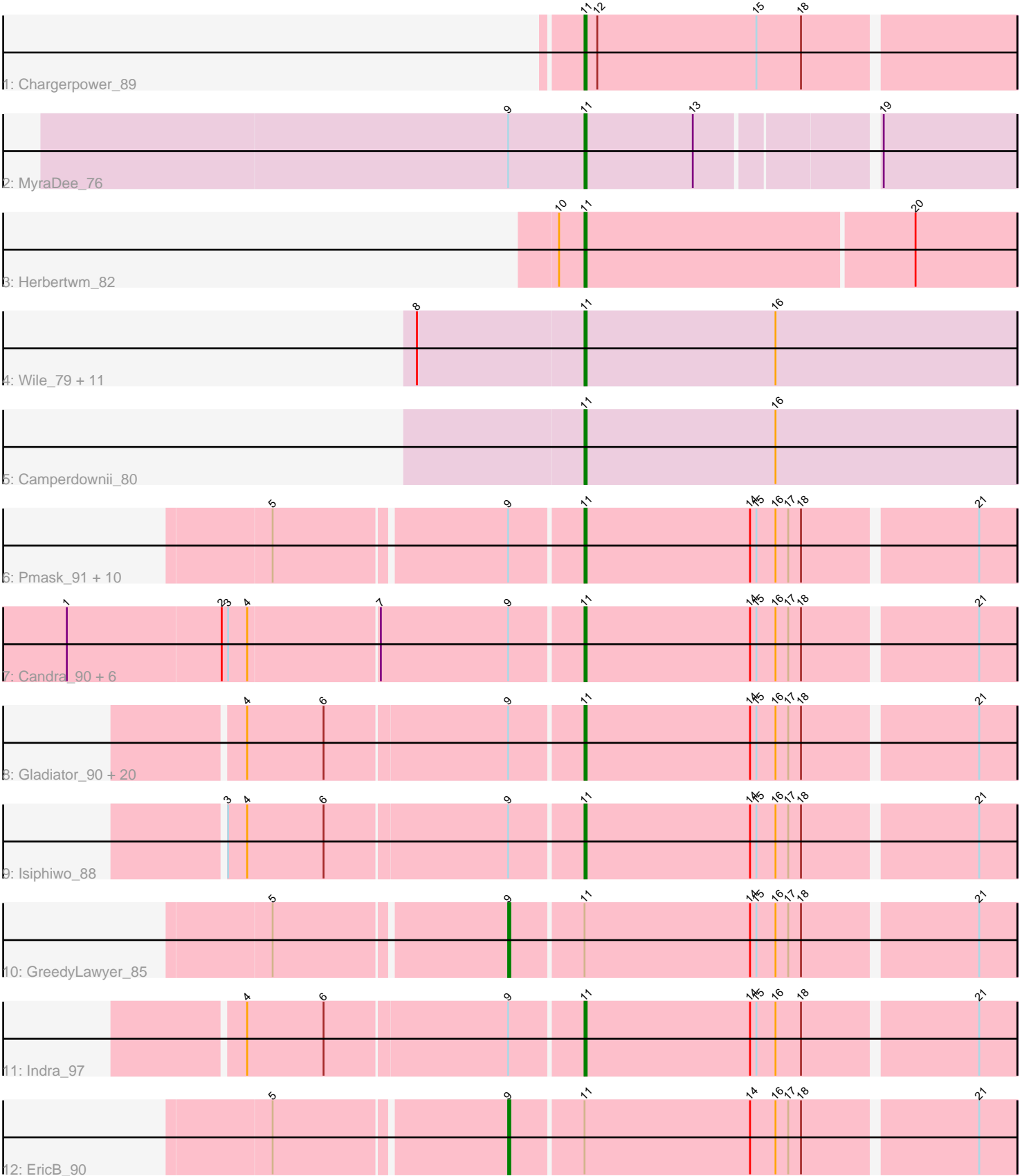


Pham 1659



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 1659 Report

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

Pham number 1659 has 59 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Chargerpower\_89
- Track 2 : MyraDee\_76
- Track 3 : Herbertwm\_82
- Track 4 : Wile\_79, Katalie136\_80, Perplexer\_80, Backyardigan\_78, Badger\_79, Bumblebee11\_79, Wizard007\_80, Cici\_80, Morpher26\_80, Druantia\_82, PetiteSangsue\_80, AbbysRanger\_80
- Track 5 : Camperdownii\_80
- Track 6 : Pmask\_91, Cookiedough\_92, Hoot\_87, Neeharika16\_91, Newrala\_91, JewelBug\_84, SuperAwesome\_92, Kipper29\_92, BABullseye\_85, Dorothea\_89, Jordennis\_90
- Track 7 : Candra\_90, McFly\_92, Chartreuse\_90, DaVinci\_90, Kazan\_93, SmellyB\_92, VohminGhazi\_92
- Track 8 : Gladiator\_90, Yokurt\_93, Jeffabunny\_82, Hexamo\_93, Hammer\_94, ToneTone\_91, Zulu\_95, Zaka\_94, Gruunaga\_94, Blue7\_95, CloudWang3\_94, Tucker\_94, Wiks\_93, Koko\_95, Garak\_95, SuperCallie99\_88, Lilbunny\_88, Rifter\_94, Artemis2UCLA\_93, Helmet\_95, Roksolana\_94
- Track 9 : Isiphiwo\_88
- Track 10 : GreedyLawyer\_85
- Track 11 : Indra\_97
- Track 12 : EricB\_90

### ***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 50 of the 52 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AbbysRanger\_80, Artemis2UCLA\_93, BABullseye\_85, Backyardigan\_78, Badger\_79, Blue7\_95, Bumblebee11\_79, Camperdownii\_80, Candra\_90, Chargerpower\_89, Chartreuse\_90, Cici\_80, CloudWang3\_94, Cookiedough\_92, DaVinci\_90, Dorothea\_89, Druantia\_82, Garak\_95, Gladiator\_90, Gruunaga\_94, Hammer\_94, Helmet\_95, Herbertwm\_82, Hexamo\_93, Hoot\_87, Indra\_97, Isiphiwo\_88, Jeffabunny\_82, JewelBug\_84, Jordennis\_90, Katalie136\_80, Kazan\_93, Kipper29\_92, Koko\_95, Lilbunny\_88, McFly\_92, Morpher26\_80, MyraDee\_76,

Neeharika16\_91, Newrala\_91, Perplexer\_80, PetiteSangsue\_80, Pmask\_91, Rifter\_94, Roksolana\_94, SmellyB\_92, SuperAwesome\_92, SuperCallie99\_88, ToneTone\_91, Tucker\_94, VohminGhazi\_92, Wiks\_93, Wile\_79, Wizard007\_80, Yokurt\_93, Zaka\_94, Zulu\_95,

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

- EricB\_90, GreedyLawyer\_85,

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

- 

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

Start 9:

- Found in 44 of 59 ( 74.6% ) of genes in pham
- Manual Annotations of this start: 2 of 52
- Called 4.5% of time when present
- Phage (with cluster) where this start called: EricB\_90 (A6), GreedyLawyer\_85 (A6),

Start 11:

- Found in 59 of 59 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 50 of 52
- Called 96.6% of time when present
- Phage (with cluster) where this start called: AbbysRanger\_80 (A4), Artemis2UCLA\_93 (A6), BABullseye\_85 (A6), Backyardigan\_78 (A4), Badger\_79 (A4), Blue7\_95 (A6), Bumblebee11\_79 (A4), Camperdownii\_80 (A4), Candra\_90 (A6), Chargerpower\_89 (A), Chartreuse\_90 (A6), Cici\_80 (A4), CloudWang3\_94 (A6), Cookiedough\_92 (A6), DaVinci\_90 (A6), Dorothea\_89 (A6), Druantia\_82 (A4), Garak\_95 (A6), Gladiator\_90 (A6), Gruunaga\_94 (A6), Hammer\_94 (A6), Helmet\_95 (A6), Herbertwm\_82 (A2), Hexamo\_93 (A6), Hoot\_87 (A6), Indra\_97 (A6), Isiphiwo\_88 (A6), Jeffabunny\_82 (A6), JewelBug\_84 (A6), Jordennis\_90 (A6), Katalie136\_80 (A4), Kazan\_93 (A6), Kipper29\_92 (A6), Koko\_95 (A6), Lilbunny\_88 (A6), McFly\_92 (A6), Morpher26\_80 (A4), MyraDee\_76 (A18), Neeharika16\_91 (A6), Newrala\_91 (A6), Perplexer\_80 (A4), PetiteSangsue\_80 (A4), Pmask\_91 (A6), Rifter\_94 (A6), Roksolana\_94 (A6), SmellyB\_92 (A6), SuperAwesome\_92 (A6), SuperCallie99\_88 (A6), ToneTone\_91 (A6), Tucker\_94 (A6), VohminGhazi\_92 (A6), Wiks\_93 (A6), Wile\_79 (A4), Wizard007\_80 (A4), Yokurt\_93 (A6), Zaka\_94 (A6), Zulu\_95 (A6),

### **Summary by clusters:**

There are 5 clusters represented in this pham: A, A18, A2, A4, A6,

Info for manual annotations of cluster A:

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

Info for manual annotations of cluster A18:

- Start number 11 was manually annotated 1 time for cluster A18.

Info for manual annotations of cluster A2:

- Start number 11 was manually annotated 1 time for cluster A2.

Info for manual annotations of cluster A4:

- Start number 11 was manually annotated 13 times for cluster A4.

Info for manual annotations of cluster A6:

- Start number 9 was manually annotated 2 times for cluster A6.
- Start number 11 was manually annotated 34 times for cluster A6.

### **Gene Information:**

Gene: AbbysRanger\_80 Start: 48252, Stop: 48049, Start Num: 11

Candidate Starts for AbbysRanger\_80:

(8, 48330), (Start: 11 @48252 has 50 MA's), (16, 48162),

Gene: Artemis2UCLA\_93 Start: 48504, Stop: 48307, Start Num: 11

Candidate Starts for Artemis2UCLA\_93:

(4, 48657), (6, 48621), (Start: 9 @48537 has 2 MA's), (Start: 11 @48504 has 50 MA's), (14, 48426), (15, 48423), (16, 48414), (17, 48408), (18, 48402), (21, 48324),

Gene: BABullseye\_85 Start: 46839, Stop: 46642, Start Num: 11

Candidate Starts for BABullseye\_85:

(5, 46977), (Start: 9 @46872 has 2 MA's), (Start: 11 @46839 has 50 MA's), (14, 46761), (15, 46758), (16, 46749), (17, 46743), (18, 46737), (21, 46659),

Gene: Backyardigan\_78 Start: 48268, Stop: 48065, Start Num: 11

Candidate Starts for Backyardigan\_78:

(8, 48346), (Start: 11 @48268 has 50 MA's), (16, 48178),

Gene: Badger\_79 Start: 48234, Stop: 48031, Start Num: 11

Candidate Starts for Badger\_79:

(8, 48312), (Start: 11 @48234 has 50 MA's), (16, 48144),

Gene: Blue7\_95 Start: 48738, Stop: 48541, Start Num: 11

Candidate Starts for Blue7\_95:

(4, 48891), (6, 48855), (Start: 9 @48771 has 2 MA's), (Start: 11 @48738 has 50 MA's), (14, 48660), (15, 48657), (16, 48648), (17, 48642), (18, 48636), (21, 48558),

Gene: Bumblebee11\_79 Start: 48234, Stop: 48031, Start Num: 11

Candidate Starts for Bumblebee11\_79:

(8, 48312), (Start: 11 @48234 has 50 MA's), (16, 48144),

Gene: Camperdownii\_80 Start: 47859, Stop: 47656, Start Num: 11

Candidate Starts for Camperdownii\_80:

(Start: 11 @47859 has 50 MA's), (16, 47769),

Gene: Candra\_90 Start: 48543, Stop: 48346, Start Num: 11

Candidate Starts for Candra\_90:

(1, 48780), (2, 48708), (3, 48705), (4, 48696), (7, 48636), (Start: 9 @48576 has 2 MA's), (Start: 11 @48543 has 50 MA's), (14, 48465), (15, 48462), (16, 48453), (17, 48447), (18, 48441), (21, 48363),

Gene: Chargerpower\_89 Start: 48218, Stop: 48021, Start Num: 11

Candidate Starts for Chargerpower\_89:

(Start: 11 @48218 has 50 MA's), (12, 48212), (15, 48137), (18, 48116),

Gene: Chartreuse\_90 Start: 47844, Stop: 47647, Start Num: 11

Candidate Starts for Chartreuse\_90:

(1, 48081), (2, 48009), (3, 48006), (4, 47997), (7, 47937), (Start: 9 @47877 has 2 MA's), (Start: 11 @47844 has 50 MA's), (14, 47766), (15, 47763), (16, 47754), (17, 47748), (18, 47742), (21, 47664),

Gene: Cici\_80 Start: 48247, Stop: 48044, Start Num: 11

Candidate Starts for Cici\_80:

(8, 48325), (Start: 11 @48247 has 50 MA's), (16, 48157),

Gene: CloudWang3\_94 Start: 49033, Stop: 48836, Start Num: 11

Candidate Starts for CloudWang3\_94:

(4, 49186), (6, 49150), (Start: 9 @49066 has 2 MA's), (Start: 11 @49033 has 50 MA's), (14, 48955), (15, 48952), (16, 48943), (17, 48937), (18, 48931), (21, 48853),

Gene: Cookiedough\_92 Start: 49158, Stop: 48961, Start Num: 11

Candidate Starts for Cookiedough\_92:

(5, 49296), (Start: 9 @49191 has 2 MA's), (Start: 11 @49158 has 50 MA's), (14, 49080), (15, 49077), (16, 49068), (17, 49062), (18, 49056), (21, 48978),

Gene: DaVinci\_90 Start: 47898, Stop: 47701, Start Num: 11

Candidate Starts for DaVinci\_90:

(1, 48135), (2, 48063), (3, 48060), (4, 48051), (7, 47991), (Start: 9 @47931 has 2 MA's), (Start: 11 @47898 has 50 MA's), (14, 47820), (15, 47817), (16, 47808), (17, 47802), (18, 47796), (21, 47718),

Gene: Dorothea\_89 Start: 49150, Stop: 48953, Start Num: 11

Candidate Starts for Dorothea\_89:

(5, 49288), (Start: 9 @49183 has 2 MA's), (Start: 11 @49150 has 50 MA's), (14, 49072), (15, 49069), (16, 49060), (17, 49054), (18, 49048), (21, 48970),

Gene: Druantia\_82 Start: 48443, Stop: 48240, Start Num: 11

Candidate Starts for Druantia\_82:

(8, 48521), (Start: 11 @48443 has 50 MA's), (16, 48353),

Gene: EricB\_90 Start: 48080, Stop: 47850, Start Num: 9

Candidate Starts for EricB\_90:

(5, 48185), (Start: 9 @48080 has 2 MA's), (Start: 11 @48047 has 50 MA's), (14, 47969), (16, 47957), (17, 47951), (18, 47945), (21, 47867),

Gene: Garak\_95 Start: 48978, Stop: 48781, Start Num: 11

Candidate Starts for Garak\_95:

(4, 49131), (6, 49095), (Start: 9 @49011 has 2 MA's), (Start: 11 @48978 has 50 MA's), (14, 48900), (15, 48897), (16, 48888), (17, 48882), (18, 48876), (21, 48798),

Gene: Gladiator\_90 Start: 48698, Stop: 48501, Start Num: 11

Candidate Starts for Gladiator\_90:

(4, 48851), (6, 48815), (Start: 9 @48731 has 2 MA's), (Start: 11 @48698 has 50 MA's), (14, 48620), (15, 48617), (16, 48608), (17, 48602), (18, 48596), (21, 48518),

Gene: GreedyLawyer\_85 Start: 48513, Stop: 48283, Start Num: 9

Candidate Starts for GreedyLawyer\_85:

(5, 48618), (Start: 9 @48513 has 2 MA's), (Start: 11 @48480 has 50 MA's), (14, 48402), (15, 48399), (16, 48390), (17, 48384), (18, 48378), (21, 48300),

Gene: Gruunaga\_94 Start: 48654, Stop: 48457, Start Num: 11

Candidate Starts for Gruunaga\_94:

(4, 48807), (6, 48771), (Start: 9 @48687 has 2 MA's), (Start: 11 @48654 has 50 MA's), (14, 48576), (15, 48573), (16, 48564), (17, 48558), (18, 48552), (21, 48474),

Gene: Hammer\_94 Start: 48351, Stop: 48154, Start Num: 11

Candidate Starts for Hammer\_94:

(4, 48504), (6, 48468), (Start: 9 @48384 has 2 MA's), (Start: 11 @48351 has 50 MA's), (14, 48273), (15, 48270), (16, 48261), (17, 48255), (18, 48249), (21, 48171),

Gene: Helmet\_95 Start: 48978, Stop: 48781, Start Num: 11

Candidate Starts for Helmet\_95:

(4, 49131), (6, 49095), (Start: 9 @49011 has 2 MA's), (Start: 11 @48978 has 50 MA's), (14, 48900), (15, 48897), (16, 48888), (17, 48882), (18, 48876), (21, 48798),

Gene: Herbertwm\_82 Start: 48011, Stop: 47811, Start Num: 11

Candidate Starts for Herbertwm\_82:

(10, 48023), (Start: 11 @48011 has 50 MA's), (20, 47858),

Gene: Hexamo\_93 Start: 48519, Stop: 48322, Start Num: 11

Candidate Starts for Hexamo\_93:

(4, 48672), (6, 48636), (Start: 9 @48552 has 2 MA's), (Start: 11 @48519 has 50 MA's), (14, 48441), (15, 48438), (16, 48429), (17, 48423), (18, 48417), (21, 48339),

Gene: Hoot\_87 Start: 46364, Stop: 46167, Start Num: 11

Candidate Starts for Hoot\_87:

(5, 46502), (Start: 9 @46397 has 2 MA's), (Start: 11 @46364 has 50 MA's), (14, 46286), (15, 46283), (16, 46274), (17, 46268), (18, 46262), (21, 46184),

Gene: Indra\_97 Start: 48979, Stop: 48782, Start Num: 11

Candidate Starts for Indra\_97:

(4, 49132), (6, 49096), (Start: 9 @49012 has 2 MA's), (Start: 11 @48979 has 50 MA's), (14, 48901), (15, 48898), (16, 48889), (18, 48877), (21, 48799),

Gene: Isiphiwo\_88 Start: 48069, Stop: 47872, Start Num: 11

Candidate Starts for Isiphiwo\_88:

(3, 48231), (4, 48222), (6, 48186), (Start: 9 @48102 has 2 MA's), (Start: 11 @48069 has 50 MA's), (14, 47991), (15, 47988), (16, 47979), (17, 47973), (18, 47967), (21, 47889),

Gene: Jeffabunny\_82 Start: 45122, Stop: 44925, Start Num: 11

Candidate Starts for Jeffabunny\_82:

(4, 45275), (6, 45239), (Start: 9 @45155 has 2 MA's), (Start: 11 @45122 has 50 MA's), (14, 45044), (15, 45041), (16, 45032), (17, 45026), (18, 45020), (21, 44942),

Gene: JewelBug\_84 Start: 46843, Stop: 46646, Start Num: 11

Candidate Starts for JewelBug\_84:

(5, 46981), (Start: 9 @46876 has 2 MA's), (Start: 11 @46843 has 50 MA's), (14, 46765), (15, 46762), (16, 46753), (17, 46747), (18, 46741), (21, 46663),

Gene: Jordennis\_90 Start: 48747, Stop: 48550, Start Num: 11

Candidate Starts for Jordennis\_90:

(5, 48885), (Start: 9 @48780 has 2 MA's), (Start: 11 @48747 has 50 MA's), (14, 48669), (15, 48666), (16, 48657), (17, 48651), (18, 48645), (21, 48567),

Gene: Katalie136\_80 Start: 48234, Stop: 48031, Start Num: 11

Candidate Starts for Katalie136\_80:

(8, 48312), (Start: 11 @48234 has 50 MA's), (16, 48144),

Gene: Kazan\_93 Start: 48513, Stop: 48316, Start Num: 11

Candidate Starts for Kazan\_93:

(1, 48750), (2, 48678), (3, 48675), (4, 48666), (7, 48606), (Start: 9 @48546 has 2 MA's), (Start: 11 @48513 has 50 MA's), (14, 48435), (15, 48432), (16, 48423), (17, 48417), (18, 48411), (21, 48333),

Gene: Kipper29\_92 Start: 48522, Stop: 48325, Start Num: 11

Candidate Starts for Kipper29\_92:

(5, 48660), (Start: 9 @48555 has 2 MA's), (Start: 11 @48522 has 50 MA's), (14, 48444), (15, 48441), (16, 48432), (17, 48426), (18, 48420), (21, 48342),

Gene: Koko\_95 Start: 49368, Stop: 49171, Start Num: 11

Candidate Starts for Koko\_95:

(4, 49521), (6, 49485), (Start: 9 @49401 has 2 MA's), (Start: 11 @49368 has 50 MA's), (14, 49290), (15, 49287), (16, 49278), (17, 49272), (18, 49266), (21, 49188),

Gene: Lilbunny\_88 Start: 47226, Stop: 47029, Start Num: 11

Candidate Starts for Lilbunny\_88:

(4, 47379), (6, 47343), (Start: 9 @47259 has 2 MA's), (Start: 11 @47226 has 50 MA's), (14, 47148), (15, 47145), (16, 47136), (17, 47130), (18, 47124), (21, 47046),

Gene: McFly\_92 Start: 48852, Stop: 48655, Start Num: 11

Candidate Starts for McFly\_92:

(1, 49089), (2, 49017), (3, 49014), (4, 49005), (7, 48945), (Start: 9 @48885 has 2 MA's), (Start: 11 @48852 has 50 MA's), (14, 48774), (15, 48771), (16, 48762), (17, 48756), (18, 48750), (21, 48672),

Gene: Morpher26\_80 Start: 48255, Stop: 48052, Start Num: 11

Candidate Starts for Morpher26\_80:

(8, 48333), (Start: 11 @48255 has 50 MA's), (16, 48165),

Gene: MyraDee\_76 Start: 43440, Stop: 43249, Start Num: 11

Candidate Starts for MyraDee\_76:

(Start: 9 @43476 has 2 MA's), (Start: 11 @43440 has 50 MA's), (13, 43389), (19, 43311),

Gene: Neeharika16\_91 Start: 48609, Stop: 48412, Start Num: 11

Candidate Starts for Neeharika16\_91:

(5, 48747), (Start: 9 @48642 has 2 MA's), (Start: 11 @48609 has 50 MA's), (14, 48531), (15, 48528), (16, 48519), (17, 48513), (18, 48507), (21, 48429),

Gene: Newrala\_91 Start: 48955, Stop: 48758, Start Num: 11

Candidate Starts for Newrala\_91:

(5, 49093), (Start: 9 @48988 has 2 MA's), (Start: 11 @48955 has 50 MA's), (14, 48877), (15, 48874), (16, 48865), (17, 48859), (18, 48853), (21, 48775),

Gene: Perplexer\_80 Start: 48235, Stop: 48032, Start Num: 11

Candidate Starts for Perplexer\_80:

(8, 48313), (Start: 11 @48235 has 50 MA's), (16, 48145),

Gene: PetiteSangsue\_80 Start: 48238, Stop: 48035, Start Num: 11

Candidate Starts for PetiteSangsue\_80:

(8, 48316), (Start: 11 @48238 has 50 MA's), (16, 48148),

Gene: Pmask\_91 Start: 49156, Stop: 48959, Start Num: 11

Candidate Starts for Pmask\_91:

(5, 49294), (Start: 9 @49189 has 2 MA's), (Start: 11 @49156 has 50 MA's), (14, 49078), (15, 49075), (16, 49066), (17, 49060), (18, 49054), (21, 48976),

Gene: Rifter\_94 Start: 48146, Stop: 47949, Start Num: 11

Candidate Starts for Rifter\_94:

(4, 48299), (6, 48263), (Start: 9 @48179 has 2 MA's), (Start: 11 @48146 has 50 MA's), (14, 48068), (15, 48065), (16, 48056), (17, 48050), (18, 48044), (21, 47966),

Gene: Roksolana\_94 Start: 48862, Stop: 48665, Start Num: 11

Candidate Starts for Roksolana\_94:

(4, 49015), (6, 48979), (Start: 9 @48895 has 2 MA's), (Start: 11 @48862 has 50 MA's), (14, 48784), (15, 48781), (16, 48772), (17, 48766), (18, 48760), (21, 48682),

Gene: SmellyB\_92 Start: 48507, Stop: 48310, Start Num: 11

Candidate Starts for SmellyB\_92:

(1, 48744), (2, 48672), (3, 48669), (4, 48660), (7, 48600), (Start: 9 @48540 has 2 MA's), (Start: 11 @48507 has 50 MA's), (14, 48429), (15, 48426), (16, 48417), (17, 48411), (18, 48405), (21, 48327),

Gene: SuperAwesome\_92 Start: 49195, Stop: 48998, Start Num: 11

Candidate Starts for SuperAwesome\_92:

(5, 49333), (Start: 9 @49228 has 2 MA's), (Start: 11 @49195 has 50 MA's), (14, 49117), (15, 49114), (16, 49105), (17, 49099), (18, 49093), (21, 49015),

Gene: SuperCallie99\_88 Start: 48570, Stop: 48373, Start Num: 11

Candidate Starts for SuperCallie99\_88:

(4, 48723), (6, 48687), (Start: 9 @48603 has 2 MA's), (Start: 11 @48570 has 50 MA's), (14, 48492), (15, 48489), (16, 48480), (17, 48474), (18, 48468), (21, 48390),

Gene: ToneTone\_91 Start: 48529, Stop: 48332, Start Num: 11

Candidate Starts for ToneTone\_91:

(4, 48682), (6, 48646), (Start: 9 @48562 has 2 MA's), (Start: 11 @48529 has 50 MA's), (14, 48451), (15, 48448), (16, 48439), (17, 48433), (18, 48427), (21, 48349),

Gene: Tucker\_94 Start: 48732, Stop: 48535, Start Num: 11

Candidate Starts for Tucker\_94:

(4, 48885), (6, 48849), (Start: 9 @48765 has 2 MA's), (Start: 11 @48732 has 50 MA's), (14, 48654), (15, 48651), (16, 48642), (17, 48636), (18, 48630), (21, 48552),

Gene: VohminGhazi\_92 Start: 48508, Stop: 48311, Start Num: 11

Candidate Starts for VohminGhazi\_92:

(1, 48745), (2, 48673), (3, 48670), (4, 48661), (7, 48601), (Start: 9 @48541 has 2 MA's), (Start: 11 @48508 has 50 MA's), (14, 48430), (15, 48427), (16, 48418), (17, 48412), (18, 48406), (21, 48328),

Gene: Wiks\_93 Start: 48609, Stop: 48412, Start Num: 11

Candidate Starts for Wiks\_93:



(4, 48762), (6, 48726), (Start: 9 @48642 has 2 MA's), (Start: 11 @48609 has 50 MA's), (14, 48531), (15, 48528), (16, 48519), (17, 48513), (18, 48507), (21, 48429),

Gene: Wile\_79 Start: 48264, Stop: 48061, Start Num: 11

Candidate Starts for Wile\_79:

(8, 48342), (Start: 11 @48264 has 50 MA's), (16, 48174),

Gene: Wizard007\_80 Start: 47990, Stop: 47787, Start Num: 11

Candidate Starts for Wizard007\_80:

(8, 48068), (Start: 11 @47990 has 50 MA's), (16, 47900),

Gene: Yokurt\_93 Start: 48609, Stop: 48412, Start Num: 11

Candidate Starts for Yokurt\_93:

(4, 48762), (6, 48726), (Start: 9 @48642 has 2 MA's), (Start: 11 @48609 has 50 MA's), (14, 48531), (15, 48528), (16, 48519), (17, 48513), (18, 48507), (21, 48429),

Gene: Zaka\_94 Start: 48609, Stop: 48412, Start Num: 11

Candidate Starts for Zaka\_94:

(4, 48762), (6, 48726), (Start: 9 @48642 has 2 MA's), (Start: 11 @48609 has 50 MA's), (14, 48531), (15, 48528), (16, 48519), (17, 48513), (18, 48507), (21, 48429),

Gene: Zulu\_95 Start: 48986, Stop: 48789, Start Num: 11

Candidate Starts for Zulu\_95:

(4, 49139), (6, 49103), (Start: 9 @49019 has 2 MA's), (Start: 11 @48986 has 50 MA's), (14, 48908), (15, 48905), (16, 48896), (17, 48890), (18, 48884), (21, 48806),