\_26 (BK1), Forrest\_30 (BK1), Francob\_25 (BK1), Gibbi\_55 (BE2), Gilson\_30 (BK1), HangryHippo\_49 (BE1), Jada\_28 (BK1), Jay2Jay\_54 (BE1), Jollison\_50 (BE2), Karimac\_50 (BE2), Karp\_26 (BK1), Kenrey\_30 (BK1), Larnav\_49 (BE1), Leo04\_50 (BE1), Liandry\_48 (BE1), LilMartin\_46 (BE1), Limpid\_26 (BK1), Lululemon\_48 (BE1), MeganTheeKilla\_28 (BK1), Mildred21\_47 (BE1), Moab\_27 (BK1), MulchMansion\_46 (BE1), Muntaha\_22 (BK2), Navo\_47 (BE1), NootNoot\_45 (BE1), PacManQ\_48 (BE1), Paradiddles\_45 (BE1), Patelgo\_27 (BK1), Peebs\_48 (BE1), Pepperwood\_49 (BE1), Persimmon\_45 (BE1), Phredrick\_28 (BK1), PinkiePie\_47 (BE1), Samisti12\_49 (BE1), Scheme\_50 (BE1), SeresaTree\_26 (BK1), Sham\_24 (BK1), SparkleGoddess\_27 (BK1), Squillium\_48 (BE1), Starbow\_49 (BE2), Stigma\_27 (BK1), Sushi23\_49 (BE1), Targaryen\_50 (BE1), Teutsch\_49 (BE1), Tribute\_47 (BE1), TunaTartare\_25 (BK1), Wakanda\_22 (BK2), Warpy\_53 (BE1), Watermoore\_49 (BE1), WhereRU\_46 (BE1), Yaboi\_51 (BE2),

#### Summary by clusters:

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

Info for manual annotations of cluster BE1:

- Start number 2 was manually annotated 37 times for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 1 was manually annotated 23 times for cluster BE2.
- Start number 2 was manually annotated 6 times for cluster BE2.

Info for manual annotations of cluster BK1:

- Start number 2 was manually annotated 22 times for cluster BK1.

Info for manual annotations of cluster BK2:

- Start number 2 was manually annotated 4 times for cluster BK2.

#### Gene Information:

Gene: Amabiko\_51 Start: 26737, Stop: 28029, Start Num: 1

Candidate Starts for Amabiko\_51:

(Start: 1 @26737 has 23 MA's), (Start: 2 @26743 has 69 MA's), (5, 26797), (9, 26881), (10, 26938), (12, 26956), (13, 26965), (25, 27268), (26, 27271), (27, 27280), (32, 27385), (33, 27436), (35, 27508),

(39, 27652), (40, 27691),

Gene: Anedea\_47 Start: 26276, Stop: 27547, Start Num: 2

Candidate Starts for Anedea\_47:

(Start: 2 @26276 has 69 MA's), (5, 26330), (6, 26351), (10, 26471), (24, 26786), (26, 26807), (27, 26816), (32, 26921), (35, 27032), (40, 27209),

Gene: Angela\_46 Start: 25756, Stop: 27027, Start Num: 2

Candidate Starts for Angela\_46:

(Start: 2 @25756 has 69 MA's), (5, 25810), (6, 25831), (10, 25951), (24, 26266), (26, 26287), (27, 26296), (32, 26401), (35, 26512), (40, 26689),

Gene: Annadreamy\_26 Start: 15166, Stop: 16485, Start Num: 2

Candidate Starts for Annadreamy\_26:

(Start: 2 @15166 has 69 MA's), (5, 15220), (10, 15361), (11, 15373), (13, 15388), (15, 15460), (16, 15466), (20, 15625), (23, 15658), (26, 15697), (27, 15706), (32, 15811), (36, 15967), (42, 16168), (45, 16381),

Gene: Bartholomune\_47 Start: 26053, Stop: 27330, Start Num: 2

Candidate Starts for Bartholomune\_47:

(Start: 2 @26053 has 69 MA's), (3, 26101), (5, 26107), (6, 26128), (8, 26188), (10, 26248), (14, 26278), (26, 26584), (27, 26593), (29, 26599), (32, 26698), (35, 26815), (40, 26992),

Gene: Battuta\_49 Start: 26711, Stop: 28003, Start Num: 1

Candidate Starts for Battuta\_49:

(Start: 1 @26711 has 23 MA's), (Start: 2 @26717 has 69 MA's), (5, 26771), (9, 26855), (10, 26912), (13, 26939), (25, 27242), (26, 27245), (27, 27254), (32, 27359), (33, 27410), (35, 27482), (39, 27626), (40, 27665),

Gene: Belfort\_28 Start: 15851, Stop: 17170, Start Num: 2

Candidate Starts for Belfort\_28:

(Start: 2 @15851 has 69 MA's), (5, 15905), (10, 16046), (13, 16073), (18, 16295), (20, 16310), (26, 16382), (27, 16391), (32, 16496), (33, 16550), (36, 16649), (42, 16850),

Gene: Beuffert\_25 Start: 14850, Stop: 16169, Start Num: 2

Candidate Starts for Beuffert\_25:

(Start: 2 @14850 has 69 MA's), (5, 14904), (10, 15045), (13, 15072), (16, 15150), (20, 15309), (26, 15381), (27, 15390), (32, 15495), (36, 15651), (42, 15852), (45, 16065),

Gene: BillNye\_22 Start: 15556, Stop: 16902, Start Num: 2

Candidate Starts for BillNye\_22:

(Start: 2 @15556 has 69 MA's), (5, 15610), (10, 15751), (13, 15778), (22, 16039), (23, 16048), (26, 16087), (27, 16096), (32, 16201), (36, 16357), (38, 16477), (41, 16561), (42, 16585), (43, 16699),

Gene: Birchlyn\_48 Start: 24594, Stop: 25886, Start Num: 1

Candidate Starts for Birchlyn\_48:

(Start: 1 @24594 has 23 MA's), (Start: 2 @24600 has 69 MA's), (5, 24654), (9, 24738), (10, 24795), (12, 24813), (13, 24822), (25, 25125), (26, 25128), (27, 25137), (32, 25242), (33, 25293), (35, 25365), (39, 25509), (40, 25548),

Gene: BlueOtter\_49 Start: 27406, Stop: 28689, Start Num: 2

Candidate Starts for BlueOtter\_49:

(Start: 2 @27406 has 69 MA's), (5, 27460), (6, 27481), (10, 27601), (16, 27706), (24, 27916), (26, 27937), (27, 27946), (32, 28051), (35, 28168), (40, 28351), (44, 28567),

Gene: Blueeyedbeauty\_28 Start: 15660, Stop: 16979, Start Num: 2

Candidate Starts for Blueeyedbeauty\_28:

(Start: 2 @15660 has 69 MA's), (5, 15714), (10, 15855), (13, 15882), (16, 15960), (20, 16119), (26, 16191), (27, 16200), (32, 16305), (36, 16461), (42, 16662), (45, 16875),

Gene: Bmoc\_47 Start: 26061, Stop: 27332, Start Num: 2

Candidate Starts for Bmoc\_47:

(Start: 2 @26061 has 69 MA's), (3, 26109), (5, 26115), (6, 26136), (10, 26256), (24, 26571), (26, 26592), (27, 26601), (32, 26706), (35, 26817), (40, 26994),

Gene: BoomerJR\_51 Start: 26592, Stop: 27887, Start Num: 1

Candidate Starts for BoomerJR\_51:

(Start: 1 @26592 has 23 MA's), (Start: 2 @26598 has 69 MA's), (5, 26652), (6, 26673), (9, 26736), (10, 26793), (13, 26820), (25, 27123), (26, 27126), (27, 27135), (32, 27240), (33, 27291), (34, 27300), (35, 27363), (40, 27546),

Gene: Bordeaux\_49 Start: 26866, Stop: 28158, Start Num: 1

Candidate Starts for Bordeaux\_49:

(Start: 1 @26866 has 23 MA's), (Start: 2 @26872 has 69 MA's), (5, 26926), (9, 27010), (10, 27067), (12, 27085), (13, 27094), (25, 27397), (26, 27400), (27, 27409), (32, 27514), (33, 27565), (35, 27637), (39, 27781), (40, 27820),

Gene: Braelyn\_48 Start: 26820, Stop: 28097, Start Num: 2

Candidate Starts for Braelyn\_48:

(Start: 2 @26820 has 69 MA's), (3, 26868), (5, 26874), (6, 26895), (8, 26955), (10, 27015), (14, 27045), (26, 27351), (27, 27360), (29, 27366), (32, 27465), (35, 27582), (40, 27759),

Gene: CeilingFan\_53 Start: 26626, Stop: 27918, Start Num: 1

Candidate Starts for CeilingFan\_53:

(Start: 1 @26626 has 23 MA's), (Start: 2 @26632 has 69 MA's), (5, 26686), (9, 26770), (10, 26827), (12, 26845), (13, 26854), (25, 27157), (26, 27160), (27, 27169), (32, 27274), (33, 27325), (35, 27397), (39, 27541), (40, 27580),

Gene: Circinus\_24 Start: 15692, Stop: 17038, Start Num: 2

Candidate Starts for Circinus\_24:

(Start: 2 @15692 has 69 MA's), (5, 15746), (10, 15887), (13, 15914), (22, 16175), (23, 16184), (26, 16223), (27, 16232), (32, 16337), (36, 16493), (38, 16613), (41, 16697), (42, 16721), (43, 16835),

Gene: Comrade\_27 Start: 15466, Stop: 16785, Start Num: 2

Candidate Starts for Comrade\_27:

(Start: 2 @15466 has 69 MA's), (5, 15520), (10, 15661), (13, 15688), (18, 15910), (20, 15925), (26, 15997), (27, 16006), (32, 16111), (33, 16165), (36, 16264), (42, 16465),

Gene: Cross\_49 Start: 27407, Stop: 28690, Start Num: 2

Candidate Starts for Cross\_49:

(Start: 2 @27407 has 69 MA's), (5, 27461), (6, 27482), (10, 27602), (16, 27707), (24, 27917), (26, 27938), (27, 27947), (32, 28052), (35, 28169), (40, 28352), (44, 28568),

Gene: Cursive\_47 Start: 26932, Stop: 28215, Start Num: 2

Candidate Starts for Cursive\_47:

(Start: 2 @26932 has 69 MA's), (5, 26986), (6, 27007), (10, 27127), (16, 27232), (24, 27442), (26, 27463), (27, 27472), (32, 27577), (35, 27694), (40, 27877), (44, 28093),

Gene: Daubenski\_50 Start: 27161, Stop: 28444, Start Num: 2

Candidate Starts for Daubenski\_50:

(Start: 2 @27161 has 69 MA's), (3, 27209), (5, 27215), (6, 27236), (10, 27356), (12, 27374), (24, 27671), (26, 27692), (27, 27701), (32, 27806), (35, 27923), (40, 28106),

Gene: EGole\_50 Start: 28311, Stop: 29594, Start Num: 2

Candidate Starts for EGole\_50:

(Start: 2 @28311 has 69 MA's), (5, 28365), (6, 28386), (10, 28506), (16, 28611), (24, 28821), (26, 28842), (27, 28851), (32, 28956), (35, 29073), (40, 29256), (44, 29472),

Gene: Elmer\_53 Start: 27780, Stop: 29066, Start Num: 2

Candidate Starts for Elmer\_53:

(Start: 1 @27774 has 23 MA's), (Start: 2 @27780 has 69 MA's), (5, 27834), (6, 27855), (10, 27975), (13, 28002), (17, 28158), (26, 28308), (27, 28317), (32, 28422), (33, 28473), (34, 28482), (35, 28545), (40, 28728),

Gene: Emma1919\_30 Start: 16071, Stop: 17405, Start Num: 2

Candidate Starts for Emma1919\_30:

(Start: 2 @16071 has 69 MA's), (4, 16122), (5, 16125), (10, 16266), (13, 16293), (18, 16515), (20, 16530), (26, 16602), (27, 16611), (32, 16716), (33, 16770), (36, 16869), (42, 17088),

Gene: Enygma\_48 Start: 26693, Stop: 27979, Start Num: 2

Candidate Starts for Enygma\_48:

(Start: 1 @26687 has 23 MA's), (Start: 2 @26693 has 69 MA's), (5, 26747), (6, 26768), (9, 26831), (10, 26888), (12, 26906), (13, 26915), (25, 27218), (26, 27221), (27, 27230), (32, 27335), (33, 27386), (35, 27458), (40, 27641),

Gene: Evy\_50 Start: 27415, Stop: 28692, Start Num: 2

Candidate Starts for Evy\_50:

(Start: 2 @27415 has 69 MA's), (5, 27469), (6, 27490), (10, 27610), (24, 27925), (26, 27946), (27, 27955), (32, 28060), (35, 28177), (40, 28354),

Gene: Faust\_26 Start: 15321, Stop: 16640, Start Num: 2

Candidate Starts for Faust\_26:

(Start: 2 @15321 has 69 MA's), (4, 15372), (5, 15375), (10, 15516), (13, 15543), (20, 15780), (26, 15852), (27, 15861), (32, 15966), (36, 16122), (42, 16320), (45, 16533),

Gene: Forrest\_30 Start: 16194, Stop: 17528, Start Num: 2

Candidate Starts for Forrest\_30:

(Start: 2 @16194 has 69 MA's), (4, 16245), (5, 16248), (10, 16389), (13, 16416), (18, 16638), (20, 16653), (26, 16725), (27, 16734), (28, 16737), (32, 16839), (33, 16893), (36, 16992), (42, 17211),

Gene: Francob\_25 Start: 14465, Stop: 15784, Start Num: 2

Candidate Starts for Francob\_25:

(Start: 2 @14465 has 69 MA's), (3, 14513), (4, 14516), (5, 14519), (10, 14660), (13, 14687), (19, 14912), (20, 14924), (26, 14996), (27, 15005), (32, 15110), (33, 15164), (36, 15263), (42, 15467),

Gene: Genie2\_51 Start: 26706, Stop: 28001, Start Num: 1

Candidate Starts for Genie2\_51:

(Start: 1 @26706 has 23 MA's), (Start: 2 @26712 has 69 MA's), (5, 26766), (6, 26787), (9, 26850), (10, 26907), (13, 26934), (25, 27237), (26, 27240), (27, 27249), (32, 27354), (33, 27405), (34, 27414), (35, 27477), (40, 27660),

Gene: Gibbi\_55 Start: 26855, Stop: 28141, Start Num: 2

Candidate Starts for Gibbi\_55:

(Start: 1 @26849 has 23 MA's), (Start: 2 @26855 has 69 MA's), (5, 26909), (9, 26993), (10, 27050), (12, 27068), (13, 27077), (25, 27380), (26, 27383), (27, 27392), (32, 27497), (33, 27548), (35, 27620), (39, 27764), (40, 27803),

Gene: Gilson\_30 Start: 16024, Stop: 17358, Start Num: 2

Candidate Starts for Gilson\_30:

(Start: 2 @16024 has 69 MA's), (4, 16075), (5, 16078), (10, 16219), (13, 16246), (18, 16468), (20, 16483), (26, 16555), (27, 16564), (32, 16669), (33, 16723), (36, 16822), (42, 17041),

Gene: HangryHippo\_49 Start: 27406, Stop: 28689, Start Num: 2

Candidate Starts for HangryHippo\_49:

(Start: 2 @27406 has 69 MA's), (5, 27460), (6, 27481), (10, 27601), (16, 27706), (24, 27916), (26, 27937), (27, 27946), (32, 28051), (35, 28168), (40, 28351), (44, 28567),

Gene: IchabodCrane\_48 Start: 26438, Stop: 27730, Start Num: 1

Candidate Starts for IchabodCrane\_48:

(Start: 1 @26438 has 23 MA's), (Start: 2 @26444 has 69 MA's), (5, 26498), (9, 26582), (10, 26639), (12, 26657), (13, 26666), (25, 26969), (26, 26972), (27, 26981), (32, 27086), (33, 27137), (35, 27209), (40, 27392),

Gene: Jada\_28 Start: 15376, Stop: 16710, Start Num: 2

Candidate Starts for Jada\_28:

(Start: 2 @15376 has 69 MA's), (4, 15427), (5, 15430), (10, 15571), (13, 15598), (18, 15820), (20, 15835), (26, 15907), (27, 15916), (28, 15919), (32, 16021), (33, 16075), (36, 16174), (42, 16393),

Gene: Jay2Jay\_54 Start: 28223, Stop: 29500, Start Num: 2

Candidate Starts for Jay2Jay\_54:

(Start: 2 @28223 has 69 MA's), (5, 28277), (6, 28298), (10, 28418), (24, 28733), (26, 28754), (27, 28763), (32, 28868), (35, 28985), (40, 29162),

Gene: JimJam\_51 Start: 26812, Stop: 28104, Start Num: 1

Candidate Starts for JimJam\_51:

(Start: 1 @26812 has 23 MA's), (Start: 2 @26818 has 69 MA's), (5, 26872), (9, 26956), (10, 27013), (12, 27031), (13, 27040), (25, 27343), (26, 27346), (27, 27355), (32, 27460), (33, 27511), (35, 27583), (39, 27727), (40, 27766),

Gene: Jollison\_50 Start: 26700, Stop: 27986, Start Num: 2

Candidate Starts for Jollison\_50:

(Start: 1 @26694 has 23 MA's), (Start: 2 @26700 has 69 MA's), (5, 26754), (9, 26838), (10, 26895), (12, 26913), (13, 26922), (25, 27225), (26, 27228), (27, 27237), (32, 27342), (33, 27393), (35, 27465), (39, 27609), (40, 27648),

Gene: Karimac\_50 Start: 26849, Stop: 28135, Start Num: 2

Candidate Starts for Karimac\_50:

(Start: 1 @26843 has 23 MA's), (Start: 2 @26849 has 69 MA's), (5, 26903), (9, 26987), (10, 27044), (12, 27062), (13, 27071), (25, 27374), (26, 27377), (27, 27386), (32, 27491), (33, 27542), (35, 27614), (40, 27797),



Gene: Karp\_26 Start: 15067, Stop: 16386, Start Num: 2

Candidate Starts for Karp\_26:

(Start: 2 @15067 has 69 MA's), (5, 15121), (10, 15262), (13, 15289), (18, 15511), (20, 15526), (26, 15598), (27, 15607), (32, 15712), (33, 15766), (36, 15865), (42, 16066),

Gene: Kenrey\_30 Start: 16073, Stop: 17407, Start Num: 2

Candidate Starts for Kenrey\_30:

(Start: 2 @16073 has 69 MA's), (4, 16124), (5, 16127), (10, 16268), (13, 16295), (18, 16517), (19, 16520), (20, 16532), (26, 16604), (27, 16613), (28, 16616), (32, 16718), (33, 16772), (36, 16871), (42, 17090),

Gene: KentuckyRacer\_51 Start: 26627, Stop: 27919, Start Num: 1

Candidate Starts for KentuckyRacer\_51:

(Start: 1 @26627 has 23 MA's), (Start: 2 @26633 has 69 MA's), (5, 26687), (9, 26771), (10, 26828), (12, 26846), (13, 26855), (25, 27158), (26, 27161), (27, 27170), (32, 27275), (33, 27326), (35, 27398), (39, 27542), (40, 27581),

Gene: Larnav\_49 Start: 27391, Stop: 28674, Start Num: 2

Candidate Starts for Larnav\_49:

(Start: 2 @27391 has 69 MA's), (5, 27445), (6, 27466), (7, 27481), (10, 27586), (16, 27691), (24, 27901), (26, 27922), (27, 27931), (32, 28036), (35, 28153), (40, 28336), (44, 28552),

Gene: Leo04\_50 Start: 27906, Stop: 29189, Start Num: 2

Candidate Starts for Leo04\_50:

(Start: 2 @27906 has 69 MA's), (5, 27960), (6, 27981), (10, 28101), (16, 28206), (24, 28416), (26, 28437), (27, 28446), (32, 28551), (35, 28668), (40, 28851), (44, 29067),

Gene: Liandry\_48 Start: 26757, Stop: 28034, Start Num: 2

Candidate Starts for Liandry\_48:

(Start: 2 @26757 has 69 MA's), (3, 26805), (5, 26811), (6, 26832), (8, 26892), (10, 26952), (14, 26982), (26, 27288), (27, 27297), (29, 27303), (32, 27402), (35, 27519), (40, 27696),

Gene: LilMartin\_46 Start: 25704, Stop: 26975, Start Num: 2

Candidate Starts for LilMartin\_46:

(Start: 2 @25704 has 69 MA's), (5, 25758), (6, 25779), (10, 25899), (24, 26214), (26, 26235), (27, 26244), (32, 26349), (35, 26460), (40, 26637),

Gene: Limpid\_26 Start: 15165, Stop: 16484, Start Num: 2

Candidate Starts for Limpid\_26:

(Start: 2 @15165 has 69 MA's), (5, 15219), (10, 15360), (11, 15372), (13, 15387), (15, 15459), (16, 15465), (20, 15624), (23, 15657), (26, 15696), (27, 15705), (32, 15810), (36, 15966), (42, 16167), (45, 16380),

Gene: LukeCage\_50 Start: 26591, Stop: 27883, Start Num: 1

Candidate Starts for LukeCage\_50:

(Start: 1 @26591 has 23 MA's), (Start: 2 @26597 has 69 MA's), (5, 26651), (6, 26672), (9, 26735), (10, 26792), (12, 26810), (13, 26819), (25, 27122), (26, 27125), (27, 27134), (31, 27224), (32, 27239), (33, 27290), (35, 27362), (40, 27545),

Gene: Lululemon\_48 Start: 26787, Stop: 28070, Start Num: 2

Candidate Starts for Lululemon\_48:

(Start: 2 @26787 has 69 MA's), (5, 26841), (6, 26862), (10, 26982), (16, 27087), (24, 27297), (26, 27318), (27, 27327), (32, 27432), (35, 27549), (40, 27732), (44, 27948),

Gene: MeganTheeKilla\_28 Start: 15385, Stop: 16719, Start Num: 2

Candidate Starts for MeganTheeKilla\_28:

(Start: 2 @15385 has 69 MA's), (4, 15436), (5, 15439), (10, 15580), (13, 15607), (18, 15829), (20, 15844), (26, 15916), (27, 15925), (32, 16030), (33, 16084), (36, 16183), (42, 16402),

Gene: Mildred21\_47 Start: 25889, Stop: 27160, Start Num: 2

Candidate Starts for Mildred21\_47:

(Start: 2 @25889 has 69 MA's), (5, 25943), (8, 26024), (10, 26084), (12, 26102), (21, 26351), (24, 26399), (26, 26420), (27, 26429), (32, 26534), (35, 26645), (40, 26822),

Gene: MindFlayer\_49 Start: 26345, Stop: 27637, Start Num: 1

Candidate Starts for MindFlayer\_49:

(Start: 1 @26345 has 23 MA's), (Start: 2 @26351 has 69 MA's), (5, 26405), (9, 26489), (10, 26546), (12, 26564), (13, 26573), (25, 26876), (26, 26879), (27, 26888), (32, 26993), (33, 27044), (35, 27116), (39, 27260), (40, 27299),

Gene: Moab\_27 Start: 15410, Stop: 16726, Start Num: 2

Candidate Starts for Moab\_27:

(Start: 2 @15410 has 69 MA's), (5, 15464), (10, 15605), (13, 15632), (15, 15704), (18, 15854), (20, 15869), (23, 15902), (26, 15941), (27, 15950), (32, 16055), (33, 16109), (36, 16208), (42, 16409),

Gene: Mugiwara\_52 Start: 27090, Stop: 28382, Start Num: 1

Candidate Starts for Mugiwara\_52:

(Start: 1 @27090 has 23 MA's), (Start: 2 @27096 has 69 MA's), (5, 27150), (6, 27171), (9, 27234), (10, 27291), (12, 27309), (13, 27318), (17, 27474), (25, 27621), (26, 27624), (27, 27633), (32, 27738), (33, 27789), (34, 27798), (35, 27861), (40, 28044), (44, 28260),

Gene: MulchMansion\_46 Start: 25704, Stop: 26975, Start Num: 2

Candidate Starts for MulchMansion\_46:

(Start: 2 @25704 has 69 MA's), (5, 25758), (6, 25779), (10, 25899), (24, 26214), (26, 26235), (27, 26244), (32, 26349), (35, 26460), (40, 26637),

Gene: Muntaha\_22 Start: 14981, Stop: 16318, Start Num: 2

Candidate Starts for Muntaha\_22:

(Start: 2 @14981 has 69 MA's), (5, 15035), (10, 15176), (13, 15203), (22, 15464), (23, 15473), (26, 15512), (27, 15521), (32, 15626), (36, 15767), (37, 15836), (42, 15998), (43, 16112), (45, 16211),

Gene: Navo\_47 Start: 26715, Stop: 27992, Start Num: 2

Candidate Starts for Navo\_47:

(Start: 2 @26715 has 69 MA's), (3, 26763), (5, 26769), (6, 26790), (8, 26850), (10, 26910), (14, 26940), (26, 27246), (27, 27255), (29, 27261), (32, 27360), (35, 27477), (40, 27654),

Gene: NootNoot\_45 Start: 25671, Stop: 26948, Start Num: 2

Candidate Starts for NootNoot\_45:

(Start: 2 @25671 has 69 MA's), (3, 25719), (5, 25725), (6, 25746), (8, 25806), (10, 25866), (14, 25896), (26, 26202), (27, 26211), (29, 26217), (32, 26316), (35, 26433), (40, 26610),

Gene: PacManQ\_48 Start: 26787, Stop: 28070, Start Num: 2

Candidate Starts for PacManQ\_48:

(Start: 2 @26787 has 69 MA's), (5, 26841), (6, 26862), (10, 26982), (16, 27087), (24, 27297), (26, 27318), (27, 27327), (32, 27432), (35, 27549), (40, 27732), (44, 27948),

Gene: Paradiddles\_45 Start: 25932, Stop: 27209, Start Num: 2

Candidate Starts for Paradiddles\_45:

(Start: 2 @25932 has 69 MA's), (3, 25980), (5, 25986), (6, 26007), (8, 26067), (10, 26127), (14, 26157), (26, 26463), (27, 26472), (29, 26478), (32, 26577), (35, 26694), (40, 26871),

Gene: Patelgo\_27 Start: 15024, Stop: 16340, Start Num: 2

Candidate Starts for Patelgo\_27:

(Start: 2 @15024 has 69 MA's), (5, 15078), (10, 15219), (13, 15246), (18, 15468), (20, 15483), (23, 15516), (26, 15555), (27, 15564), (32, 15669), (33, 15723), (36, 15822), (42, 16023),

Gene: Peebs\_48 Start: 27144, Stop: 28427, Start Num: 2

Candidate Starts for Peebs\_48:

(Start: 2 @27144 has 69 MA's), (5, 27198), (6, 27219), (10, 27339), (16, 27444), (24, 27654), (26, 27675), (27, 27684), (32, 27789), (35, 27906), (40, 28089), (44, 28305),

Gene: Pepperwood\_49 Start: 27277, Stop: 28560, Start Num: 2

Candidate Starts for Pepperwood\_49:

(Start: 2 @27277 has 69 MA's), (5, 27331), (6, 27352), (10, 27472), (16, 27577), (24, 27787), (26, 27808), (27, 27817), (32, 27922), (35, 28039), (40, 28222), (44, 28438),

Gene: Persimmon\_45 Start: 25646, Stop: 26923, Start Num: 2

Candidate Starts for Persimmon\_45:

(Start: 2 @25646 has 69 MA's), (3, 25694), (5, 25700), (6, 25721), (8, 25781), (10, 25841), (14, 25871), (26, 26177), (27, 26186), (29, 26192), (32, 26291), (35, 26408), (40, 26585),

Gene: Phredrick\_28 Start: 15279, Stop: 16613, Start Num: 2

Candidate Starts for Phredrick\_28:

(Start: 2 @15279 has 69 MA's), (4, 15330), (5, 15333), (10, 15474), (13, 15501), (18, 15723), (19, 15726), (20, 15738), (26, 15810), (27, 15819), (28, 15822), (32, 15924), (33, 15978), (36, 16077), (42, 16296),

Gene: PinkiePie\_47 Start: 26757, Stop: 28034, Start Num: 2

Candidate Starts for PinkiePie\_47:

(Start: 2 @26757 has 69 MA's), (3, 26805), (5, 26811), (6, 26832), (8, 26892), (10, 26952), (14, 26982), (26, 27288), (27, 27297), (29, 27303), (32, 27402), (35, 27519), (40, 27696),

Gene: PumpkinSpice\_50 Start: 26737, Stop: 28029, Start Num: 1

Candidate Starts for PumpkinSpice\_50:

(Start: 1 @26737 has 23 MA's), (Start: 2 @26743 has 69 MA's), (5, 26797), (9, 26881), (10, 26938), (12, 26956), (13, 26965), (25, 27268), (26, 27271), (27, 27280), (32, 27385), (33, 27436), (35, 27508), (39, 27652), (40, 27691),

Gene: Quaran19\_51 Start: 26728, Stop: 28020, Start Num: 1

Candidate Starts for Quaran19\_51:

(Start: 1 @26728 has 23 MA's), (Start: 2 @26734 has 69 MA's), (5, 26788), (9, 26872), (10, 26929), (12, 26947), (13, 26956), (25, 27259), (26, 27262), (27, 27271), (32, 27376), (33, 27427), (35, 27499), (39, 27643), (40, 27682),

Gene: SaltySpittoon\_51 Start: 26737, Stop: 28029, Start Num: 1

Candidate Starts for SaltySpittoon\_51:

(Start: 1 @26737 has 23 MA's), (Start: 2 @26743 has 69 MA's), (5, 26797), (9, 26881), (10, 26938), (12, 26956), (13, 26965), (25, 27268), (26, 27271), (27, 27280), (32, 27385), (33, 27436), (35, 27508), (39, 27652), (40, 27691),

Gene: Samisti12\_49 Start: 28580, Stop: 29863, Start Num: 2

Candidate Starts for Samisti12\_49:

(Start: 2 @28580 has 69 MA's), (5, 28634), (6, 28655), (10, 28775), (16, 28880), (24, 29090), (26, 29111), (27, 29120), (32, 29225), (35, 29342), (40, 29525), (44, 29741),

Gene: Scheme\_50 Start: 27991, Stop: 29274, Start Num: 2

Candidate Starts for Scheme\_50:

(Start: 2 @27991 has 69 MA's), (5, 28045), (6, 28066), (10, 28186), (16, 28291), (24, 28501), (26, 28522), (27, 28531), (32, 28636), (35, 28753), (40, 28936), (44, 29152),

Gene: SeresaTree\_26 Start: 14711, Stop: 16030, Start Num: 2

Candidate Starts for SeresaTree\_26:

(Start: 2 @14711 has 69 MA's), (4, 14762), (5, 14765), (10, 14906), (13, 14933), (20, 15170), (26, 15242), (27, 15251), (32, 15356), (36, 15512), (42, 15710), (45, 15923),

Gene: Sham\_24 Start: 15770, Stop: 17089, Start Num: 2

Candidate Starts for Sham\_24:

(Start: 2 @15770 has 69 MA's), (5, 15824), (10, 15965), (13, 15992), (16, 16070), (20, 16229), (25, 16298), (26, 16301), (27, 16310), (32, 16415), (36, 16571), (42, 16769),

Gene: Sollertia\_51 Start: 26706, Stop: 28001, Start Num: 1

Candidate Starts for Sollertia\_51:

(Start: 1 @26706 has 23 MA's), (Start: 2 @26712 has 69 MA's), (5, 26766), (6, 26787), (9, 26850), (10, 26907), (13, 26934), (25, 27237), (26, 27240), (27, 27249), (32, 27354), (33, 27405), (34, 27414), (35, 27477), (40, 27660),

Gene: SparkleGoddess\_27 Start: 15468, Stop: 16787, Start Num: 2

Candidate Starts for SparkleGoddess\_27:

(Start: 2 @15468 has 69 MA's), (5, 15522), (10, 15663), (13, 15690), (18, 15912), (20, 15927), (26, 15999), (27, 16008), (32, 16113), (33, 16167), (36, 16266), (42, 16467),

Gene: Spelly\_51 Start: 26692, Stop: 27984, Start Num: 1

Candidate Starts for Spelly\_51:

(Start: 1 @26692 has 23 MA's), (Start: 2 @26698 has 69 MA's), (5, 26752), (9, 26836), (10, 26893), (12, 26911), (13, 26920), (25, 27223), (26, 27226), (27, 27235), (32, 27340), (33, 27391), (35, 27463), (39, 27607), (40, 27646),

Gene: Spilled\_52 Start: 26809, Stop: 28101, Start Num: 1

Candidate Starts for Spilled\_52:

(Start: 1 @26809 has 23 MA's), (Start: 2 @26815 has 69 MA's), (5, 26869), (9, 26953), (10, 27010), (12, 27028), (13, 27037), (25, 27340), (26, 27343), (27, 27352), (32, 27457), (33, 27508), (35, 27580), (40, 27763),

Gene: Squillium\_48 Start: 26758, Stop: 28035, Start Num: 2

Candidate Starts for Squillium\_48:

(Start: 2 @26758 has 69 MA's), (3, 26806), (5, 26812), (6, 26833), (8, 26893), (10, 26953), (14, 26983), (26, 27289), (27, 27298), (29, 27304), (32, 27403), (35, 27520), (40, 27697),

Gene: Stanimal\_51 Start: 26595, Stop: 27890, Start Num: 1

Candidate Starts for Stanimal\_51:

(Start: 1 @26595 has 23 MA's), (Start: 2 @26601 has 69 MA's), (5, 26655), (6, 26676), (9, 26739), (10, 26796), (13, 26823), (25, 27126), (26, 27129), (27, 27138), (32, 27243), (33, 27294), (34, 27303), (35, 27366), (40, 27549),

Gene: StarPlatinum\_51 Start: 27233, Stop: 28525, Start Num: 1

Candidate Starts for StarPlatinum\_51:

(Start: 1 @27233 has 23 MA's), (Start: 2 @27239 has 69 MA's), (5, 27293), (6, 27314), (9, 27377), (10, 27434), (12, 27452), (13, 27461), (25, 27764), (26, 27767), (27, 27776), (32, 27881), (33, 27932), (35, 28004), (40, 28187),

Gene: Starbow\_49 Start: 26719, Stop: 28005, Start Num: 2

Candidate Starts for Starbow\_49:

(Start: 1 @26713 has 23 MA's), (Start: 2 @26719 has 69 MA's), (5, 26773), (9, 26857), (10, 26914), (13, 26941), (25, 27244), (26, 27247), (27, 27256), (32, 27361), (33, 27412), (35, 27484), (39, 27628), (40, 27667),

Gene: Stigma\_27 Start: 15469, Stop: 16788, Start Num: 2

Candidate Starts for Stigma\_27:

(Start: 2 @15469 has 69 MA's), (5, 15523), (10, 15664), (13, 15691), (18, 15913), (20, 15928), (26, 16000), (27, 16009), (32, 16114), (33, 16168), (36, 16267), (42, 16468),

Gene: Sushi23\_49 Start: 27502, Stop: 28785, Start Num: 2

Candidate Starts for Sushi23\_49:

(Start: 2 @27502 has 69 MA's), (5, 27556), (6, 27577), (10, 27697), (16, 27802), (24, 28012), (26, 28033), (27, 28042), (32, 28147), (35, 28264), (40, 28447), (44, 28663),

Gene: Targaryen\_50 Start: 28272, Stop: 29549, Start Num: 2

Candidate Starts for Targaryen\_50:

(Start: 2 @28272 has 69 MA's), (5, 28326), (6, 28347), (10, 28467), (24, 28782), (26, 28803), (27, 28812), (32, 28917), (35, 29034), (40, 29211),

Gene: Teutsch\_49 Start: 27771, Stop: 29054, Start Num: 2

Candidate Starts for Teutsch\_49:

(Start: 2 @27771 has 69 MA's), (5, 27825), (6, 27846), (10, 27966), (16, 28071), (24, 28281), (26, 28302), (27, 28311), (32, 28416), (35, 28533), (40, 28716), (44, 28932),

Gene: TomSawyer\_49 Start: 26331, Stop: 27623, Start Num: 1

Candidate Starts for TomSawyer\_49:

(Start: 1 @26331 has 23 MA's), (Start: 2 @26337 has 69 MA's), (5, 26391), (9, 26475), (10, 26532), (12, 26550), (13, 26559), (25, 26862), (26, 26865), (27, 26874), (32, 26979), (33, 27030), (35, 27102), (39, 27246), (40, 27285),

Gene: Tomas\_53 Start: 29052, Stop: 30332, Start Num: 1

Candidate Starts for Tomas\_53:

(Start: 1 @29052 has 23 MA's), (Start: 2 @29058 has 69 MA's), (3, 29106), (5, 29112), (10, 29253), (21, 29520), (26, 29589), (27, 29598), (30, 29676), (32, 29703), (33, 29751), (35, 29823), (40, 29994),

Gene: Tribute\_47 Start: 26971, Stop: 28254, Start Num: 2

Candidate Starts for Tribute\_47:

(Start: 2 @26971 has 69 MA's), (5, 27025), (6, 27046), (10, 27166), (16, 27271), (24, 27481), (26, 27502), (27, 27511), (32, 27616), (35, 27733), (40, 27916), (44, 28132),

Gene: TunaTartare\_25 Start: 16060, Stop: 17379, Start Num: 2

Candidate Starts for TunaTartare\_25:

(Start: 2 @16060 has 69 MA's), (5, 16114), (10, 16255), (13, 16282), (16, 16360), (20, 16519), (26, 16591), (27, 16600), (32, 16705), (36, 16861), (42, 17059),

Gene: Wakanda\_22 Start: 14907, Stop: 16244, Start Num: 2

Candidate Starts for Wakanda\_22:

(Start: 2 @14907 has 69 MA's), (5, 14961), (10, 15102), (12, 15120), (13, 15129), (22, 15390), (23, 15399), (26, 15438), (27, 15447), (32, 15552), (36, 15693), (37, 15762), (42, 15924), (43, 16038), (45, 16137),

Gene: Warpy\_53 Start: 27736, Stop: 29013, Start Num: 2

Candidate Starts for Warpy\_53:

(Start: 2 @27736 has 69 MA's), (5, 27790), (6, 27811), (8, 27871), (10, 27931), (24, 28246), (26, 28267), (27, 28276), (32, 28381), (35, 28498), (40, 28675),

Gene: Watermoore\_49 Start: 27978, Stop: 29261, Start Num: 2

Candidate Starts for Watermoore\_49:

(Start: 2 @27978 has 69 MA's), (5, 28032), (6, 28053), (10, 28173), (16, 28278), (24, 28488), (26, 28509), (27, 28518), (32, 28623), (35, 28740), (40, 28923), (44, 29139),

Gene: WhereRU\_46 Start: 26237, Stop: 27514, Start Num: 2

Candidate Starts for WhereRU\_46:

(Start: 2 @26237 has 69 MA's), (3, 26285), (5, 26291), (6, 26312), (8, 26372), (10, 26432), (14, 26462), (26, 26768), (27, 26777), (29, 26783), (32, 26882), (35, 26999), (40, 27176),

Gene: Wipeout\_49 Start: 27082, Stop: 28374, Start Num: 1

Candidate Starts for Wipeout\_49:

(Start: 1 @27082 has 23 MA's), (Start: 2 @27088 has 69 MA's), (5, 27142), (9, 27226), (10, 27283), (12, 27301), (13, 27310), (25, 27613), (26, 27616), (27, 27625), (32, 27730), (33, 27781), (35, 27853), (39, 27997), (40, 28036),

Gene: Wofford\_50 Start: 27737, Stop: 29029, Start Num: 1

Candidate Starts for Wofford\_50:

(Start: 1 @27737 has 23 MA's), (Start: 2 @27743 has 69 MA's), (5, 27797), (6, 27818), (10, 27938), (13, 27965), (17, 28121), (26, 28271), (27, 28280), (31, 28370), (32, 28385), (33, 28436), (34, 28445), (35, 28508), (40, 28691),

Gene: Yaboi\_51 Start: 26689, Stop: 27978, Start Num: 2

Candidate Starts for Yaboi\_51:

(Start: 1 @26683 has 23 MA's), (Start: 2 @26689 has 69 MA's), (5, 26743), (6, 26764), (9, 26827), (10, 26884), (13, 26911), (25, 27214), (26, 27217), (27, 27226), (32, 27331), (33, 27382), (34, 27391), (35, 27454), (40, 27637),