



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 161793 Report

This analysis was run 04/28/24 on database version 559.

Pham number 161793 has 84 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Minnie\_55, IrishSherpFalk\_51, Coco12\_49, WillSterrel\_51, Sarma624\_48, Cerasum\_46, BigPhil\_46, Velveteen\_45, Kingsley\_47, Spartacus\_52
- Track 2 : Mandlovu\_47, Strokeseat\_47, Hlubikazi\_47
- Track 3 : Donkeykong\_51
- Track 4 : LastJedi\_46, Pippy\_50, Brocalys\_47, Clifton\_47
- Track 5 : ByChance\_42, Gorge\_55, Saal\_53
- Track 6 : DRBy19\_54, Philus\_54
- Track 7 : Moonbeam\_46, Emma\_50, Mutaforma13\_53, Filuzino\_48, Whatsapiecost\_49, EleanorGeorge\_48, Ardmore\_41, Soul22\_54, Juice456\_52, Batiatus\_48, MilleniumForce\_50
- Track 8 : Ms6\_43
- Track 9 : Melissauren88\_48, Bobi\_52, StAnnes\_49, XFactor\_48
- Track 10 : SG4\_47, Lorde\_51, Enby\_51, Flathead\_49
- Track 11 : VRedHorse\_50, Mova\_50
- Track 12 : Phalconet\_49, PhesterPhotato\_53
- Track 13 : DosHalletts\_55
- Track 14 : Byougenkin\_48, Juniper1\_51, SimranZ1\_49
- Track 15 : Shauna1\_45, Bipolar\_47, Phanphagia\_45
- Track 16 : Akhila\_42, MilanaBonita\_42, DLane\_46
- Track 17 : Rialto\_55
- Track 18 : Fruitloop\_48
- Track 19 : Hades\_51
- Track 20 : LunaBlu\_54, ShroomBoi\_50, Wachhund\_52, KristaRAM\_49, SuperGrey\_50, Galactic\_51
- Track 21 : CaptainTrips\_47, Hegedechwinu\_50, MinionDave\_49, Beakin\_52
- Track 22 : Zizzle\_56, Mattes\_54, BobaPhett\_54, James\_54
- Track 23 : Ovechkin\_47
- Track 24 : Kenuha5\_48
- Track 25 : Cornucopia\_53
- Track 26 : Alexphander\_55
- Track 27 : SwagPigglett\_56
- Track 28 : Rita\_52
- Track 29 : Guppsters\_50
- Track 30 : Mozy\_60
- Track 31 : TChen\_50, MooMoo\_46

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

The start number called the most often in the published annotations is 11, it was called in 72 of the 78 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Akhila\_42, Alexphander\_55, Ardmore\_41, Batiatus\_48, Beakin\_52, BigPhil\_46, Bipolar\_47, Bobi\_52, Brocalys\_47, ByChance\_42, Byougenkin\_48, CaptainTrips\_47, Cerasum\_46, Clifton\_47, Coco12\_49, Cornucopia\_53, DLane\_46, DRBy19\_54, Donkeykong\_51, DosHalletts\_55, EleanorGeorge\_48, Emma\_50, Enby\_51, Filuzino\_48, Flathead\_49, Fruitloop\_48, Galactic\_51, Gorge\_55, Guppsters\_50, Hades\_51, Hegedechwinu\_50, Hlubikazi\_47, IrishSherpFalk\_51, Juice456\_52, Juniper1\_51, Kingsley\_47, KristaRAM\_49, LastJedi\_46, Lorde\_51, LunaBlu\_54, Mandlovu\_47, Melissauren88\_48, MilanaBonita\_42, MilleniumForce\_50, MinionDave\_49, Minnie\_55, MooMoo\_46, Moonbeam\_46, Mova\_50, Ms6\_43, Mutaforma13\_53, Ovechkin\_47, Phalconet\_49, Phanphagia\_45, PhesterPhotato\_53, Philus\_54, Pippy\_50, Rialto\_55, Rita\_52, SG4\_47, Saal\_53, Sarma624\_48, Shauna1\_45, ShroomBoi\_50, SimranZ1\_49, Soul22\_54, Spartacus\_52, StAnnes\_49, Strokeseat\_47, SuperGrey\_50, SwagPiggett\_56, TChen\_50, VRedHorse\_50, Velveteen\_45, Wachhund\_52, Whatsapiecost\_49, WillSterrel\_51, XFactor\_48,

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

- BobaPhett\_54, James\_54, Kenuha5\_48, Mattes\_54, Mozy\_60, Zizzle\_56,

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

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### **Summary by start number:**

Start 5:

- Found in 6 of 84 ( 7.1% ) of genes in pham
- Manual Annotations of this start: 5 of 78
- Called 83.3% of time when present
- Phage (with cluster) where this start called: BobaPhett\_54 (F1), James\_54 (F1), Kenuha5\_48 (F1), Mattes\_54 (F1), Zizzle\_56 (F1),

Start 9:

- Found in 1 of 84 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 78
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Mozy\_60 (F1),

Start 11:

- Found in 84 of 84 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 72 of 78
- Called 92.9% of time when present
- Phage (with cluster) where this start called: Akhila\_42 (F1), Alexphander\_55 (F1), Ardmore\_41 (F1), Batiatus\_48 (F1), Beakin\_52 (F1), BigPhil\_46 (F1), Bipolar\_47 (F1), Bobi\_52 (F1), Brocalys\_47 (F1), ByChance\_42 (F1), Byougenkin\_48 (F1), CaptainTrips\_47 (F1), Cerasum\_46 (F1), Clifton\_47 (F1), Coco12\_49 (F1), Cornucopia\_53 (F1), DLane\_46 (F1), DRBy19\_54 (F1), Donkeykong\_51 (F1), DosHalletts\_55 (F1), EleanorGeorge\_48 (F1), Emma\_50 (F1), Enby\_51 (F1),

Filuzino\_48 (F1), Flathead\_49 (F1), Fruitloop\_48 (F1), Galactic\_51 (F1), Gorge\_55 (F1), Guppsters\_50 (F1), Hades\_51 (F1), Hegedechwinu\_50 (F1), Hlubikazi\_47 (F1), IrishSherpFalk\_51 (F1), Juice456\_52 (F1), Juniper1\_51 (F1), Kingsley\_47 (F1), KristaRAM\_49 (F1), LastJedi\_46 (F1), Lorde\_51 (F1), LunaBlu\_54 (F1), Mandlovu\_47 (F1), Melissauren88\_48 (F1), MilanaBonita\_42 (F1), MilleniumForce\_50 (F1), MinionDave\_49 (F1), Minnie\_55 (F1), MooMoo\_46 (singleton), Moonbeam\_46 (F1), Mova\_50 (F1), Ms6\_43 (F1), Mutaforma13\_53 (F1), Ovechkin\_47 (F1), Phalconet\_49 (F1), Phanphagia\_45 (F1), PhesterPotato\_53 (F1), Philus\_54 (F1), Pippy\_50 (F1), Rialto\_55 (F1), Rita\_52 (F1), SG4\_47 (F1), Saal\_53 (F1), Sarma624\_48 (F1), Shauna1\_45 (F1), ShroomBoi\_50 (F1), SimranZ1\_49 (F1), Soul22\_54 (F2), Spartacus\_52 (F1), StAnnes\_49 (F1), Strokeseat\_47 (F1), SuperGrey\_50 (F1), SwagPigglett\_56 (F1), TChen\_50 (F4), VRedHorse\_50 (F1), Velveteen\_45 (F1), Wachhund\_52 (F1), Whatsapiecost\_49 (F1), WillSterrel\_51 (F1), XFactor\_48 (F1),

### Summary by clusters:

There are 4 clusters represented in this pham: F1, singleton, F4, F2,

Info for manual annotations of cluster F1:

- Start number 5 was manually annotated 5 times for cluster F1.
- Start number 9 was manually annotated 1 time for cluster F1.
- Start number 11 was manually annotated 69 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 11 was manually annotated 1 time for cluster F2.

Info for manual annotations of cluster F4:

- Start number 11 was manually annotated 1 time for cluster F4.

### Gene Information:

Gene: Akhila\_42 Start: 32431, Stop: 32691, Start Num: 11

Candidate Starts for Akhila\_42:

(Start: 11 @32431 has 72 MA's), (13, 32449), (14, 32458), (15, 32482), (16, 32503), (18, 32557), (19, 32563), (20, 32566), (23, 32629), (25, 32638), (28, 32644), (29, 32656), (30, 32680),

Gene: Alexphander\_55 Start: 37472, Stop: 37738, Start Num: 11

Candidate Starts for Alexphander\_55:

(Start: 11 @37472 has 72 MA's), (14, 37499), (15, 37523), (16, 37544), (18, 37598), (19, 37604), (20, 37607), (21, 37652), (23, 37670), (27, 37685), (28, 37691), (29, 37703),

Gene: Ardmore\_41 Start: 34224, Stop: 34484, Start Num: 11

Candidate Starts for Ardmore\_41:

(Start: 11 @34224 has 72 MA's), (13, 34242), (14, 34251), (15, 34275), (16, 34296), (18, 34350), (19, 34356), (20, 34359), (25, 34431), (28, 34437), (29, 34449), (30, 34473),

Gene: Batiatus\_48 Start: 36640, Stop: 36903, Start Num: 11

Candidate Starts for Batiatus\_48:

(Start: 11 @36640 has 72 MA's), (13, 36658), (14, 36667), (15, 36691), (16, 36712), (18, 36766), (19, 36772), (20, 36775), (25, 36847), (28, 36853), (29, 36865), (30, 36889),

Gene: Beakin\_52 Start: 36460, Stop: 36720, Start Num: 11

Candidate Starts for Beakin\_52:

(Start: 11 @36460 has 72 MA's), (13, 36478), (14, 36487), (15, 36511), (16, 36532), (18, 36586), (19, 36592), (20, 36595), (25, 36667), (28, 36673), (29, 36685), (30, 36709),

Gene: BigPhil\_46 Start: 32920, Stop: 33180, Start Num: 11

Candidate Starts for BigPhil\_46:

(Start: 11 @32920 has 72 MA's), (13, 32938), (14, 32947), (15, 32971), (16, 32992), (18, 33046), (19, 33052), (20, 33055), (21, 33100), (23, 33118), (25, 33127), (28, 33133), (29, 33145),

Gene: Bipolar\_47 Start: 36374, Stop: 36634, Start Num: 11

Candidate Starts for Bipolar\_47:

(Start: 11 @36374 has 72 MA's), (12, 36383), (15, 36425), (16, 36446), (18, 36500), (19, 36506), (20, 36509), (25, 36581), (28, 36587), (29, 36599),

Gene: BobaPhett\_54 Start: 39312, Stop: 39671, Start Num: 5

Candidate Starts for BobaPhett\_54:

(1, 38748), (2, 38919), (3, 38985), (Start: 5 @39312 has 5 MA's), (8, 39327), (10, 39381), (Start: 11 @39411 has 72 MA's), (13, 39429), (14, 39438), (15, 39462), (16, 39483), (18, 39537), (19, 39543), (20, 39546), (25, 39618), (28, 39624), (29, 39636),

Gene: Bobi\_52 Start: 37227, Stop: 37487, Start Num: 11

Candidate Starts for Bobi\_52:

(Start: 11 @37227 has 72 MA's), (13, 37245), (14, 37254), (15, 37278), (16, 37299), (18, 37353), (19, 37359), (20, 37362), (23, 37425), (25, 37434), (28, 37440), (29, 37452), (30, 37476),

Gene: Brocalys\_47 Start: 34063, Stop: 34332, Start Num: 11

Candidate Starts for Brocalys\_47:

(Start: 11 @34063 has 72 MA's), (13, 34081), (14, 34090), (15, 34114), (16, 34135), (17, 34177), (18, 34189), (19, 34195), (20, 34198), (21, 34243), (23, 34261), (27, 34279), (28, 34285), (29, 34297),

Gene: ByChance\_42 Start: 32434, Stop: 32697, Start Num: 11

Candidate Starts for ByChance\_42:

(Start: 11 @32434 has 72 MA's), (13, 32452), (14, 32461), (15, 32485), (16, 32506), (18, 32560), (19, 32566), (20, 32569), (23, 32632), (25, 32641), (28, 32647), (29, 32659), (30, 32683),

Gene: Byougenkin\_48 Start: 36458, Stop: 36718, Start Num: 11

Candidate Starts for Byougenkin\_48:

(Start: 11 @36458 has 72 MA's), (12, 36467), (15, 36509), (16, 36530), (17, 36572), (18, 36584), (19, 36590), (20, 36593), (22, 36647), (23, 36656), (25, 36665), (28, 36671), (29, 36683), (30, 36707),

Gene: CaptainTrips\_47 Start: 35660, Stop: 35923, Start Num: 11

Candidate Starts for CaptainTrips\_47:

(Start: 11 @35660 has 72 MA's), (13, 35678), (14, 35687), (15, 35711), (16, 35732), (18, 35786), (19, 35792), (20, 35795), (25, 35867), (28, 35873), (29, 35885), (30, 35909),

Gene: Cerasum\_46 Start: 32938, Stop: 33198, Start Num: 11

Candidate Starts for Cerasum\_46:

(Start: 11 @32938 has 72 MA's), (13, 32956), (14, 32965), (15, 32989), (16, 33010), (18, 33064), (19, 33070), (20, 33073), (21, 33118), (23, 33136), (25, 33145), (28, 33151), (29, 33163),

Gene: Clifton\_47 Start: 34414, Stop: 34683, Start Num: 11

Candidate Starts for Clifton\_47:

(Start: 11 @34414 has 72 MA's), (13, 34432), (14, 34441), (15, 34465), (16, 34486), (17, 34528), (18, 34540), (19, 34546), (20, 34549), (21, 34594), (23, 34612), (27, 34630), (28, 34636), (29, 34648),

Gene: Coco12\_49 Start: 36995, Stop: 37255, Start Num: 11

Candidate Starts for Coco12\_49:

(Start: 11 @36995 has 72 MA's), (13, 37013), (14, 37022), (15, 37046), (16, 37067), (18, 37121), (19, 37127), (20, 37130), (21, 37175), (23, 37193), (25, 37202), (28, 37208), (29, 37220),

Gene: Cornucopia\_53 Start: 37702, Stop: 37962, Start Num: 11

Candidate Starts for Cornucopia\_53:

(Start: 11 @37702 has 72 MA's), (13, 37720), (14, 37729), (15, 37753), (16, 37774), (18, 37828), (19, 37834), (20, 37837), (21, 37882), (23, 37900), (25, 37909), (28, 37915), (29, 37927), (30, 37951),

Gene: DLane\_46 Start: 35745, Stop: 36005, Start Num: 11

Candidate Starts for DLane\_46:

(Start: 11 @35745 has 72 MA's), (13, 35763), (14, 35772), (15, 35796), (16, 35817), (18, 35871), (19, 35877), (20, 35880), (23, 35943), (25, 35952), (28, 35958), (29, 35970), (30, 35994),

Gene: DRBy19\_54 Start: 38199, Stop: 38459, Start Num: 11

Candidate Starts for DRBy19\_54:

(Start: 11 @38199 has 72 MA's), (13, 38217), (14, 38226), (15, 38250), (16, 38271), (18, 38325), (19, 38331), (20, 38334), (25, 38406), (28, 38412), (29, 38424),

Gene: Donkeykong\_51 Start: 38545, Stop: 38805, Start Num: 11

Candidate Starts for Donkeykong\_51:

(Start: 11 @38545 has 72 MA's), (13, 38563), (14, 38572), (15, 38596), (16, 38617), (18, 38671), (19, 38677), (20, 38680), (25, 38752), (28, 38758), (29, 38770), (30, 38794),

Gene: DosHalletts\_55 Start: 37887, Stop: 38156, Start Num: 11

Candidate Starts for DosHalletts\_55:

(4, 37767), (6, 37794), (7, 37797), (Start: 11 @37887 has 72 MA's), (13, 37905), (15, 37938), (16, 37959), (17, 38001), (18, 38013), (19, 38019), (20, 38022), (21, 38067), (23, 38085), (27, 38103), (28, 38109), (29, 38121),

Gene: EleanorGeorge\_48 Start: 36028, Stop: 36288, Start Num: 11

Candidate Starts for EleanorGeorge\_48:

(Start: 11 @36028 has 72 MA's), (13, 36046), (14, 36055), (15, 36079), (16, 36100), (18, 36154), (19, 36160), (20, 36163), (25, 36235), (28, 36241), (29, 36253), (30, 36277),

Gene: Emma\_50 Start: 35972, Stop: 36232, Start Num: 11

Candidate Starts for Emma\_50:

(Start: 11 @35972 has 72 MA's), (13, 35990), (14, 35999), (15, 36023), (16, 36044), (18, 36098), (19, 36104), (20, 36107), (25, 36179), (28, 36185), (29, 36197), (30, 36221),

Gene: Enby\_51 Start: 35146, Stop: 35409, Start Num: 11

Candidate Starts for Enby\_51:

(Start: 11 @35146 has 72 MA's), (13, 35164), (14, 35173), (15, 35197), (16, 35218), (18, 35272), (19, 35278), (20, 35281), (23, 35344), (25, 35353), (28, 35359), (29, 35371), (30, 35395),

Gene: Filuzino\_48 Start: 35552, Stop: 35812, Start Num: 11

Candidate Starts for Filuzino\_48:

(Start: 11 @35552 has 72 MA's), (13, 35570), (14, 35579), (15, 35603), (16, 35624), (18, 35678), (19, 35684), (20, 35687), (25, 35759), (28, 35765), (29, 35777), (30, 35801),

Gene: Flathead\_49 Start: 36925, Stop: 37185, Start Num: 11

Candidate Starts for Flathead\_49:

(Start: 11 @36925 has 72 MA's), (13, 36943), (14, 36952), (15, 36976), (16, 36997), (18, 37051), (19, 37057), (20, 37060), (23, 37123), (25, 37132), (28, 37138), (29, 37150), (30, 37174),

Gene: Fruitloop\_48 Start: 37415, Stop: 37678, Start Num: 11

Candidate Starts for Fruitloop\_48:

(Start: 11 @37415 has 72 MA's), (13, 37433), (14, 37442), (15, 37466), (16, 37487), (18, 37541), (19, 37547), (20, 37550), (25, 37622), (26, 37625), (28, 37631), (29, 37643), (30, 37667),

Gene: Galactic\_51 Start: 37171, Stop: 37431, Start Num: 11

Candidate Starts for Galactic\_51:

(Start: 11 @37171 has 72 MA's), (13, 37189), (14, 37198), (15, 37222), (16, 37243), (18, 37297), (19, 37303), (20, 37306), (25, 37378), (28, 37384), (29, 37396),

Gene: Gorge\_55 Start: 38326, Stop: 38589, Start Num: 11

Candidate Starts for Gorge\_55:

(Start: 11 @38326 has 72 MA's), (13, 38344), (14, 38353), (15, 38377), (16, 38398), (18, 38452), (19, 38458), (20, 38461), (23, 38524), (25, 38533), (28, 38539), (29, 38551), (30, 38575),

Gene: Guppsters\_50 Start: 36031, Stop: 36291, Start Num: 11

Candidate Starts for Guppsters\_50:

(Start: 11 @36031 has 72 MA's), (13, 36049), (14, 36058), (15, 36082), (16, 36103), (18, 36157), (19, 36163), (20, 36166), (25, 36238), (28, 36244), (29, 36256), (30, 36280),

Gene: Hades\_51 Start: 36925, Stop: 37188, Start Num: 11

Candidate Starts for Hades\_51:

(Start: 11 @36925 has 72 MA's), (13, 36943), (15, 36976), (16, 36997), (18, 37051), (19, 37057), (20, 37060), (23, 37123), (25, 37132), (28, 37138), (29, 37150), (30, 37174),

Gene: Hegedechwinu\_50 Start: 35352, Stop: 35612, Start Num: 11

Candidate Starts for Hegedechwinu\_50:

(Start: 11 @35352 has 72 MA's), (13, 35370), (14, 35379), (15, 35403), (16, 35424), (18, 35478), (19, 35484), (20, 35487), (25, 35559), (28, 35565), (29, 35577), (30, 35601),

Gene: Hlubikazi\_47 Start: 35112, Stop: 35372, Start Num: 11

Candidate Starts for Hlubikazi\_47:

(Start: 11 @35112 has 72 MA's), (13, 35130), (14, 35139), (15, 35163), (16, 35184), (18, 35238), (19, 35244), (20, 35247), (25, 35319), (28, 35325), (29, 35337),

Gene: IrishSherpFalk\_51 Start: 38088, Stop: 38348, Start Num: 11

Candidate Starts for IrishSherpFalk\_51:

(Start: 11 @38088 has 72 MA's), (13, 38106), (14, 38115), (15, 38139), (16, 38160), (18, 38214), (19, 38220), (20, 38223), (21, 38268), (23, 38286), (25, 38295), (28, 38301), (29, 38313),

Gene: James\_54 Start: 38190, Stop: 38549, Start Num: 5

Candidate Starts for James\_54:

(1, 37626), (2, 37797), (3, 37863), (Start: 5 @38190 has 5 MA's), (8, 38205), (10, 38259), (Start: 11 @38289 has 72 MA's), (13, 38307), (14, 38316), (15, 38340), (16, 38361), (18, 38415), (19, 38421), (20, 38424), (25, 38496), (28, 38502), (29, 38514),

Gene: Juice456\_52 Start: 37930, Stop: 38190, Start Num: 11

Candidate Starts for Juice456\_52:

(Start: 11 @37930 has 72 MA's), (13, 37948), (14, 37957), (15, 37981), (16, 38002), (18, 38056), (19, 38062), (20, 38065), (25, 38137), (28, 38143), (29, 38155), (30, 38179),

Gene: Juniper1\_51 Start: 36146, Stop: 36406, Start Num: 11

Candidate Starts for Juniper1\_51:

(Start: 11 @36146 has 72 MA's), (12, 36155), (15, 36197), (16, 36218), (17, 36260), (18, 36272), (19, 36278), (20, 36281), (22, 36335), (23, 36344), (25, 36353), (28, 36359), (29, 36371), (30, 36395),

Gene: Kenuha5\_48 Start: 35550, Stop: 35903, Start Num: 5

Candidate Starts for Kenuha5\_48:

(Start: 5 @35550 has 5 MA's), (Start: 11 @35643 has 72 MA's), (13, 35661), (14, 35670), (15, 35694), (16, 35715), (18, 35769), (19, 35775), (20, 35778), (25, 35850), (28, 35856), (29, 35868),

Gene: Kingsley\_47 Start: 35728, Stop: 35988, Start Num: 11

Candidate Starts for Kingsley\_47:

(Start: 11 @35728 has 72 MA's), (13, 35746), (14, 35755), (15, 35779), (16, 35800), (18, 35854), (19, 35860), (20, 35863), (21, 35908), (23, 35926), (25, 35935), (28, 35941), (29, 35953),

Gene: KristaRAM\_49 Start: 37743, Stop: 38003, Start Num: 11

Candidate Starts for KristaRAM\_49:

(Start: 11 @37743 has 72 MA's), (13, 37761), (14, 37770), (15, 37794), (16, 37815), (18, 37869), (19, 37875), (20, 37878), (25, 37950), (28, 37956), (29, 37968),

Gene: LastJedi\_46 Start: 34457, Stop: 34726, Start Num: 11

Candidate Starts for LastJedi\_46:

(Start: 11 @34457 has 72 MA's), (13, 34475), (14, 34484), (15, 34508), (16, 34529), (17, 34571), (18, 34583), (19, 34589), (20, 34592), (21, 34637), (23, 34655), (27, 34673), (28, 34679), (29, 34691),

Gene: Lorde\_51 Start: 35121, Stop: 35384, Start Num: 11

Candidate Starts for Lorde\_51:

(Start: 11 @35121 has 72 MA's), (13, 35139), (14, 35148), (15, 35172), (16, 35193), (18, 35247), (19, 35253), (20, 35256), (23, 35319), (25, 35328), (28, 35334), (29, 35346), (30, 35370),

Gene: LunaBlu\_54 Start: 37830, Stop: 38090, Start Num: 11

Candidate Starts for LunaBlu\_54:

(Start: 11 @37830 has 72 MA's), (13, 37848), (14, 37857), (15, 37881), (16, 37902), (18, 37956), (19, 37962), (20, 37965), (25, 38037), (28, 38043), (29, 38055),

Gene: Mandlovu\_47 Start: 35054, Stop: 35314, Start Num: 11

Candidate Starts for Mandlovu\_47:

(Start: 11 @35054 has 72 MA's), (13, 35072), (14, 35081), (15, 35105), (16, 35126), (18, 35180), (19, 35186), (20, 35189), (25, 35261), (28, 35267), (29, 35279),

Gene: Mattes\_54 Start: 38190, Stop: 38549, Start Num: 5

Candidate Starts for Mattes\_54:

(1, 37626), (2, 37797), (3, 37863), (Start: 5 @38190 has 5 MA's), (8, 38205), (10, 38259), (Start: 11 @38289 has 72 MA's), (13, 38307), (14, 38316), (15, 38340), (16, 38361), (18, 38415), (19, 38421), (20, 38424), (25, 38496), (28, 38502), (29, 38514),

Gene: Melissauren88\_48 Start: 35898, Stop: 36161, Start Num: 11



Candidate Starts for Melissauren88\_48:

(Start: 11 @35898 has 72 MA's), (13, 35916), (14, 35925), (15, 35949), (16, 35970), (18, 36024), (19, 36030), (20, 36033), (23, 36096), (25, 36105), (28, 36111), (29, 36123), (30, 36147),

Gene: MilanaBonita\_42 Start: 32431, Stop: 32691, Start Num: 11

Candidate Starts for MilanaBonita\_42:

(Start: 11 @32431 has 72 MA's), (13, 32449), (14, 32458), (15, 32482), (16, 32503), (18, 32557), (19, 32563), (20, 32566), (23, 32629), (25, 32638), (28, 32644), (29, 32656), (30, 32680),

Gene: MilleniumForce\_50 Start: 37892, Stop: 38152, Start Num: 11

Candidate Starts for MilleniumForce\_50:

(Start: 11 @37892 has 72 MA's), (13, 37910), (14, 37919), (15, 37943), (16, 37964), (18, 38018), (19, 38024), (20, 38027), (25, 38099), (28, 38105), (29, 38117), (30, 38141),

Gene: MinionDave\_49 Start: 36435, Stop: 36698, Start Num: 11

Candidate Starts for MinionDave\_49:

(Start: 11 @36435 has 72 MA's), (13, 36453), (14, 36462), (15, 36486), (16, 36507), (18, 36561), (19, 36567), (20, 36570), (25, 36642), (28, 36648), (29, 36660), (30, 36684),

Gene: Minnie\_55 Start: 38774, Stop: 39034, Start Num: 11

Candidate Starts for Minnie\_55:

(Start: 11 @38774 has 72 MA's), (13, 38792), (14, 38801), (15, 38825), (16, 38846), (18, 38900), (19, 38906), (20, 38909), (21, 38954), (23, 38972), (25, 38981), (28, 38987), (29, 38999),

Gene: MooMoo\_46 Start: 35558, Stop: 35833, Start Num: 11

Candidate Starts for MooMoo\_46:

(Start: 11 @35558 has 72 MA's), (15, 35609), (16, 35630), (17, 35672), (18, 35684), (19, 35690), (20, 35693), (24, 35771), (27, 35780), (28, 35786), (29, 35798),

Gene: Moonbeam\_46 Start: 35928, Stop: 36188, Start Num: 11

Candidate Starts for Moonbeam\_46:

(Start: 11 @35928 has 72 MA's), (13, 35946), (14, 35955), (15, 35979), (16, 36000), (18, 36054), (19, 36060), (20, 36063), (25, 36135), (28, 36141), (29, 36153), (30, 36177),

Gene: Mova\_50 Start: 35691, Stop: 35951, Start Num: 11

Candidate Starts for Mova\_50:

(Start: 11 @35691 has 72 MA's), (13, 35709), (14, 35718), (15, 35742), (16, 35763), (18, 35817), (19, 35823), (20, 35826), (25, 35898), (28, 35904), (29, 35916), (30, 35940),

Gene: Mozy\_60 Start: 39450, Stop: 39764, Start Num: 9

Candidate Starts for Mozy\_60:

(Start: 9 @39450 has 1 MA's), (Start: 11 @39504 has 72 MA's), (13, 39522), (14, 39531), (15, 39555), (16, 39576), (17, 39618), (18, 39630), (19, 39636), (20, 39639), (23, 39702), (25, 39711), (28, 39717), (29, 39729), (30, 39753),

Gene: Ms6\_43 Start: 30964, Stop: 31230, Start Num: 11

Candidate Starts for Ms6\_43:

(Start: 11 @30964 has 72 MA's), (13, 30982), (14, 30991), (15, 31015), (16, 31036), (18, 31090), (19, 31096), (20, 31099), (21, 31144), (23, 31162), (27, 31177), (28, 31183), (29, 31195), (30, 31219),

Gene: Mutaforma13\_53 Start: 38482, Stop: 38742, Start Num: 11

Candidate Starts for Mutaforma13\_53:

(Start: 11 @38482 has 72 MA's), (13, 38500), (14, 38509), (15, 38533), (16, 38554), (18, 38608), (19, 38614), (20, 38617), (25, 38689), (28, 38695), (29, 38707), (30, 38731),

Gene: Ovechkin\_47 Start: 36285, Stop: 36545, Start Num: 11

Candidate Starts for Ovechkin\_47:

(Start: 11 @36285 has 72 MA's), (13, 36303), (14, 36312), (15, 36336), (16, 36357), (18, 36411), (19, 36417), (20, 36420), (25, 36492), (28, 36498), (29, 36510), (30, 36534),

Gene: Phalconet\_49 Start: 36205, Stop: 36465, Start Num: 11

Candidate Starts for Phalconet\_49:

(Start: 11 @36205 has 72 MA's), (13, 36223), (14, 36232), (15, 36256), (16, 36277), (18, 36331), (19, 36337), (20, 36340), (23, 36403), (25, 36412), (28, 36418), (29, 36430), (30, 36454),

Gene: Phanphagia\_45 Start: 36033, Stop: 36293, Start Num: 11

Candidate Starts for Phanphagia\_45:

(Start: 11 @36033 has 72 MA's), (12, 36042), (15, 36084), (16, 36105), (18, 36159), (19, 36165), (20, 36168), (25, 36240), (28, 36246), (29, 36258),

Gene: PhesterPhotato\_53 Start: 37160, Stop: 37420, Start Num: 11

Candidate Starts for PhesterPhotato\_53:

(Start: 11 @37160 has 72 MA's), (13, 37178), (14, 37187), (15, 37211), (16, 37232), (18, 37286), (19, 37292), (20, 37295), (23, 37358), (25, 37367), (28, 37373), (29, 37385), (30, 37409),

Gene: Philus\_54 Start: 38175, Stop: 38435, Start Num: 11

Candidate Starts for Philus\_54:

(Start: 11 @38175 has 72 MA's), (13, 38193), (14, 38202), (15, 38226), (16, 38247), (18, 38301), (19, 38307), (20, 38310), (25, 38382), (28, 38388), (29, 38400),

Gene: Pippy\_50 Start: 36021, Stop: 36290, Start Num: 11

Candidate Starts for Pippy\_50:

(Start: 11 @36021 has 72 MA's), (13, 36039), (14, 36048), (15, 36072), (16, 36093), (17, 36135), (18, 36147), (19, 36153), (20, 36156), (21, 36201), (23, 36219), (27, 36237), (28, 36243), (29, 36255),

Gene: Rialto\_55 Start: 39407, Stop: 39676, Start Num: 11

Candidate Starts for Rialto\_55:

(Start: 11 @39407 has 72 MA's), (13, 39425), (14, 39434), (15, 39458), (16, 39479), (17, 39521), (18, 39533), (19, 39539), (20, 39542), (21, 39587), (23, 39605), (27, 39623), (28, 39629), (29, 39641),

Gene: Rita\_52 Start: 36039, Stop: 36299, Start Num: 11

Candidate Starts for Rita\_52:

(Start: 11 @36039 has 72 MA's), (12, 36048), (15, 36090), (16, 36111), (17, 36153), (18, 36165), (19, 36171), (20, 36174), (23, 36237), (25, 36246), (28, 36252), (29, 36264), (30, 36288),

Gene: SG4\_47 Start: 35631, Stop: 35894, Start Num: 11

Candidate Starts for SG4\_47:

(Start: 11 @35631 has 72 MA's), (13, 35649), (14, 35658), (15, 35682), (16, 35703), (18, 35757), (19, 35763), (20, 35766), (23, 35829), (25, 35838), (28, 35844), (29, 35856), (30, 35880),

Gene: Saal\_53 Start: 38145, Stop: 38408, Start Num: 11

Candidate Starts for Saal\_53:

(Start: 11 @38145 has 72 MA's), (13, 38163), (14, 38172), (15, 38196), (16, 38217), (18, 38271), (19, 38277), (20, 38280), (23, 38343), (25, 38352), (28, 38358), (29, 38370), (30, 38394),

Gene: Sarma624\_48 Start: 32920, Stop: 33180, Start Num: 11

Candidate Starts for Sarma624\_48:

(Start: 11 @32920 has 72 MA's), (13, 32938), (14, 32947), (15, 32971), (16, 32992), (18, 33046), (19, 33052), (20, 33055), (21, 33100), (23, 33118), (25, 33127), (28, 33133), (29, 33145),

Gene: Shauna1\_45 Start: 36023, Stop: 36283, Start Num: 11

Candidate Starts for Shauna1\_45:

(Start: 11 @36023 has 72 MA's), (12, 36032), (15, 36074), (16, 36095), (18, 36149), (19, 36155), (20, 36158), (25, 36230), (28, 36236), (29, 36248),

Gene: ShroomBoi\_50 Start: 36513, Stop: 36773, Start Num: 11

Candidate Starts for ShroomBoi\_50:

(Start: 11 @36513 has 72 MA's), (13, 36531), (14, 36540), (15, 36564), (16, 36585), (18, 36639), (19, 36645), (20, 36648), (25, 36720), (28, 36726), (29, 36738),

Gene: SimranZ1\_49 Start: 35859, Stop: 36119, Start Num: 11

Candidate Starts for SimranZ1\_49:

(Start: 11 @35859 has 72 MA's), (12, 35868), (15, 35910), (16, 35931), (17, 35973), (18, 35985), (19, 35991), (20, 35994), (22, 36048), (23, 36057), (25, 36066), (28, 36072), (29, 36084), (30, 36108),

Gene: Soul22\_54 Start: 36760, Stop: 37020, Start Num: 11

Candidate Starts for Soul22\_54:

(Start: 11 @36760 has 72 MA's), (13, 36778), (14, 36787), (15, 36811), (16, 36832), (18, 36886), (19, 36892), (20, 36895), (25, 36967), (28, 36973), (29, 36985), (30, 37009),

Gene: Spartacus\_52 Start: 37005, Stop: 37265, Start Num: 11

Candidate Starts for Spartacus\_52:

(Start: 11 @37005 has 72 MA's), (13, 37023), (14, 37032), (15, 37056), (16, 37077), (18, 37131), (19, 37137), (20, 37140), (21, 37185), (23, 37203), (25, 37212), (28, 37218), (29, 37230),

Gene: StAnnes\_49 Start: 36877, Stop: 37140, Start Num: 11

Candidate Starts for StAnnes\_49:

(Start: 11 @36877 has 72 MA's), (13, 36895), (14, 36904), (15, 36928), (16, 36949), (18, 37003), (19, 37009), (20, 37012), (23, 37075), (25, 37084), (28, 37090), (29, 37102), (30, 37126),

Gene: Strokeseat\_47 Start: 35111, Stop: 35371, Start Num: 11

Candidate Starts for Strokeseat\_47:

(Start: 11 @35111 has 72 MA's), (13, 35129), (14, 35138), (15, 35162), (16, 35183), (18, 35237), (19, 35243), (20, 35246), (25, 35318), (28, 35324), (29, 35336),

Gene: SuperGrey\_50 Start: 37482, Stop: 37742, Start Num: 11

Candidate Starts for SuperGrey\_50:

(Start: 11 @37482 has 72 MA's), (13, 37500), (14, 37509), (15, 37533), (16, 37554), (18, 37608), (19, 37614), (20, 37617), (25, 37689), (28, 37695), (29, 37707),

Gene: SwagPigglett\_56 Start: 39180, Stop: 39440, Start Num: 11

Candidate Starts for SwagPigglett\_56:

(1, 38517), (2, 38688), (3, 38754), (Start: 5 @39081 has 5 MA's), (8, 39096), (10, 39150), (Start: 11 @39180 has 72 MA's), (13, 39198), (14, 39207), (15, 39231), (16, 39252), (18, 39306), (19, 39312), (20, 39315), (25, 39387), (28, 39393), (29, 39405),

Gene: TChen\_50 Start: 37233, Stop: 37508, Start Num: 11

Candidate Starts for TChen\_50:

(Start: 11 @37233 has 72 MA's), (15, 37284), (16, 37305), (17, 37347), (18, 37359), (19, 37365), (20, 37368), (24, 37446), (27, 37455), (28, 37461), (29, 37473),

Gene: VRedHorse\_50 Start: 36119, Stop: 36382, Start Num: 11

Candidate Starts for VRedHorse\_50:

(Start: 11 @36119 has 72 MA's), (13, 36137), (14, 36146), (15, 36170), (16, 36191), (18, 36245), (19, 36251), (20, 36254), (25, 36326), (28, 36332), (29, 36344), (30, 36368),

Gene: Velveteen\_45 Start: 32920, Stop: 33180, Start Num: 11

Candidate Starts for Velveteen\_45:

(Start: 11 @32920 has 72 MA's), (13, 32938), (14, 32947), (15, 32971), (16, 32992), (18, 33046), (19, 33052), (20, 33055), (21, 33100), (23, 33118), (25, 33127), (28, 33133), (29, 33145),

Gene: Wachhund\_52 Start: 36526, Stop: 36786, Start Num: 11

Candidate Starts for Wachhund\_52:

(Start: 11 @36526 has 72 MA's), (13, 36544), (14, 36553), (15, 36577), (16, 36598), (18, 36652), (19, 36658), (20, 36661), (25, 36733), (28, 36739), (29, 36751),

Gene: Whatsapiecost\_49 Start: 35788, Stop: 36048, Start Num: 11

Candidate Starts for Whatsapiecost\_49:

(Start: 11 @35788 has 72 MA's), (13, 35806), (14, 35815), (15, 35839), (16, 35860), (18, 35914), (19, 35920), (20, 35923), (25, 35995), (28, 36001), (29, 36013), (30, 36037),

Gene: WillSterrel\_51 Start: 38121, Stop: 38381, Start Num: 11

Candidate Starts for WillSterrel\_51:

(Start: 11 @38121 has 72 MA's), (13, 38139), (14, 38148), (15, 38172), (16, 38193), (18, 38247), (19, 38253), (20, 38256), (21, 38301), (23, 38319), (25, 38328), (28, 38334), (29, 38346),

Gene: XFactor\_48 Start: 35606, Stop: 35869, Start Num: 11

Candidate Starts for XFactor\_48:

(Start: 11 @35606 has 72 MA's), (13, 35624), (14, 35633), (15, 35657), (16, 35678), (18, 35732), (19, 35738), (20, 35741), (23, 35804), (25, 35813), (28, 35819), (29, 35831), (30, 35855),

Gene: Zizzle\_56 Start: 38765, Stop: 39124, Start Num: 5

Candidate Starts for Zizzle\_56:

(1, 38201), (2, 38372), (3, 38438), (Start: 5 @38765 has 5 MA's), (8, 38780), (10, 38834), (Start: 11 @38864 has 72 MA's), (13, 38882), (14, 38891), (15, 38915), (16, 38936), (18, 38990), (19, 38996), (20, 38999), (25, 39071), (28, 39077), (29, 39089),