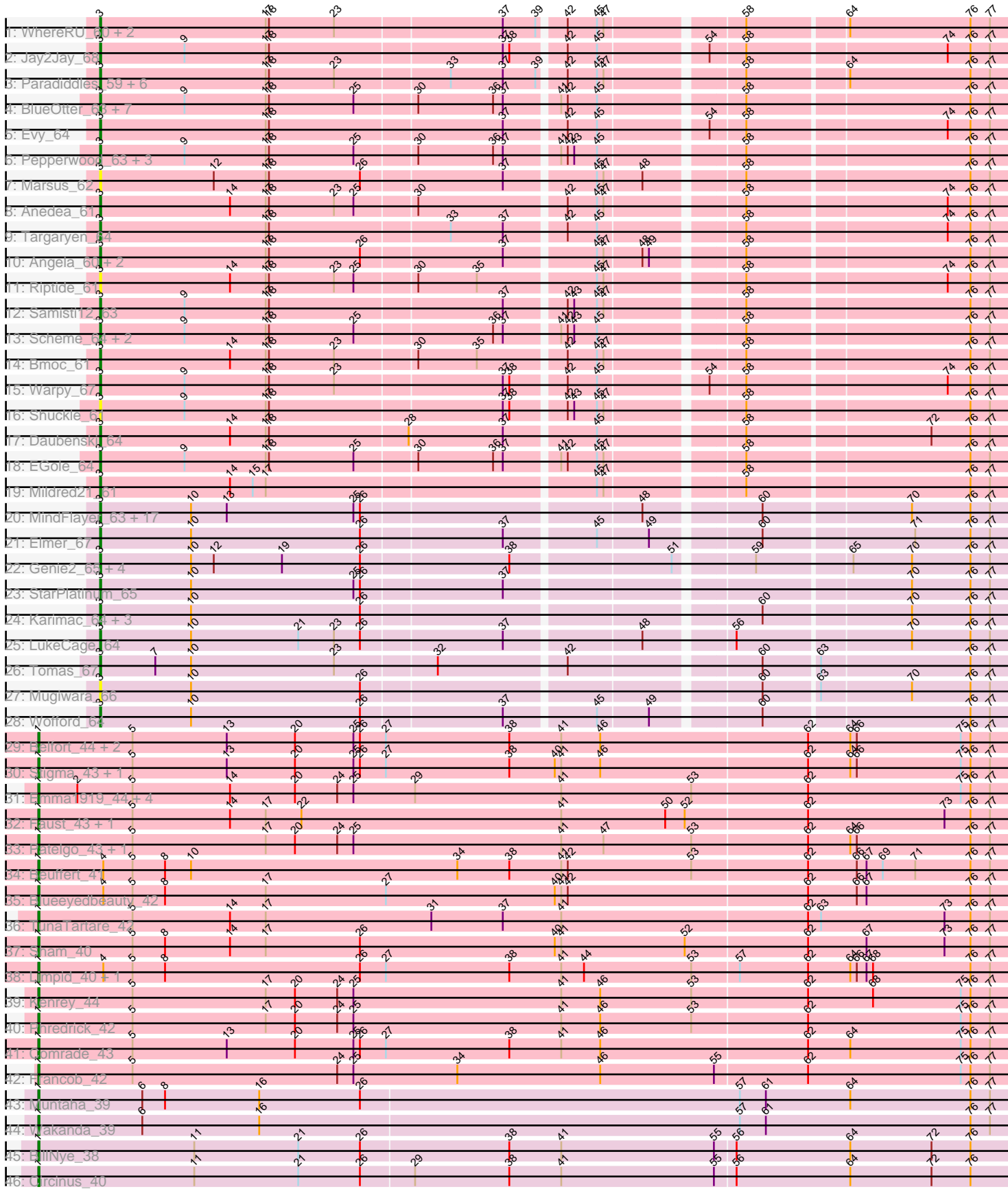


Pham 214140



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 214140 Report

This analysis was run 02/22/25 on database version 588.

Pham number 214140 has 102 members, 9 are drafts.

Phages represented in each track:

- Track 1 : WhereRU\_60, Persimmon\_59, Bartholomune\_61
- Track 2 : Jay2Jay\_68
- Track 3 : Paradiddles\_59, NootNoot\_59, Braelyn\_62, Navo\_61, Squillium\_62, PinkiePie\_61, Liandry\_62
- Track 4 : BlueOtter\_63, Cursive\_61, Leo04\_64, HangryHippo\_63, PacManQ\_62, Watermoore\_63, Cross\_63, Lululemon\_62
- Track 5 : Evy\_64
- Track 6 : Pepperwood\_63, Tribute\_61, Larnav\_63, Sushi23\_63
- Track 7 : Marsus\_62
- Track 8 : Anedea\_61
- Track 9 : Targaryen\_64
- Track 10 : Angela\_60, MulchMansion\_60, LilMartin\_60
- Track 11 : Riptide\_61
- Track 12 : Samisti12\_63
- Track 13 : Scheme\_64, Peebs\_62, Teutsch\_63
- Track 14 : Bmoc\_61
- Track 15 : Warpy\_67
- Track 16 : Shuckle\_61
- Track 17 : Daubenski\_64
- Track 18 : EGole\_64
- Track 19 : Mildred21\_61
- Track 20 : MindFlayer\_63, Wipeout\_63, Bordeaux\_63, Battuta\_63, Birchlyn\_62, SaltySpitoon\_65, Amabiko\_65, TomSawyer\_63, Spelly\_65, Gibbi\_69, Spilled\_66, JimJam\_65, PumpkinSpice\_64, KentuckyRacer\_65, Jollison\_64, Starbow\_63, Rikishi\_68, Quaran19\_65
- Track 21 : Elmer\_67
- Track 22 : Genie2\_65, Stanimal\_65, Sollertia\_65, BoomerJR\_65, Yaboi\_65
- Track 23 : StarPlatinum\_65
- Track 24 : Karimac\_64, IchabodCrane\_62, Enygma\_65, CeilingFan\_64
- Track 25 : LukeCage\_64
- Track 26 : Tomas\_67
- Track 27 : Mugiwara\_66
- Track 28 : Wofford\_64
- Track 29 : Belfort\_44, Karp\_42, Westy\_43
- Track 30 : Stigma\_43, SparkleGoddess\_43
- Track 31 : Emma1919\_44, Jada\_42, Gilson\_44, Forrest\_44, MeganTheeKilla\_42
- Track 32 : Faust\_43, SeresaTree\_42

- Track 33 : Patelgo\_43, Moab\_43
- Track 34 : Beuffert\_41
- Track 35 : Blueeyedbeauty\_42
- Track 36 : TunaTartare\_42
- Track 37 : Sham\_40
- Track 38 : Limpid\_40, Annadreamy\_40
- Track 39 : Kenrey\_44
- Track 40 : Phredrick\_42
- Track 41 : Comrade\_43
- Track 42 : Francob\_42
- Track 43 : Muntaha\_39
- Track 44 : Wakanda\_39
- Track 45 : BillNye\_38
- Track 46 : Circinus\_40

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

The start number called the most often in the published annotations is 3, it was called in 67 of the 93 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Amabiko\_65, Anedea\_61, Angela\_60, Bartholomune\_61, Battuta\_63, Birchlyn\_62, BlueOtter\_63, Bmoc\_61, BoomerJR\_65, Bordeaux\_63, Braelyn\_62, CeilingFan\_64, Cross\_63, Cursive\_61, Daubenski\_64, EGole\_64, Elmer\_67, Enygma\_65, Evy\_64, Genie2\_65, Gibbi\_69, HangryHippo\_63, IchabodCrane\_62, Jay2Jay\_68, JimJam\_65, Jollison\_64, Karimac\_64, KentuckyRacer\_65, Larnav\_63, Leo04\_64, Liandry\_62, LilMartin\_60, LukeCage\_64, Lululemon\_62, Marsus\_62, Mildred21\_61, MindFlayer\_63, Mugiwara\_66, MulchMansion\_60, Navo\_61, NootNoot\_59, PacManQ\_62, Paradiddles\_59, Peebs\_62, Pepperwood\_63, Persimmon\_59, PinkiePie\_61, PumpkinSpice\_64, Quaran19\_65, Rikishi\_68, Riptide\_61, SaltySpittoon\_65, Samisti12\_63, Scheme\_64, Shuckle\_61, Sollertia\_65, Spelly\_65, Spilled\_66, Squillium\_62, Stanimal\_65, StarPlatinum\_65, Starbow\_63, Sushi23\_63, Targaryen\_64, Teutsch\_63, TomSawyer\_63, Tomas\_67, Tribute\_61, Warpy\_67, Watermoore\_63, WhereRU\_60, Wipeout\_63, Wofford\_64, Yaboi\_65,

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

- 

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

- Annadreamy\_40, Belfort\_44, Beuffert\_41, BillNye\_38, Blueeyedbeauty\_42, Circinus\_40, Comrade\_43, Emma1919\_44, Faust\_43, Forrest\_44, Francob\_42, Gilson\_44, Jada\_42, Karp\_42, Kenrey\_44, Limpid\_40, MeganTheeKilla\_42, Moab\_43, Muntaha\_39, Patelgo\_43, Phredrick\_42, SeresaTree\_42, Sham\_40, SparkleGoddess\_43, Stigma\_43, TunaTartare\_42, Wakanda\_39, Westy\_43,

**Summary by start number:**

Start 1:

- Found in 28 of 102 ( 27.5% ) of genes in pham
- Manual Annotations of this start: 26 of 93

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Annadreamy\_40 (BK1), Belfort\_44 (BK1), Beuffert\_41 (BK1), BillNye\_38 (BK2), Blueeyedbeauty\_42 (BK1), Circinus\_40 (BK2), Comrade\_43 (BK1), Emma1919\_44 (BK1), Faust\_43 (BK1), Forrest\_44 (BK1), Francob\_42 (BK1), Gilson\_44 (BK1), Jada\_42 (BK1), Karp\_42 (BK1), Kenrey\_44 (BK1), Limpid\_40 (BK1), MeganTheeKilla\_42 (BK1), Moab\_43 (BK1), Muntaha\_39 (BK2), Patelgo\_43 (BK1), Phredrick\_42 (BK1), SeresaTree\_42 (BK1), Sham\_40 (BK1), SparkleGoddess\_43 (BK1), Stigma\_43 (BK1), TunaTartare\_42 (BK1), Wakanda\_39 (BK2), Westy\_43 (BK1),

### Start 3:

- Found in 74 of 102 ( 72.5% ) of genes in pham
- Manual Annotations of this start: 67 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amabiko\_65 (BE2), Anedea\_61 (BE1), Angela\_60 (BE1), Bartholomune\_61 (BE1), Battuta\_63 (BE2), Birchlyn\_62 (BE2), BlueOtter\_63 (BE1), Bmoc\_61 (BE1), BoomerJR\_65 (BE2), Bordeaux\_63 (BE2), Braelyn\_62 (BE1), CeilingFan\_64 (BE2), Cross\_63 (BE1), Cursive\_61 (BE1), Daubenski\_64 (BE1), EGole\_64 (BE1), Elmer\_67 (BE2), Enygma\_65 (BE2), Evy\_64 (BE1), Genie2\_65 (BE2), Gibbi\_69 (BE2), HangryHippo\_63 (BE1), IchabodCrane\_62 (BE2), Jay2Jay\_68 (BE1), JimJam\_65 (BE2), Jollison\_64 (BE2), Karimac\_64 (BE2), KentuckyRacer\_65 (BE2), Larnav\_63 (BE1), Leo04\_64 (BE1), Liandry\_62 (BE1), LilMartin\_60 (BE1), LukeCage\_64 (BE2), Lululemon\_62 (BE1), Marsus\_62 (BE1), Mildred21\_61 (BE1), MindFlayer\_63 (BE2), Mugiwara\_66 (BE2), MulchMansion\_60 (BE1), Navo\_61 (BE1), NootNoot\_59 (BE1), PacManQ\_62 (BE1), Paradiddles\_59 (BE1), Peebs\_62 (BE1), Pepperwood\_63 (BE1), Persimmon\_59 (BE1), PinkiePie\_61 (BE1), PumpkinSpice\_64 (BE2), Quarant19\_65 (BE2), Rikishi\_68 (BE2), Riptide\_61 (BE1), SaltySpittoon\_65 (BE2), Samisti12\_63 (BE1), Scheme\_64 (BE1), Shuckle\_61 (BE1), Sollertia\_65 (BE2), Spelly\_65 (BE2), Spilled\_66 (BE2), Squillium\_62 (BE1), Stanimal\_65 (BE2), StarPlatinum\_65 (BE2), Starbow\_63 (BE2), Sushi23\_63 (BE1), Targaryen\_64 (BE1), Teutsch\_63 (BE1), TomSawyer\_63 (BE2), Tomas\_67 (BE2), Tribute\_61 (BE1), Warpy\_67 (BE1), Watermoore\_63 (BE1), WhereRU\_60 (BE1), Wipeout\_63 (BE2), Wofford\_64 (BE2), Yaboi\_65 (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 3 was manually annotated 37 times for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 3 was manually annotated 30 times for cluster BE2.

Info for manual annotations of cluster BK1:

- Start number 1 was manually annotated 22 times for cluster BK1.

Info for manual annotations of cluster BK2:

- Start number 1 was manually annotated 4 times for cluster BK2.

### Gene Information:

Gene: Amabiko\_65 Start: 44090, Stop: 44887, Start Num: 3

Candidate Starts for Amabiko\_65:

(Start: 3 @44090 has 67 MA's), (10, 44174), (13, 44207), (25, 44324), (26, 44330), (48, 44573), (60, 44669), (70, 44798), (76, 44852), (77, 44870),

Gene: Anedea\_61 Start: 43637, Stop: 44434, Start Num: 3

Candidate Starts for Anedea\_61:

(Start: 3 @43637 has 67 MA's), (14, 43757), (17, 43790), (18, 43793), (23, 43853), (25, 43871), (30, 43925), (42, 44054), (45, 44081), (47, 44087), (58, 44201), (74, 44378), (76, 44399), (77, 44417),

Gene: Angela\_60 Start: 43095, Stop: 43892, Start Num: 3

Candidate Starts for Angela\_60:

(Start: 3 @43095 has 67 MA's), (17, 43248), (18, 43251), (26, 43335), (37, 43461), (45, 43539), (47, 43545), (48, 43578), (49, 43584), (58, 43659), (76, 43857), (77, 43875),

Gene: Annadreamy\_40 Start: 32790, Stop: 33683, Start Num: 1

Candidate Starts for Annadreamy\_40:

(Start: 1 @32790 has 26 MA's), (4, 32850), (5, 32877), (8, 32907), (26, 33087), (27, 33111), (38, 33225), (41, 33273), (44, 33294), (53, 33393), (57, 33435), (62, 33498), (64, 33537), (66, 33543), (67, 33552), (68, 33558), (76, 33648), (77, 33666),

Gene: Bartholomune\_61 Start: 43401, Stop: 44198, Start Num: 3

Candidate Starts for Bartholomune\_61:

(Start: 3 @43401 has 67 MA's), (17, 43554), (18, 43557), (23, 43617), (37, 43767), (39, 43797), (42, 43818), (45, 43845), (47, 43851), (58, 43965), (64, 44052), (76, 44163), (77, 44181),

Gene: Battuta\_63 Start: 44064, Stop: 44861, Start Num: 3

Candidate Starts for Battuta\_63:

(Start: 3 @44064 has 67 MA's), (10, 44148), (13, 44181), (25, 44298), (26, 44304), (48, 44547), (60, 44643), (70, 44772), (76, 44826), (77, 44844),

Gene: Belfort\_44 Start: 35282, Stop: 36178, Start Num: 1

Candidate Starts for Belfort\_44:

(Start: 1 @35282 has 26 MA's), (5, 35369), (13, 35456), (20, 35519), (25, 35573), (26, 35579), (27, 35603), (38, 35717), (41, 35765), (46, 35801), (62, 35990), (64, 36029), (66, 36035), (75, 36131), (76, 36140), (77, 36158),

Gene: Beuffert\_41 Start: 33886, Stop: 34779, Start Num: 1

Candidate Starts for Beuffert\_41:

(Start: 1 @33886 has 26 MA's), (4, 33946), (5, 33973), (8, 34003), (10, 34027), (34, 34273), (38, 34321), (41, 34369), (42, 34375), (53, 34489), (62, 34594), (66, 34639), (67, 34648), (69, 34663), (71, 34693), (76, 34744), (77, 34762),

Gene: BillNye\_38 Start: 36153, Stop: 37046, Start Num: 1

Candidate Starts for BillNye\_38:

(Start: 1 @36153 has 26 MA's), (11, 36297), (21, 36393), (26, 36450), (38, 36585), (41, 36633), (55, 36774), (56, 36792), (64, 36897), (72, 36972), (76, 37008),

Gene: Birchlyn\_62 Start: 41947, Stop: 42744, Start Num: 3

Candidate Starts for Birchlyn\_62:

(Start: 3 @41947 has 67 MA's), (10, 42031), (13, 42064), (25, 42181), (26, 42187), (48, 42430), (60, 42526), (70, 42655), (76, 42709), (77, 42727),

Gene: BlueOtter\_63 Start: 44775, Stop: 45572, Start Num: 3

Candidate Starts for BlueOtter\_63:

(Start: 3 @44775 has 67 MA's), (9, 44853), (17, 44928), (18, 44931), (25, 45009), (30, 45063), (36, 45132), (37, 45141), (41, 45186), (42, 45192), (45, 45219), (58, 45339), (76, 45537), (77, 45555),

Gene: Blueeyedbeauty\_42 Start: 33278, Stop: 34171, Start Num: 1

Candidate Starts for Blueeyedbeauty\_42:

(Start: 1 @33278 has 26 MA's), (4, 33338), (5, 33365), (8, 33395), (17, 33488), (27, 33599), (40, 33755), (41, 33761), (42, 33767), (62, 33986), (66, 34031), (67, 34040), (76, 34136), (77, 34154),

Gene: Bmoc\_61 Start: 43422, Stop: 44219, Start Num: 3

Candidate Starts for Bmoc\_61:

(Start: 3 @43422 has 67 MA's), (14, 43542), (17, 43575), (18, 43578), (23, 43638), (30, 43710), (35, 43764), (42, 43839), (45, 43866), (47, 43872), (58, 43986), (76, 44184), (77, 44202),

Gene: BoomerJR\_65 Start: 43941, Stop: 44738, Start Num: 3

Candidate Starts for BoomerJR\_65:

(Start: 3 @43941 has 67 MA's), (10, 44025), (12, 44046), (19, 44109), (26, 44181), (38, 44313), (51, 44451), (59, 44514), (65, 44595), (70, 44649), (76, 44703), (77, 44721),

Gene: Bordeaux\_63 Start: 44219, Stop: 45016, Start Num: 3

Candidate Starts for Bordeaux\_63:

(Start: 3 @44219 has 67 MA's), (10, 44303), (13, 44336), (25, 44453), (26, 44459), (48, 44702), (60, 44798), (70, 44927), (76, 44981), (77, 44999),

Gene: Braelyn\_62 Start: 44168, Stop: 44965, Start Num: 3

Candidate Starts for Braelyn\_62:

(Start: 3 @44168 has 67 MA's), (17, 44321), (18, 44324), (23, 44384), (33, 44486), (37, 44534), (39, 44564), (42, 44585), (45, 44612), (47, 44618), (58, 44732), (64, 44819), (76, 44930), (77, 44948),

Gene: CeilingFan\_64 Start: 43979, Stop: 44776, Start Num: 3

Candidate Starts for CeilingFan\_64:

(Start: 3 @43979 has 67 MA's), (10, 44063), (26, 44219), (60, 44558), (70, 44687), (76, 44741), (77, 44759),

Gene: Circinus\_40 Start: 36289, Stop: 37182, Start Num: 1

Candidate Starts for Circinus\_40:

(Start: 1 @36289 has 26 MA's), (11, 36433), (21, 36529), (26, 36586), (29, 36634), (38, 36721), (41, 36769), (55, 36910), (56, 36928), (64, 37033), (72, 37108), (76, 37144),

Gene: Comrade\_43 Start: 34897, Stop: 35793, Start Num: 1

Candidate Starts for Comrade\_43:

(Start: 1 @34897 has 26 MA's), (5, 34984), (13, 35071), (20, 35134), (25, 35188), (26, 35194), (27, 35218), (38, 35332), (41, 35380), (46, 35416), (62, 35605), (64, 35644), (75, 35746), (76, 35755), (77, 35773),

Gene: Cross\_63 Start: 44776, Stop: 45573, Start Num: 3

Candidate Starts for Cross\_63:

(Start: 3 @44776 has 67 MA's), (9, 44854), (17, 44929), (18, 44932), (25, 45010), (30, 45064), (36, 45133), (37, 45142), (41, 45187), (42, 45193), (45, 45220), (58, 45340), (76, 45538), (77, 45556),

Gene: Cursive\_61 Start: 44301, Stop: 45098, Start Num: 3

Candidate Starts for Cursive\_61:

(Start: 3 @44301 has 67 MA's), (9, 44379), (17, 44454), (18, 44457), (25, 44535), (30, 44589), (36, 44658), (37, 44667), (41, 44712), (42, 44718), (45, 44745), (58, 44865), (76, 45063), (77, 45081),

Gene: Daubenski\_64 Start: 44506, Stop: 45303, Start Num: 3

Candidate Starts for Daubenski\_64:

(Start: 3 @44506 has 67 MA's), (14, 44626), (17, 44659), (18, 44662), (28, 44788), (37, 44872), (45, 44950), (58, 45070), (72, 45232), (76, 45268), (77, 45286),

Gene: EGole\_64 Start: 45725, Stop: 46522, Start Num: 3

Candidate Starts for EGole\_64:

(Start: 3 @45725 has 67 MA's), (9, 45803), (17, 45878), (18, 45881), (25, 45959), (30, 46013), (36, 46082), (37, 46091), (41, 46136), (42, 46142), (45, 46169), (47, 46175), (58, 46289), (76, 46487), (77, 46505),

Gene: Elmer\_67 Start: 45154, Stop: 45951, Start Num: 3

Candidate Starts for Elmer\_67:

(Start: 3 @45154 has 67 MA's), (10, 45238), (26, 45394), (37, 45520), (45, 45598), (49, 45643), (60, 45733), (71, 45865), (76, 45916), (77, 45934),

Gene: Emma1919\_44 Start: 33688, Stop: 34584, Start Num: 1

Candidate Starts for Emma1919\_44:

(Start: 1 @33688 has 26 MA's), (2, 33724), (5, 33775), (14, 33865), (20, 33925), (24, 33964), (25, 33979), (29, 34036), (41, 34171), (53, 34291), (62, 34396), (75, 34537), (76, 34546), (77, 34564),

Gene: Enygma\_65 Start: 45891, Stop: 46688, Start Num: 3

Candidate Starts for Enygma\_65:

(Start: 3 @45891 has 67 MA's), (10, 45975), (26, 46131), (60, 46470), (70, 46599), (76, 46653), (77, 46671),

Gene: Evy\_64 Start: 44764, Stop: 45561, Start Num: 3

Candidate Starts for Evy\_64:

(Start: 3 @44764 has 67 MA's), (17, 44917), (18, 44920), (37, 45130), (42, 45181), (45, 45208), (54, 45298), (58, 45328), (74, 45505), (76, 45526), (77, 45544),

Gene: Faust\_43 Start: 34266, Stop: 35162, Start Num: 1

Candidate Starts for Faust\_43:

(Start: 1 @34266 has 26 MA's), (5, 34353), (14, 34443), (17, 34476), (22, 34509), (41, 34749), (50, 34845), (52, 34863), (62, 34974), (73, 35100), (76, 35124), (77, 35142),

Gene: Forrest\_44 Start: 33823, Stop: 34719, Start Num: 1

Candidate Starts for Forrest\_44:

(Start: 1 @33823 has 26 MA's), (2, 33859), (5, 33910), (14, 34000), (20, 34060), (24, 34099), (25, 34114), (29, 34171), (41, 34306), (53, 34426), (62, 34531), (75, 34672), (76, 34681), (77, 34699),

Gene: Francob\_42 Start: 33811, Stop: 34707, Start Num: 1

Candidate Starts for Francob\_42:

(Start: 1 @33811 has 26 MA's), (5, 33898), (24, 34087), (25, 34102), (34, 34198), (46, 34330), (55, 34435), (62, 34519), (75, 34660), (76, 34669), (77, 34687),

Gene: Genie2\_65 Start: 44055, Stop: 44852, Start Num: 3

Candidate Starts for Genie2\_65:

(Start: 3 @44055 has 67 MA's), (10, 44139), (12, 44160), (19, 44223), (26, 44295), (38, 44427), (51, 44565), (59, 44628), (65, 44709), (70, 44763), (76, 44817), (77, 44835),

Gene: Gibbi\_69 Start: 44202, Stop: 44999, Start Num: 3

Candidate Starts for Gibbi\_69:

(Start: 3 @44202 has 67 MA's), (10, 44286), (13, 44319), (25, 44436), (26, 44442), (48, 44685), (60, 44781), (70, 44910), (76, 44964), (77, 44982),

Gene: Gilson\_44 Start: 33641, Stop: 34537, Start Num: 1

Candidate Starts for Gilson\_44:

(Start: 1 @33641 has 26 MA's), (2, 33677), (5, 33728), (14, 33818), (20, 33878), (24, 33917), (25, 33932), (29, 33989), (41, 34124), (53, 34244), (62, 34349), (75, 34490), (76, 34499), (77, 34517),

Gene: HangryHippo\_63 Start: 44775, Stop: 45572, Start Num: 3

Candidate Starts for HangryHippo\_63:

(Start: 3 @44775 has 67 MA's), (9, 44853), (17, 44928), (18, 44931), (25, 45009), (30, 45063), (36, 45132), (37, 45141), (41, 45186), (42, 45192), (45, 45219), (58, 45339), (76, 45537), (77, 45555),

Gene: IchabodCrane\_62 Start: 43791, Stop: 44588, Start Num: 3

Candidate Starts for IchabodCrane\_62:

(Start: 3 @43791 has 67 MA's), (10, 43875), (26, 44031), (60, 44370), (70, 44499), (76, 44553), (77, 44571),

Gene: Jada\_42 Start: 33005, Stop: 33901, Start Num: 1

Candidate Starts for Jada\_42:

(Start: 1 @33005 has 26 MA's), (2, 33041), (5, 33092), (14, 33182), (20, 33242), (24, 33281), (25, 33296), (29, 33353), (41, 33488), (53, 33608), (62, 33713), (75, 33854), (76, 33863), (77, 33881),

Gene: Jay2Jay\_68 Start: 45617, Stop: 46414, Start Num: 3

Candidate Starts for Jay2Jay\_68:

(Start: 3 @45617 has 67 MA's), (9, 45695), (17, 45770), (18, 45773), (37, 45983), (38, 45989), (42, 46034), (45, 46061), (54, 46151), (58, 46181), (74, 46358), (76, 46379), (77, 46397),

Gene: JimJam\_65 Start: 44165, Stop: 44962, Start Num: 3

Candidate Starts for JimJam\_65:

(Start: 3 @44165 has 67 MA's), (10, 44249), (13, 44282), (25, 44399), (26, 44405), (48, 44648), (60, 44744), (70, 44873), (76, 44927), (77, 44945),

Gene: Jollison\_64 Start: 44047, Stop: 44844, Start Num: 3

Candidate Starts for Jollison\_64:

(Start: 3 @44047 has 67 MA's), (10, 44131), (13, 44164), (25, 44281), (26, 44287), (48, 44530), (60, 44626), (70, 44755), (76, 44809), (77, 44827),

Gene: Karimac\_64 Start: 44196, Stop: 44993, Start Num: 3

Candidate Starts for Karimac\_64:

(Start: 3 @44196 has 67 MA's), (10, 44280), (26, 44436), (60, 44775), (70, 44904), (76, 44958), (77, 44976),

Gene: Karp\_42 Start: 34497, Stop: 35393, Start Num: 1

Candidate Starts for Karp\_42:

(Start: 1 @34497 has 26 MA's), (5, 34584), (13, 34671), (20, 34734), (25, 34788), (26, 34794), (27, 34818), (38, 34932), (41, 34980), (46, 35016), (62, 35205), (64, 35244), (66, 35250), (75, 35346), (76, 35355), (77, 35373),

Gene: Kenrey\_44 Start: 33834, Stop: 34730, Start Num: 1



Candidate Starts for Kenrey\_44:

(Start: 1 @33834 has 26 MA's), (5, 33921), (17, 34044), (20, 34071), (24, 34110), (25, 34125), (41, 34317), (46, 34353), (53, 34437), (62, 34542), (68, 34602), (75, 34683), (76, 34692), (77, 34710),

Gene: KentuckyRacer\_65 Start: 43980, Stop: 44777, Start Num: 3

Candidate Starts for KentuckyRacer\_65:

(Start: 3 @43980 has 67 MA's), (10, 44064), (13, 44097), (25, 44214), (26, 44220), (48, 44463), (60, 44559), (70, 44688), (76, 44742), (77, 44760),

Gene: Larnav\_63 Start: 44760, Stop: 45557, Start Num: 3

Candidate Starts for Larnav\_63:

(Start: 3 @44760 has 67 MA's), (9, 44838), (17, 44913), (18, 44916), (25, 44994), (30, 45048), (36, 45117), (37, 45126), (41, 45171), (42, 45177), (43, 45183), (45, 45204), (58, 45324), (76, 45522), (77, 45540),

Gene: Leo04\_64 Start: 45275, Stop: 46072, Start Num: 3

Candidate Starts for Leo04\_64:

(Start: 3 @45275 has 67 MA's), (9, 45353), (17, 45428), (18, 45431), (25, 45509), (30, 45563), (36, 45632), (37, 45641), (41, 45686), (42, 45692), (45, 45719), (58, 45839), (76, 46037), (77, 46055),

Gene: Liandry\_62 Start: 44150, Stop: 44947, Start Num: 3

Candidate Starts for Liandry\_62:

(Start: 3 @44150 has 67 MA's), (17, 44303), (18, 44306), (23, 44366), (33, 44468), (37, 44516), (39, 44546), (42, 44567), (45, 44594), (47, 44600), (58, 44714), (64, 44801), (76, 44912), (77, 44930),

Gene: LilMartin\_60 Start: 43043, Stop: 43840, Start Num: 3

Candidate Starts for LilMartin\_60:

(Start: 3 @43043 has 67 MA's), (17, 43196), (18, 43199), (26, 43283), (37, 43409), (45, 43487), (47, 43493), (48, 43526), (49, 43532), (58, 43607), (76, 43805), (77, 43823),

Gene: Limpid\_40 Start: 32789, Stop: 33682, Start Num: 1

Candidate Starts for Limpid\_40:

(Start: 1 @32789 has 26 MA's), (4, 32849), (5, 32876), (8, 32906), (26, 33086), (27, 33110), (38, 33224), (41, 33272), (44, 33293), (53, 33392), (57, 33434), (62, 33497), (64, 33536), (66, 33542), (67, 33551), (68, 33557), (76, 33647), (77, 33665),

Gene: LukeCage\_64 Start: 43953, Stop: 44750, Start Num: 3

Candidate Starts for LukeCage\_64:

(Start: 3 @43953 has 67 MA's), (10, 44037), (21, 44136), (23, 44169), (26, 44193), (37, 44319), (48, 44436), (56, 44508), (70, 44661), (76, 44715), (77, 44733),

Gene: Lululemon\_62 Start: 44156, Stop: 44953, Start Num: 3

Candidate Starts for Lululemon\_62:

(Start: 3 @44156 has 67 MA's), (9, 44234), (17, 44309), (18, 44312), (25, 44390), (30, 44444), (36, 44513), (37, 44522), (41, 44567), (42, 44573), (45, 44600), (58, 44720), (76, 44918), (77, 44936),

Gene: Marsus\_62 Start: 43315, Stop: 44112, Start Num: 3

Candidate Starts for Marsus\_62:

(Start: 3 @43315 has 67 MA's), (12, 43420), (17, 43468), (18, 43471), (26, 43555), (37, 43681), (45, 43759), (47, 43765), (48, 43798), (58, 43879), (76, 44077), (77, 44095),

Gene: MeganTheeKilla\_42 Start: 33002, Stop: 33898, Start Num: 1

Candidate Starts for MeganTheeKilla\_42:

(Start: 1 @33002 has 26 MA's), (2, 33038), (5, 33089), (14, 33179), (20, 33239), (24, 33278), (25, 33293), (29, 33350), (41, 33485), (53, 33605), (62, 33710), (75, 33851), (76, 33860), (77, 33878),

Gene: Mildred21\_61 Start: 43235, Stop: 44032, Start Num: 3

Candidate Starts for Mildred21\_61:

(Start: 3 @43235 has 67 MA's), (14, 43355), (15, 43376), (17, 43388), (45, 43679), (47, 43685), (58, 43799), (76, 43997), (77, 44015),

Gene: MindFlayer\_63 Start: 43698, Stop: 44495, Start Num: 3

Candidate Starts for MindFlayer\_63:

(Start: 3 @43698 has 67 MA's), (10, 43782), (13, 43815), (25, 43932), (26, 43938), (48, 44181), (60, 44277), (70, 44406), (76, 44460), (77, 44478),

Gene: Moab\_43 Start: 34860, Stop: 35756, Start Num: 1

Candidate Starts for Moab\_43:

(Start: 1 @34860 has 26 MA's), (5, 34947), (17, 35070), (20, 35097), (24, 35136), (25, 35151), (41, 35343), (47, 35382), (53, 35463), (62, 35568), (64, 35607), (66, 35613), (76, 35718), (77, 35736),

Gene: Mugiwara\_66 Start: 44434, Stop: 45231, Start Num: 3

Candidate Starts for Mugiwara\_66:

(Start: 3 @44434 has 67 MA's), (10, 44518), (26, 44674), (60, 45013), (63, 45061), (70, 45142), (76, 45196), (77, 45214),

Gene: MulchMansion\_60 Start: 43043, Stop: 43840, Start Num: 3

Candidate Starts for MulchMansion\_60:

(Start: 3 @43043 has 67 MA's), (17, 43196), (18, 43199), (26, 43283), (37, 43409), (45, 43487), (47, 43493), (48, 43526), (49, 43532), (58, 43607), (76, 43805), (77, 43823),

Gene: Muntaha\_39 Start: 34605, Stop: 35501, Start Num: 1

Candidate Starts for Muntaha\_39:

(Start: 1 @34605 has 26 MA's), (6, 34701), (8, 34722), (16, 34809), (26, 34902), (57, 35250), (61, 35274), (64, 35352), (76, 35463), (77, 35481),

Gene: Navo\_61 Start: 44069, Stop: 44866, Start Num: 3

Candidate Starts for Navo\_61:

(Start: 3 @44069 has 67 MA's), (17, 44222), (18, 44225), (23, 44285), (33, 44387), (37, 44435), (39, 44465), (42, 44486), (45, 44513), (47, 44519), (58, 44633), (64, 44720), (76, 44831), (77, 44849),

Gene: NootNoot\_59 Start: 43064, Stop: 43861, Start Num: 3

Candidate Starts for NootNoot\_59:

(Start: 3 @43064 has 67 MA's), (17, 43217), (18, 43220), (23, 43280), (33, 43382), (37, 43430), (39, 43460), (42, 43481), (45, 43508), (47, 43514), (58, 43628), (64, 43715), (76, 43826), (77, 43844),

Gene: PacManQ\_62 Start: 44156, Stop: 44953, Start Num: 3

Candidate Starts for PacManQ\_62:

(Start: 3 @44156 has 67 MA's), (9, 44234), (17, 44309), (18, 44312), (25, 44390), (30, 44444), (36, 44513), (37, 44522), (41, 44567), (42, 44573), (45, 44600), (58, 44720), (76, 44918), (77, 44936),

Gene: Paradiddles\_59 Start: 43325, Stop: 44122, Start Num: 3

Candidate Starts for Paradiddles\_59:

(Start: 3 @43325 has 67 MA's), (17, 43478), (18, 43481), (23, 43541), (33, 43643), (37, 43691), (39, 43721), (42, 43742), (45, 43769), (47, 43775), (58, 43889), (64, 43976), (76, 44087), (77, 44105),

Gene: Patelgo\_43 Start: 35050, Stop: 35946, Start Num: 1

Candidate Starts for Patelgo\_43:

(Start: 1 @35050 has 26 MA's), (5, 35137), (17, 35260), (20, 35287), (24, 35326), (25, 35341), (41, 35533), (47, 35572), (53, 35653), (62, 35758), (64, 35797), (66, 35803), (76, 35908), (77, 35926),

Gene: Peebs\_62 Start: 44513, Stop: 45310, Start Num: 3

Candidate Starts for Peebs\_62:

(Start: 3 @44513 has 67 MA's), (9, 44591), (17, 44666), (18, 44669), (25, 44747), (36, 44870), (37, 44879), (41, 44924), (42, 44930), (43, 44936), (45, 44957), (58, 45077), (76, 45275), (77, 45293),

Gene: Pepperwood\_63 Start: 44646, Stop: 45443, Start Num: 3

Candidate Starts for Pepperwood\_63:

(Start: 3 @44646 has 67 MA's), (9, 44724), (17, 44799), (18, 44802), (25, 44880), (30, 44934), (36, 45003), (37, 45012), (41, 45057), (42, 45063), (43, 45069), (45, 45090), (58, 45210), (76, 45408), (77, 45426),

Gene: Persimmon\_59 Start: 42994, Stop: 43791, Start Num: 3

Candidate Starts for Persimmon\_59:

(Start: 3 @42994 has 67 MA's), (17, 43147), (18, 43150), (23, 43210), (37, 43360), (39, 43390), (42, 43411), (45, 43438), (47, 43444), (58, 43558), (64, 43645), (76, 43756), (77, 43774),

Gene: Phredrick\_42 Start: 32908, Stop: 33804, Start Num: 1

Candidate Starts for Phredrick\_42:

(Start: 1 @32908 has 26 MA's), (5, 32995), (17, 33118), (20, 33145), (24, 33184), (25, 33199), (41, 33391), (46, 33427), (53, 33511), (62, 33616), (75, 33757), (76, 33766), (77, 33784),

Gene: PinkiePie\_61 Start: 44150, Stop: 44947, Start Num: 3

Candidate Starts for PinkiePie\_61:

(Start: 3 @44150 has 67 MA's), (17, 44303), (18, 44306), (23, 44366), (33, 44468), (37, 44516), (39, 44546), (42, 44567), (45, 44594), (47, 44600), (58, 44714), (64, 44801), (76, 44912), (77, 44930),

Gene: PumpkinSpice\_64 Start: 44090, Stop: 44887, Start Num: 3

Candidate Starts for PumpkinSpice\_64:

(Start: 3 @44090 has 67 MA's), (10, 44174), (13, 44207), (25, 44324), (26, 44330), (48, 44573), (60, 44669), (70, 44798), (76, 44852), (77, 44870),

Gene: Quaran19\_65 Start: 44081, Stop: 44878, Start Num: 3

Candidate Starts for Quaran19\_65:

(Start: 3 @44081 has 67 MA's), (10, 44165), (13, 44198), (25, 44315), (26, 44321), (48, 44564), (60, 44660), (70, 44789), (76, 44843), (77, 44861),

Gene: Rikishi\_68 Start: 43996, Stop: 44793, Start Num: 3

Candidate Starts for Rikishi\_68:

(Start: 3 @43996 has 67 MA's), (10, 44080), (13, 44113), (25, 44230), (26, 44236), (48, 44479), (60, 44575), (70, 44704), (76, 44758), (77, 44776),

Gene: Riptide\_61 Start: 42859, Stop: 43656, Start Num: 3

Candidate Starts for Riptide\_61:

(Start: 3 @42859 has 67 MA's), (14, 42979), (17, 43012), (18, 43015), (23, 43075), (25, 43093), (30, 43147), (35, 43201), (45, 43303), (47, 43309), (58, 43423), (74, 43600), (76, 43621), (77, 43639),

Gene: SaltySpittoon\_65 Start: 44090, Stop: 44887, Start Num: 3

Candidate Starts for SaltySpittoon\_65:

(Start: 3 @44090 has 67 MA's), (10, 44174), (13, 44207), (25, 44324), (26, 44330), (48, 44573), (60, 44669), (70, 44798), (76, 44852), (77, 44870),

Gene: Samisti12\_63 Start: 45950, Stop: 46747, Start Num: 3

Candidate Starts for Samisti12\_63:

(Start: 3 @45950 has 67 MA's), (9, 46028), (17, 46103), (18, 46106), (37, 46316), (42, 46367), (43, 46373), (45, 46394), (47, 46400), (58, 46514), (76, 46712), (77, 46730),

Gene: Scheme\_64 Start: 45360, Stop: 46157, Start Num: 3

Candidate Starts for Scheme\_64:

(Start: 3 @45360 has 67 MA's), (9, 45438), (17, 45513), (18, 45516), (25, 45594), (36, 45717), (37, 45726), (41, 45771), (42, 45777), (43, 45783), (45, 45804), (58, 45924), (76, 46122), (77, 46140),

Gene: SeresaTree\_42 Start: 33656, Stop: 34552, Start Num: 1

Candidate Starts for SeresaTree\_42:

(Start: 1 @33656 has 26 MA's), (5, 33743), (14, 33833), (17, 33866), (22, 33899), (41, 34139), (50, 34235), (52, 34253), (62, 34364), (73, 34490), (76, 34514), (77, 34532),

Gene: Sham\_40 Start: 34781, Stop: 35677, Start Num: 1

Candidate Starts for Sham\_40:

(Start: 1 @34781 has 26 MA's), (5, 34868), (8, 34898), (14, 34958), (17, 34991), (26, 35078), (40, 35258), (41, 35264), (52, 35378), (62, 35489), (67, 35543), (73, 35615), (76, 35639), (77, 35657),

Gene: Shuckle\_61 Start: 44966, Stop: 45763, Start Num: 3

Candidate Starts for Shuckle\_61:

(Start: 3 @44966 has 67 MA's), (9, 45044), (17, 45119), (18, 45122), (37, 45332), (38, 45338), (42, 45383), (43, 45389), (45, 45410), (47, 45416), (58, 45530), (76, 45728), (77, 45746),

Gene: Sollertia\_65 Start: 44055, Stop: 44852, Start Num: 3

Candidate Starts for Sollertia\_65:

(Start: 3 @44055 has 67 MA's), (10, 44139), (12, 44160), (19, 44223), (26, 44295), (38, 44427), (51, 44565), (59, 44628), (65, 44709), (70, 44763), (76, 44817), (77, 44835),

Gene: SparkleGoddess\_43 Start: 34899, Stop: 35795, Start Num: 1

Candidate Starts for SparkleGoddess\_43:

(Start: 1 @34899 has 26 MA's), (5, 34986), (13, 35073), (20, 35136), (25, 35190), (26, 35196), (27, 35220), (38, 35334), (40, 35376), (41, 35382), (46, 35418), (62, 35607), (64, 35646), (66, 35652), (75, 35748), (76, 35757), (77, 35775),

Gene: Spelly\_65 Start: 44045, Stop: 44842, Start Num: 3

Candidate Starts for Spelly\_65:

(Start: 3 @44045 has 67 MA's), (10, 44129), (13, 44162), (25, 44279), (26, 44285), (48, 44528), (60, 44624), (70, 44753), (76, 44807), (77, 44825),

Gene: Spilled\_66 Start: 44162, Stop: 44959, Start Num: 3

Candidate Starts for Spilled\_66:

(Start: 3 @44162 has 67 MA's), (10, 44246), (13, 44279), (25, 44396), (26, 44402), (48, 44645), (60, 44741), (70, 44870), (76, 44924), (77, 44942),

Gene: Squillium\_62 Start: 44151, Stop: 44948, Start Num: 3

Candidate Starts for Squillium\_62:

(Start: 3 @44151 has 67 MA's), (17, 44304), (18, 44307), (23, 44367), (33, 44469), (37, 44517), (39, 44547), (42, 44568), (45, 44595), (47, 44601), (58, 44715), (64, 44802), (76, 44913), (77, 44931),

Gene: Stanimal\_65 Start: 43944, Stop: 44741, Start Num: 3

Candidate Starts for Stanimal\_65:

(Start: 3 @43944 has 67 MA's), (10, 44028), (12, 44049), (19, 44112), (26, 44184), (38, 44316), (51, 44454), (59, 44517), (65, 44598), (70, 44652), (76, 44706), (77, 44724),

Gene: StarPlatinum\_65 Start: 44593, Stop: 45390, Start Num: 3

Candidate Starts for StarPlatinum\_65:

(Start: 3 @44593 has 67 MA's), (10, 44677), (25, 44827), (26, 44833), (37, 44959), (70, 45301), (76, 45355), (77, 45373),

Gene: Starbow\_63 Start: 44066, Stop: 44863, Start Num: 3

Candidate Starts for Starbow\_63:

(Start: 3 @44066 has 67 MA's), (10, 44150), (13, 44183), (25, 44300), (26, 44306), (48, 44549), (60, 44645), (70, 44774), (76, 44828), (77, 44846),

Gene: Stigma\_43 Start: 34912, Stop: 35808, Start Num: 1

Candidate Starts for Stigma\_43:

(Start: 1 @34912 has 26 MA's), (5, 34999), (13, 35086), (20, 35149), (25, 35203), (26, 35209), (27, 35233), (38, 35347), (40, 35389), (41, 35395), (46, 35431), (62, 35620), (64, 35659), (66, 35665), (75, 35761), (76, 35770), (77, 35788),

Gene: Sushi23\_63 Start: 44871, Stop: 45668, Start Num: 3

Candidate Starts for Sushi23\_63:

(Start: 3 @44871 has 67 MA's), (9, 44949), (17, 45024), (18, 45027), (25, 45105), (30, 45159), (36, 45228), (37, 45237), (41, 45282), (42, 45288), (43, 45294), (45, 45315), (58, 45435), (76, 45633), (77, 45651),

Gene: Targaryen\_64 Start: 45666, Stop: 46463, Start Num: 3

Candidate Starts for Targaryen\_64:

(Start: 3 @45666 has 67 MA's), (17, 45819), (18, 45822), (33, 45984), (37, 46032), (42, 46083), (45, 46110), (58, 46230), (74, 46407), (76, 46428), (77, 46446),

Gene: Teutsch\_63 Start: 45134, Stop: 45931, Start Num: 3

Candidate Starts for Teutsch\_63:

(Start: 3 @45134 has 67 MA's), (9, 45212), (17, 45287), (18, 45290), (25, 45368), (36, 45491), (37, 45500), (41, 45545), (42, 45551), (43, 45557), (45, 45578), (58, 45698), (76, 45896), (77, 45914),

Gene: TomSawyer\_63 Start: 43684, Stop: 44481, Start Num: 3

Candidate Starts for TomSawyer\_63:

(Start: 3 @43684 has 67 MA's), (10, 43768), (13, 43801), (25, 43918), (26, 43924), (48, 44167), (60, 44263), (70, 44392), (76, 44446), (77, 44464),

Gene: Tomas\_67 Start: 46390, Stop: 47187, Start Num: 3

Candidate Starts for Tomas\_67:

(Start: 3 @46390 has 67 MA's), (7, 46441), (10, 46474), (23, 46606), (32, 46696), (42, 46807), (60, 46969), (63, 47017), (76, 47152), (77, 47170),

Gene: Tribute\_61 Start: 44340, Stop: 45137, Start Num: 3

Candidate Starts for Tribute\_61:

(Start: 3 @44340 has 67 MA's), (9, 44418), (17, 44493), (18, 44496), (25, 44574), (30, 44628), (36, 44697), (37, 44706), (41, 44751), (42, 44757), (43, 44763), (45, 44784), (58, 44904), (76, 45102), (77, 45120),

Gene: TunaTartare\_42 Start: 35073, Stop: 35969, Start Num: 1

Candidate Starts for TunaTartare\_42:

(Start: 1 @35073 has 26 MA's), (5, 35160), (14, 35250), (17, 35283), (31, 35436), (37, 35502), (41, 35556), (62, 35781), (63, 35793), (73, 35907), (76, 35931), (77, 35949),

Gene: Wakanda\_39 Start: 34543, Stop: 35439, Start Num: 1

Candidate Starts for Wakanda\_39:

(Start: 1 @34543 has 26 MA's), (6, 34639), (16, 34747), (57, 35188), (61, 35212), (76, 35401), (77, 35419),

Gene: Warpy\_67 Start: 45130, Stop: 45927, Start Num: 3

Candidate Starts for Warpy\_67:

(Start: 3 @45130 has 67 MA's), (9, 45208), (17, 45283), (18, 45286), (23, 45346), (37, 45496), (38, 45502), (42, 45547), (45, 45574), (54, 45664), (58, 45694), (74, 45871), (76, 45892), (77, 45910),

Gene: Watermoore\_63 Start: 45347, Stop: 46144, Start Num: 3

Candidate Starts for Watermoore\_63:

(Start: 3 @45347 has 67 MA's), (9, 45425), (17, 45500), (18, 45503), (25, 45581), (30, 45635), (36, 45704), (37, 45713), (41, 45758), (42, 45764), (45, 45791), (58, 45911), (76, 46109), (77, 46127),

Gene: Westy\_43 Start: 34900, Stop: 35796, Start Num: 1

Candidate Starts for Westy\_43:

(Start: 1 @34900 has 26 MA's), (5, 34987), (13, 35074), (20, 35137), (25, 35191), (26, 35197), (27, 35221), (38, 35335), (41, 35383), (46, 35419), (62, 35608), (64, 35647), (66, 35653), (75, 35749), (76, 35758), (77, 35776),

Gene: WhereRU\_60 Start: 43585, Stop: 44382, Start Num: 3

Candidate Starts for WhereRU\_60:

(Start: 3 @43585 has 67 MA's), (17, 43738), (18, 43741), (23, 43801), (37, 43951), (39, 43981), (42, 44002), (45, 44029), (47, 44035), (58, 44149), (64, 44236), (76, 44347), (77, 44365),

Gene: Wipeout\_63 Start: 44435, Stop: 45232, Start Num: 3

Candidate Starts for Wipeout\_63:

(Start: 3 @44435 has 67 MA's), (10, 44519), (13, 44552), (25, 44669), (26, 44675), (48, 44918), (60, 45014), (70, 45143), (76, 45197), (77, 45215),

Gene: Wofford\_64 Start: 45117, Stop: 45914, Start Num: 3

Candidate Starts for Wofford\_64:

(Start: 3 @45117 has 67 MA's), (10, 45201), (26, 45357), (37, 45483), (45, 45561), (49, 45606), (60, 45696), (76, 45879), (77, 45897),

Gene: Yaboi\_65 Start: 44032, Stop: 44829, Start Num: 3

Candidate Starts for Yaboi\_65:

(Start: 3 @44032 has 67 MA's), (10, 44116), (12, 44137), (19, 44200), (26, 44272), (38, 44404), (51, 44542), (59, 44605), (65, 44686), (70, 44740), (76, 44794), (77, 44812),