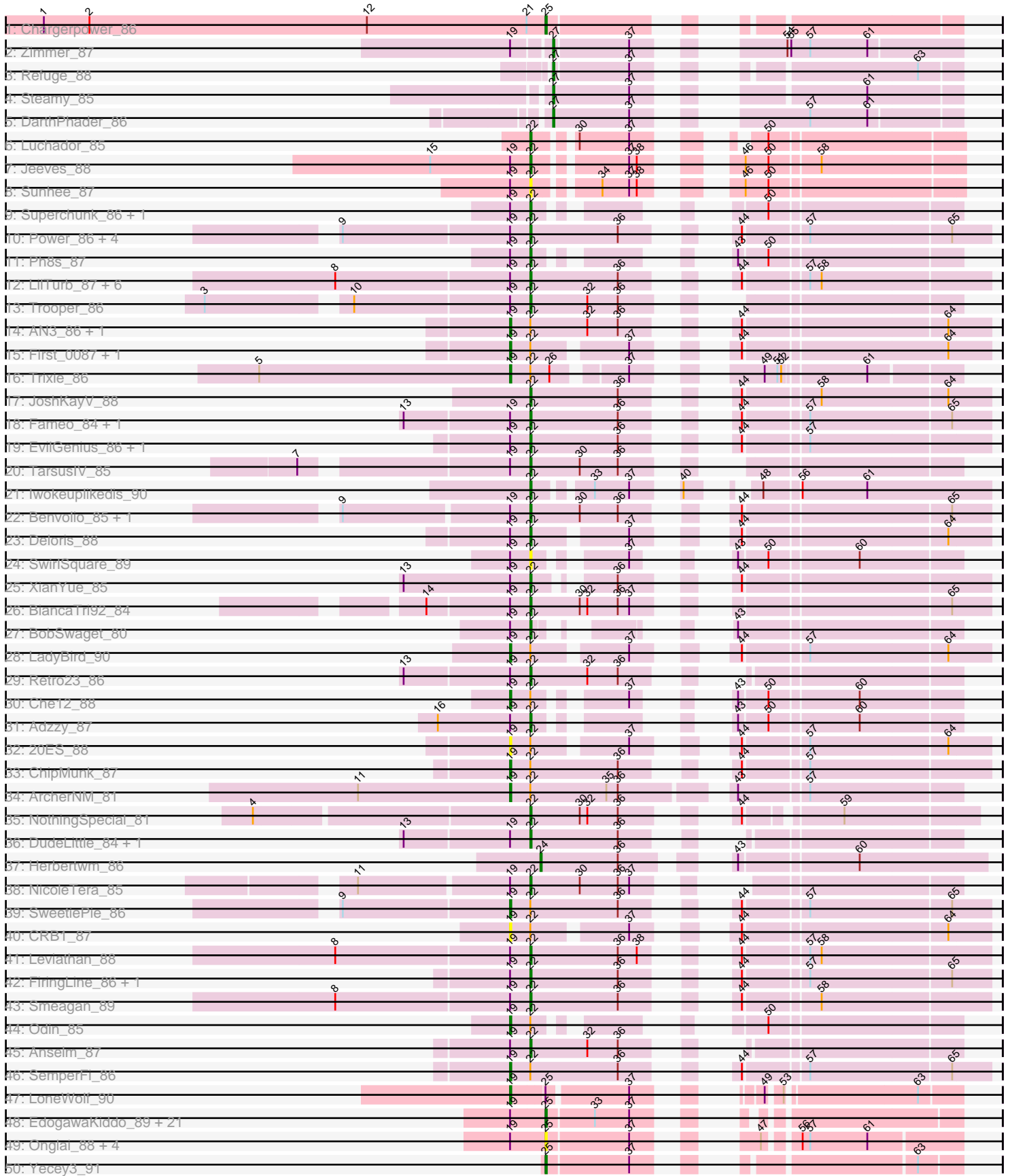
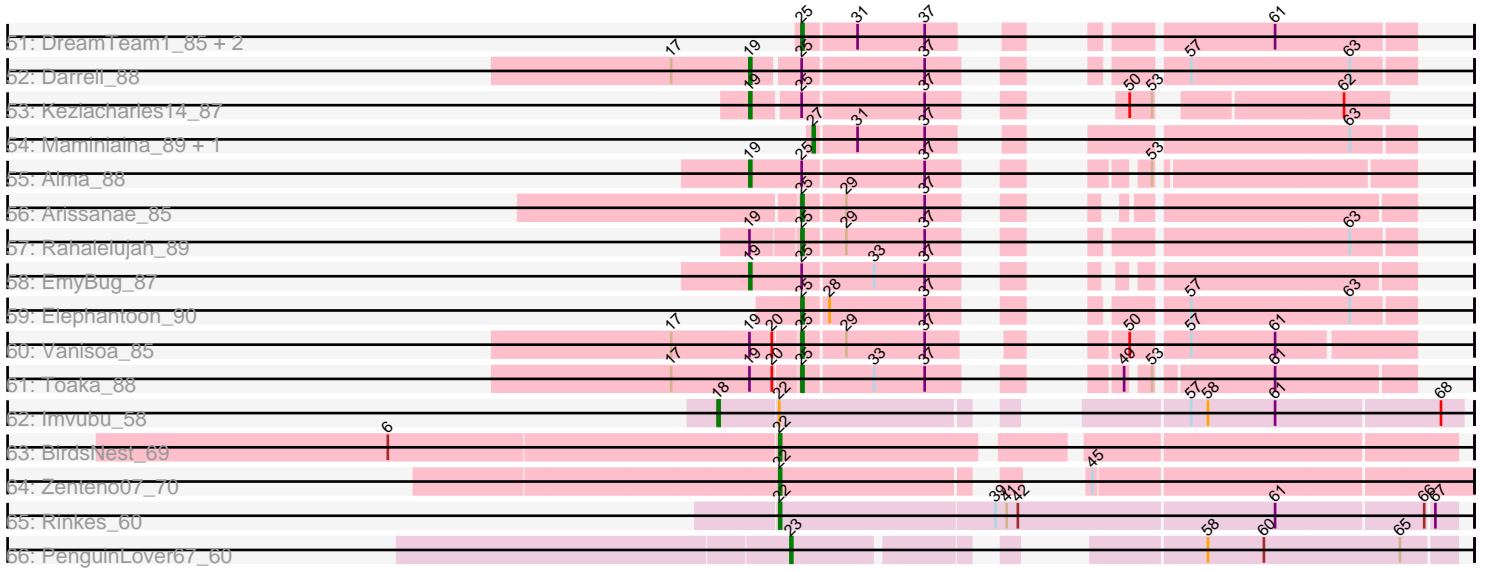


Pham 202800



Pham 202800



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 202800 Report

This analysis was run 01/18/25 on database version 583.

Pham number 202800 has 112 members, 14 are drafts.

Phages represented in each track:

- Track 1 : Chargerpower\_86
- Track 2 : Zimmer\_87
- Track 3 : Refuge\_88
- Track 4 : Steamy\_85
- Track 5 : DarthPhader\_86
- Track 6 : Luchador\_85
- Track 7 : Jeeves\_88
- Track 8 : Sunhee\_87
- Track 9 : Superchunk\_86, Caraxes\_87
- Track 10 : Power\_86, QueenB2\_83, SnapTap\_86, Georgie2\_88, Crucio\_86
- Track 11 : Ph8s\_87
- Track 12 : LilTurb\_87, Jerm\_88, Whabigail7\_85, Turbido\_87, Agape74\_88, Dignity\_88, AbbyPaige\_88
- Track 13 : Trooper\_86
- Track 14 : AN3\_86, VA6\_86
- Track 15 : First\_0087, BengiVuitton\_88
- Track 16 : Trixie\_86
- Track 17 : JoshKayV\_88
- Track 18 : Fameo\_84, Heffalump\_83
- Track 19 : EvilGenius\_86, KingCyrus\_85
- Track 20 : TarsusIV\_85
- Track 21 : Iwokeuplikedis\_90
- Track 22 : Benvolio\_85, Echild\_89
- Track 23 : Deloris\_88
- Track 24 : SwirlSquare\_89
- Track 25 : XianYue\_85
- Track 26 : BiancaTri92\_84
- Track 27 : BobSwaget\_80
- Track 28 : LadyBird\_90
- Track 29 : Retro23\_86
- Track 30 : Che12\_88
- Track 31 : Adzzy\_87
- Track 32 : 20ES\_88
- Track 33 : ChipMunk\_87
- Track 34 : ArcherNM\_81
- Track 35 : NothingSpecial\_81
- Track 36 : DudeLittle\_84, Dalmatian\_86

- Track 37 : Herbertwm\_86
- Track 38 : NicoleTera\_85
- Track 39 : SweetiePie\_86
- Track 40 : CRB1\_87
- Track 41 : Leviathan\_88
- Track 42 : FiringLine\_86, QueenBeesly\_86
- Track 43 : Smeagan\_89
- Track 44 : Odin\_85
- Track 45 : Anselm\_87
- Track 46 : SemperFi\_86
- Track 47 : LoneWolf\_90
- Track 48 : EdogawaKiddo\_89, Scherzo\_88, HortumSL17\_91, Phonnegut\_90, Qobbit\_88, Aliter\_83, Tubs\_90, Phaeder\_90, Sachima\_86, Conquerage\_88, Catalina\_92, Fayely\_88, Pioneer\_90, Eidsmoe\_88, Beemo\_90, Myxus\_90, ExplosioNervosa\_88, Priya\_88, Ugenie5\_77, Lilleskat\_87, PackMan\_85, Spouty\_88
- Track 49 : Onglai\_88, Jiawan\_88, Halex\_89, Hanray\_88, RyeScarlet\_91
- Track 50 : Yecey3\_91
- Track 51 : DreamTeam1\_85, SheaKeira\_85, Charm\_85
- Track 52 : Darrell\_88
- Track 53 : Keziacharles14\_87
- Track 54 : Maminiaina\_89, BogosyJay\_89
- Track 55 : Alma\_88
- Track 56 : Arissanae\_85
- Track 57 : Rahalelujah\_89
- Track 58 : EmyBug\_87
- Track 59 : Elephantoon\_90
- Track 60 : Vanisoa\_85
- Track 61 : Toaka\_88
- Track 62 : Imvubu\_58
- Track 63 : BirdsNest\_69
- Track 64 : Zenteno07\_70
- Track 65 : Rinkes\_60
- Track 66 : PenguinLover67\_60

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

The start number called the most often in the published annotations is 22, it was called in 44 of the 98 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AbbyPaige\_88, Adzzy\_87, Agape74\_88, Anselm\_87, Benvolio\_85, BiancaTri92\_84, BirdsNest\_69, BobSwaget\_80, Caraxes\_87, Crucio\_86, Dalmatian\_86, Deloris\_88, Dignity\_88, DudeLittle\_84, Echild\_89, EvilGenius\_86, Fameo\_84, FiringLine\_86, Georgie2\_88, Heffalump\_83, Iwokeuplikedis\_90, Jeeves\_88, Jerm\_88, JoshKayV\_88, KingCyrus\_85, Leviathan\_88, LilTurb\_87, Luchador\_85, NicoleTera\_85, NothingSpecial\_81, Ph8s\_87, Power\_86, QueenB2\_83, QueenBeesly\_86, Retro23\_86, Rinkes\_60, Smeagan\_89, SnapTap\_86, Sunhee\_87, Superchunk\_86, SwirlSquare\_89, TarsusIV\_85, Trooper\_86, Turbido\_87, Whabigail7\_85, XianYue\_85, Zenteno07\_70,

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

- 20ES\_88, AN3\_86, ArcherNM\_81, BengiVuitton\_88, CRB1\_87, Che12\_88, ChipMunk\_87, First\_0087, Imvubu\_58, LadyBird\_90, Odin\_85, SemperFi\_86, SweetiePie\_86, Trixie\_86, VA6\_86,

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

- Aliter\_83, Alma\_88, Arissanae\_85, Beemo\_90, BogosyJay\_89, Catalina\_92, Chargerpower\_86, Charm\_85, Conquerage\_88, Darrell\_88, DarthPhader\_86, DreamTeam1\_85, EdogawaKiddo\_89, Eidsmoe\_88, Elephantoon\_90, EmyBug\_87, ExplosioNervosa\_88, Fayely\_88, Hanray\_88, Herbertwm\_86, Holecx\_89, HortumSL17\_91, Jiawan\_88, Keziacharles14\_87, Lilleskat\_87, LoneWolf\_90, Maminiaina\_89, Myxus\_90, Onglai\_88, PackMan\_85, PenguinLove67\_60, Phaeder\_90, Phonnegut\_90, Pioneer\_90, Priya\_88, Qobbit\_88, Rahalelujah\_89, Refuge\_88, RyeScarlet\_91, Sachima\_86, Scherzo\_88, SheaKeira\_85, Spouty\_88, Steamy\_85, Toaka\_88, Tubs\_90, Ugenie5\_77, Vanisoa\_85, Yecey3\_91, Zimmer\_87,

### Summary by start number:

Start 18:

- Found in 1 of 112 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Imvubu\_58 (B10),

Start 19:

- Found in 90 of 112 ( 80.4% ) of genes in pham
- Manual Annotations of this start: 16 of 98
- Called 21.1% of time when present
- Phage (with cluster) where this start called: 20ES\_88 (A2), AN3\_86 (A2), Alma\_88 (A9), ArcherNM\_81 (A2), BengiVuitton\_88 (A2), CRB1\_87 (A2), Che12\_88 (A2), ChipMunk\_87 (A2), Darrell\_88 (A9), EmyBug\_87 (A9), First\_0087 (A2), Keziacharles14\_87 (A9), LadyBird\_90 (A2), LoneWolf\_90 (A9), Odin\_85 (A2), SemperFi\_86 (A2), SweetiePie\_86 (A2), Trixie\_86 (A2), VA6\_86 (A2),

Start 22:

- Found in 62 of 112 ( 55.4% ) of genes in pham
- Manual Annotations of this start: 44 of 98
- Called 75.8% of time when present
- Phage (with cluster) where this start called: AbbyPaige\_88 (A2), Adzzy\_87 (A2), Agape74\_88 (A2), Anselm\_87 (A2), Benvolio\_85 (A2), BiancaTri92\_84 (A2), BirdsNest\_69 (B13), BobSwaget\_80 (A2), Caraxes\_87 (A2), Crucio\_86 (A2), Dalmatian\_86 (A2), Deloris\_88 (A2), Dignity\_88 (A2), DudeLittle\_84 (A2), Echid\_89 (A2), EvilGenius\_86 (A2), Fameo\_84 (A2), FiringLine\_86 (A2), Georgie2\_88 (A2), Heffalump\_83 (A2), Iwokeuplikedis\_90 (A2), Jeeves\_88 (A14), Jerm\_88 (A2), JoshKayV\_88 (A2), KingCyrus\_85 (A2), Leviathan\_88 (A2), LilTurb\_87 (A2), Luchador\_85 (A14), NicoleTera\_85 (A2), NothingSpecial\_81 (A2), Ph8s\_87 (A2), Power\_86 (A2), QueenB2\_83 (A2), QueenBeesly\_86 (A2), Retro23\_86 (A2), Rinkes\_60 (B9), Smeagan\_89 (A2), SnapTap\_86 (A2), Sunhee\_87 (A14), Superchunk\_86 (A2), SwirlSquare\_89 (A2), TarsusIV\_85 (A2), Trooper\_86 (A2), Turbido\_87 (A2), Whabigail7\_85 (A2), XianYue\_85 (A2), Zenteno07\_70 (B13),

Start 23:

- Found in 1 of 112 ( 0.9% ) of genes in pham

- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: PenguinLover67\_60 (B9),

Start 24:

- Found in 1 of 112 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Herbertwm\_86 (A2),

Start 25:

- Found in 42 of 112 ( 37.5% ) of genes in pham
- Manual Annotations of this start: 29 of 98
- Called 88.1% of time when present
- Phage (with cluster) where this start called: Aliter\_83 (A9), Arissanae\_85 (A9), Beemo\_90 (A9), Catalina\_92 (A9), Chargerpower\_86 (A), Charm\_85 (A9), Conquerage\_88 (A9), DreamTeam1\_85 (A9), EdogawaKiddo\_89 (A9), Eidsmoe\_88 (A9), Elephantoon\_90 (A9), ExplosioNervosa\_88 (A9), Fayely\_88 (A9), Hanray\_88 (A9), Holecx\_89 (A9), HortumSL17\_91 (A9), Jiawan\_88 (A9), Lilleskat\_87 (A9), Myxus\_90 (A9), Onglai\_88 (A9), PackMan\_85 (A9), Phaeder\_90 (A9), Phonnegut\_90 (A9), Pioneer\_90 (A9), Priya\_88 (A9), Qobbit\_88 (A9), Rahalelujah\_89 (A9), RyeScarlet\_91 (A9), Sachima\_86 (A9), Scherzo\_88 (A9), SheaKeira\_85 (A9), Spouty\_88 (A9), Toaka\_88 (A9), Tubs\_90 (A9), Ugenie5\_77 (A9), Vanisoa\_85 (A9), Yecey3\_91 (A9),

Start 27:

- Found in 6 of 112 ( 5.4% ) of genes in pham
- Manual Annotations of this start: 6 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BogosyJay\_89 (A9), DARTHPhader\_86 (A12), Maminiaina\_89 (A9), Refuge\_88 (A12), Steamy\_85 (A12), Zimmer\_87 (A12),

### Summary by clusters:

There are 8 clusters represented in this pham: A, A14, A12, A2, B13, B10, A9, B9,

Info for manual annotations of cluster A:

- Start number 25 was manually annotated 1 time for cluster A.

Info for manual annotations of cluster A12:

- Start number 27 was manually annotated 4 times for cluster A12.

Info for manual annotations of cluster A14:

- Start number 22 was manually annotated 2 times for cluster A14.

Info for manual annotations of cluster A2:

- Start number 19 was manually annotated 11 times for cluster A2.
- Start number 22 was manually annotated 39 times for cluster A2.
- Start number 24 was manually annotated 1 time for cluster A2.

Info for manual annotations of cluster A9:

- Start number 19 was manually annotated 5 times for cluster A9.
- Start number 25 was manually annotated 28 times for cluster A9.

- Start number 27 was manually annotated 2 times for cluster A9.

Info for manual annotations of cluster B10:

- Start number 18 was manually annotated 1 time for cluster B10.

Info for manual annotations of cluster B13:

- Start number 22 was manually annotated 2 times for cluster B13.

Info for manual annotations of cluster B9:

- Start number 22 was manually annotated 1 time for cluster B9.
- Start number 23 was manually annotated 1 time for cluster B9.

### **Gene Information:**

Gene: 20ES\_88 Start: 48926, Stop: 48621, Start Num: 19

Candidate Starts for 20ES\_88:

(Start: 19 @48926 has 16 MA's), (Start: 22 @48911 has 44 MA's), (37, 48845), (44, 48803), (57, 48758), (64, 48653),

Gene: AN3\_86 Start: 47190, Stop: 46879, Start Num: 19

Candidate Starts for AN3\_86:

(Start: 19 @47190 has 16 MA's), (Start: 22 @47175 has 44 MA's), (32, 47130), (36, 47106), (44, 47061), (64, 46911),

Gene: AbbyPaige\_88 Start: 49174, Stop: 48878, Start Num: 22

Candidate Starts for AbbyPaige\_88:

(8, 49324), (Start: 19 @49189 has 16 MA's), (Start: 22 @49174 has 44 MA's), (36, 49105), (44, 49060), (57, 49015), (58, 49006),

Gene: Adzzy\_87 Start: 47625, Stop: 47383, Start Num: 22

Candidate Starts for Adzzy\_87:

(16, 47697), (Start: 19 @47640 has 16 MA's), (Start: 22 @47625 has 44 MA's), (43, 47547), (50, 47526), (60, 47460),

Gene: Agape74\_88 Start: 49150, Stop: 48854, Start Num: 22

Candidate Starts for Agape74\_88:

(8, 49300), (Start: 19 @49165 has 16 MA's), (Start: 22 @49150 has 44 MA's), (36, 49081), (44, 49036), (57, 48991), (58, 48982),

Gene: Aliter\_83 Start: 46251, Stop: 46006, Start Num: 25

Candidate Starts for Aliter\_83:

(Start: 19 @46278 has 16 MA's), (Start: 25 @46251 has 29 MA's), (33, 46215), (37, 46188),

Gene: Alma\_88 Start: 49120, Stop: 48845, Start Num: 19

Candidate Starts for Alma\_88:

(Start: 19 @49120 has 16 MA's), (Start: 25 @49093 has 29 MA's), (37, 49030), (53, 48973),

Gene: Anselm\_87 Start: 49020, Stop: 48757, Start Num: 22

Candidate Starts for Anselm\_87:

(Start: 19 @49035 has 16 MA's), (Start: 22 @49020 has 44 MA's), (32, 48975), (36, 48951),

Gene: ArcherNM\_81 Start: 48470, Stop: 48147, Start Num: 19

Candidate Starts for ArcherNM\_81:

(11, 48590), (Start: 19 @48470 has 16 MA's), (Start: 22 @48455 has 44 MA's), (35, 48395), (36, 48386), (43, 48314), (57, 48263),

Gene: Arissanae\_85 Start: 48962, Stop: 48717, Start Num: 25

Candidate Starts for Arissanae\_85:

(Start: 25 @48962 has 29 MA's), (29, 48941), (37, 48899),

Gene: Beemo\_90 Start: 49084, Stop: 48839, Start Num: 25

Candidate Starts for Beemo\_90:

(Start: 19 @49111 has 16 MA's), (Start: 25 @49084 has 29 MA's), (33, 49048), (37, 49021),

Gene: BengiVuitton\_88 Start: 49031, Stop: 48726, Start Num: 19

Candidate Starts for BengiVuitton\_88:

(Start: 19 @49031 has 16 MA's), (Start: 22 @49016 has 44 MA's), (37, 48950), (44, 48908), (64, 48758),

Gene: Benvolio\_85 Start: 48794, Stop: 48495, Start Num: 22

Candidate Starts for Benvolio\_85:

(9, 48935), (Start: 19 @48809 has 16 MA's), (Start: 22 @48794 has 44 MA's), (30, 48755), (36, 48725), (44, 48677), (65, 48524),

Gene: BiancaTri92\_84 Start: 48631, Stop: 48332, Start Num: 22

Candidate Starts for BiancaTri92\_84:

(14, 48709), (Start: 19 @48646 has 16 MA's), (Start: 22 @48631 has 44 MA's), (30, 48592), (32, 48586), (36, 48562), (37, 48553), (65, 48361),

Gene: BirdsNest\_69 Start: 56932, Stop: 56600, Start Num: 22

Candidate Starts for BirdsNest\_69:

(6, 57136), (Start: 22 @56932 has 44 MA's),

Gene: BobSwaget\_80 Start: 46489, Stop: 46259, Start Num: 22

Candidate Starts for BobSwaget\_80:

(Start: 19 @46504 has 16 MA's), (Start: 22 @46489 has 44 MA's), (43, 46426),

Gene: BogosyJay\_89 Start: 49135, Stop: 48884, Start Num: 27

Candidate Starts for BogosyJay\_89:

(Start: 27 @49135 has 6 MA's), (31, 49114), (37, 49078), (63, 48916),

Gene: CRB1\_87 Start: 49179, Stop: 48874, Start Num: 19

Candidate Starts for CRB1\_87:

(Start: 19 @49179 has 16 MA's), (Start: 22 @49164 has 44 MA's), (37, 49098), (44, 49056), (64, 48906),

Gene: Caraxes\_87 Start: 47583, Stop: 47341, Start Num: 22

Candidate Starts for Caraxes\_87:

(Start: 19 @47598 has 16 MA's), (Start: 22 @47583 has 44 MA's), (50, 47484),

Gene: Catalina\_92 Start: 49198, Stop: 48953, Start Num: 25

Candidate Starts for Catalina\_92:

(Start: 19 @49225 has 16 MA's), (Start: 25 @49198 has 29 MA's), (33, 49162), (37, 49135),



Gene: Chargerpower\_86 Start: 47145, Stop: 46894, Start Num: 25  
Candidate Starts for Chargerpower\_86:  
(1, 47541), (2, 47505), (12, 47286), (21, 47160), (Start: 25 @47145 has 29 MA's),

Gene: Charm\_85 Start: 48488, Stop: 48237, Start Num: 25  
Candidate Starts for Charm\_85:  
(Start: 25 @48488 has 29 MA's), (31, 48461), (37, 48425), (61, 48308),

Gene: Che12\_88 Start: 47719, Stop: 47462, Start Num: 19  
Candidate Starts for Che12\_88:  
(Start: 19 @47719 has 16 MA's), (Start: 22 @47704 has 44 MA's), (37, 47650), (43, 47626), (50, 47605), (60, 47539),

Gene: ChipMunk\_87 Start: 50092, Stop: 49781, Start Num: 19  
Candidate Starts for ChipMunk\_87:  
(Start: 19 @50092 has 16 MA's), (Start: 22 @50077 has 44 MA's), (36, 50008), (44, 49963), (57, 49918),

Gene: Conquerage\_88 Start: 48859, Stop: 48614, Start Num: 25  
Candidate Starts for Conquerage\_88:  
(Start: 19 @48886 has 16 MA's), (Start: 25 @48859 has 29 MA's), (33, 48823), (37, 48796),

Gene: Crucio\_86 Start: 49024, Stop: 48728, Start Num: 22  
Candidate Starts for Crucio\_86:  
(9, 49168), (Start: 19 @49039 has 16 MA's), (Start: 22 @49024 has 44 MA's), (36, 48955), (44, 48910), (57, 48865), (65, 48757),

Gene: Dalmatian\_86 Start: 48805, Stop: 48542, Start Num: 22  
Candidate Starts for Dalmatian\_86:  
(13, 48901), (Start: 19 @48820 has 16 MA's), (Start: 22 @48805 has 44 MA's), (36, 48736),

Gene: Darrell\_88 Start: 48317, Stop: 48039, Start Num: 19  
Candidate Starts for Darrell\_88:  
(17, 48359), (Start: 19 @48317 has 16 MA's), (Start: 25 @48293 has 29 MA's), (37, 48230), (57, 48155), (63, 48071),

Gene: DarthPhader\_86 Start: 50000, Stop: 49740, Start Num: 27  
Candidate Starts for DarthPhader\_86:  
(Start: 27 @50000 has 6 MA's), (37, 49940), (57, 49853), (61, 49808),

Gene: Deloris\_88 Start: 48709, Stop: 48419, Start Num: 22  
Candidate Starts for Deloris\_88:  
(Start: 19 @48724 has 16 MA's), (Start: 22 @48709 has 44 MA's), (37, 48643), (44, 48601), (64, 48451),

Gene: Dignity\_88 Start: 49257, Stop: 48961, Start Num: 22  
Candidate Starts for Dignity\_88:  
(8, 49407), (Start: 19 @49272 has 16 MA's), (Start: 22 @49257 has 44 MA's), (36, 49188), (44, 49143), (57, 49098), (58, 49089),

Gene: DreamTeam1\_85 Start: 48336, Stop: 48085, Start Num: 25  
Candidate Starts for DreamTeam1\_85:  
(Start: 25 @48336 has 29 MA's), (31, 48309), (37, 48273), (61, 48156),

Gene: DudeLittle\_84 Start: 48523, Stop: 48260, Start Num: 22

Candidate Starts for DudeLittle\_84:

(13, 48619), (Start: 19 @48538 has 16 MA's), (Start: 22 @48523 has 44 MA's), (36, 48454),

Gene: Echild\_89 Start: 48818, Stop: 48519, Start Num: 22

Candidate Starts for Echild\_89:

(9, 48959), (Start: 19 @48833 has 16 MA's), (Start: 22 @48818 has 44 MA's), (30, 48779), (36, 48749), (44, 48701), (65, 48548),

Gene: EdogawaKiddo\_89 Start: 49161, Stop: 48916, Start Num: 25

Candidate Starts for EdogawaKiddo\_89:

(Start: 19 @49188 has 16 MA's), (Start: 25 @49161 has 29 MA's), (33, 49125), (37, 49098),

Gene: Eidsmoe\_88 Start: 48852, Stop: 48607, Start Num: 25

Candidate Starts for Eidsmoe\_88:

(Start: 19 @48879 has 16 MA's), (Start: 25 @48852 has 29 MA's), (33, 48816), (37, 48789),

Gene: Elephantoon\_90 Start: 49016, Stop: 48762, Start Num: 25

Candidate Starts for Elephantoon\_90:

(Start: 25 @49016 has 29 MA's), (28, 49004), (37, 48953), (57, 48878), (63, 48794),

Gene: EmyBug\_87 Start: 48881, Stop: 48609, Start Num: 19

Candidate Starts for EmyBug\_87:

(Start: 19 @48881 has 16 MA's), (Start: 25 @48854 has 29 MA's), (33, 48818), (37, 48791),

Gene: EvilGenius\_86 Start: 50078, Stop: 49782, Start Num: 22

Candidate Starts for EvilGenius\_86:

(Start: 19 @50093 has 16 MA's), (Start: 22 @50078 has 44 MA's), (36, 50009), (44, 49964), (57, 49919),

Gene: ExplosioNervosa\_88 Start: 48920, Stop: 48675, Start Num: 25

Candidate Starts for ExplosioNervosa\_88:

(Start: 19 @48947 has 16 MA's), (Start: 25 @48920 has 29 MA's), (33, 48884), (37, 48857),

Gene: Fameo\_84 Start: 48576, Stop: 48280, Start Num: 22

Candidate Starts for Fameo\_84:

(13, 48672), (Start: 19 @48591 has 16 MA's), (Start: 22 @48576 has 44 MA's), (36, 48507), (44, 48462), (57, 48417), (65, 48309),

Gene: Fayely\_88 Start: 48828, Stop: 48583, Start Num: 25

Candidate Starts for Fayely\_88:

(Start: 19 @48855 has 16 MA's), (Start: 25 @48828 has 29 MA's), (33, 48792), (37, 48765),

Gene: FiringLine\_86 Start: 48964, Stop: 48668, Start Num: 22

Candidate Starts for FiringLine\_86:

(Start: 19 @48979 has 16 MA's), (Start: 22 @48964 has 44 MA's), (36, 48895), (44, 48850), (57, 48805), (65, 48697),

Gene: First\_0087 Start: 48829, Stop: 48521, Start Num: 19

Candidate Starts for First\_0087:

(Start: 19 @48829 has 16 MA's), (Start: 22 @48814 has 44 MA's), (37, 48748), (44, 48706), (64, 48553),

Gene: Georgie2\_88 Start: 49168, Stop: 48872, Start Num: 22

Candidate Starts for Georgie2\_88:

(9, 49312), (Start: 19 @49183 has 16 MA's), (Start: 22 @49168 has 44 MA's), (36, 49099), (44, 49054), (57, 49009), (65, 48901),

Gene: Hanray\_88 Start: 49149, Stop: 48895, Start Num: 25

Candidate Starts for Hanray\_88:

(Start: 19 @49176 has 16 MA's), (Start: 25 @49149 has 29 MA's), (37, 49086), (47, 49038), (56, 49017), (57, 49011), (61, 48966),

Gene: Heffalump\_83 Start: 49044, Stop: 48748, Start Num: 22

Candidate Starts for Heffalump\_83:

(13, 49140), (Start: 19 @49059 has 16 MA's), (Start: 22 @49044 has 44 MA's), (36, 48975), (44, 48930), (57, 48885), (65, 48777),

Gene: Herbertwm\_86 Start: 49248, Stop: 48952, Start Num: 24

Candidate Starts for Herbertwm\_86:

(Start: 24 @49248 has 1 MA's), (36, 49188), (43, 49137), (60, 49050),

Gene: Holec\_89 Start: 49162, Stop: 48908, Start Num: 25

Candidate Starts for Holec\_89:

(Start: 19 @49189 has 16 MA's), (Start: 25 @49162 has 29 MA's), (37, 49099), (47, 49051), (56, 49030), (57, 49024), (61, 48979),

Gene: HortumSL17\_91 Start: 49196, Stop: 48951, Start Num: 25

Candidate Starts for HortumSL17\_91:

(Start: 19 @49223 has 16 MA's), (Start: 25 @49196 has 29 MA's), (33, 49160), (37, 49133),

Gene: Imvubu\_58 Start: 54802, Stop: 54467, Start Num: 18

Candidate Starts for Imvubu\_58:

(Start: 18 @54802 has 1 MA's), (Start: 22 @54772 has 44 MA's), (57, 54607), (58, 54598), (61, 54562), (68, 54478),

Gene: Iwokeuplikedis\_90 Start: 49128, Stop: 48847, Start Num: 22

Candidate Starts for Iwokeuplikedis\_90:

(Start: 22 @49128 has 44 MA's), (33, 49092), (37, 49065), (40, 49044), (48, 49017), (56, 48993), (61, 48942),

Gene: Jeeves\_88 Start: 47130, Stop: 46858, Start Num: 22

Candidate Starts for Jeeves\_88:

(15, 47208), (Start: 19 @47145 has 16 MA's), (Start: 22 @47130 has 44 MA's), (37, 47067), (38, 47061), (46, 47019), (50, 47001), (58, 46965),

Gene: Jerm\_88 Start: 49225, Stop: 48929, Start Num: 22

Candidate Starts for Jerm\_88:

(8, 49375), (Start: 19 @49240 has 16 MA's), (Start: 22 @49225 has 44 MA's), (36, 49156), (44, 49111), (57, 49066), (58, 49057),

Gene: Jiawan\_88 Start: 49179, Stop: 48925, Start Num: 25

Candidate Starts for Jiawan\_88:

(Start: 19 @49206 has 16 MA's), (Start: 25 @49179 has 29 MA's), (37, 49116), (47, 49068), (56, 49047), (57, 49041), (61, 48996),

Gene: JoshKayV\_88 Start: 49393, Stop: 49097, Start Num: 22

Candidate Starts for JoshKayV\_88:

(Start: 22 @49393 has 44 MA's), (36, 49324), (44, 49279), (58, 49225), (64, 49129),

Gene: Keziacharles14\_87 Start: 49677, Stop: 49432, Start Num: 19

Candidate Starts for Keziacharles14\_87:

(Start: 19 @49677 has 16 MA's), (Start: 25 @49653 has 29 MA's), (37, 49590), (50, 49551), (53, 49539), (62, 49455),

Gene: KingCyrus\_85 Start: 50091, Stop: 49795, Start Num: 22

Candidate Starts for KingCyrus\_85:

(Start: 19 @50106 has 16 MA's), (Start: 22 @50091 has 44 MA's), (36, 50022), (44, 49977), (57, 49932),

Gene: LadyBird\_90 Start: 49324, Stop: 49019, Start Num: 19

Candidate Starts for LadyBird\_90:

(Start: 19 @49324 has 16 MA's), (Start: 22 @49309 has 44 MA's), (37, 49243), (44, 49201), (57, 49156), (64, 49051),

Gene: Leviathan\_88 Start: 49306, Stop: 49010, Start Num: 22

Candidate Starts for Leviathan\_88:

(8, 49456), (Start: 19 @49321 has 16 MA's), (Start: 22 @49306 has 44 MA's), (36, 49237), (38, 49222), (44, 49192), (57, 49147), (58, 49138),

Gene: LilTurb\_87 Start: 49102, Stop: 48806, Start Num: 22

Candidate Starts for LilTurb\_87:

(8, 49252), (Start: 19 @49117 has 16 MA's), (Start: 22 @49102 has 44 MA's), (36, 49033), (44, 48988), (57, 48943), (58, 48934),

Gene: Lilleskat\_87 Start: 49150, Stop: 48905, Start Num: 25

Candidate Starts for Lilleskat\_87:

(Start: 19 @49177 has 16 MA's), (Start: 25 @49150 has 29 MA's), (33, 49114), (37, 49087),

Gene: LoneWolf\_90 Start: 49212, Stop: 48946, Start Num: 19

Candidate Starts for LoneWolf\_90:

(Start: 19 @49212 has 16 MA's), (Start: 25 @49188 has 29 MA's), (37, 49128), (49, 49083), (53, 49074), (63, 48978),

Gene: Luchador\_85 Start: 48225, Stop: 47965, Start Num: 22

Candidate Starts for Luchador\_85:

(Start: 22 @48225 has 44 MA's), (30, 48201), (37, 48162), (50, 48108),

Gene: Maminiaina\_89 Start: 49117, Stop: 48866, Start Num: 27

Candidate Starts for Maminiaina\_89:

(Start: 27 @49117 has 6 MA's), (31, 49096), (37, 49060), (63, 48898),

Gene: Myxus\_90 Start: 49196, Stop: 48951, Start Num: 25

Candidate Starts for Myxus\_90:

(Start: 19 @49223 has 16 MA's), (Start: 25 @49196 has 29 MA's), (33, 49160), (37, 49133),

Gene: NicoleTera\_85 Start: 48705, Stop: 48442, Start Num: 22

Candidate Starts for NicoleTera\_85:

(11, 48834), (Start: 19 @48720 has 16 MA's), (Start: 22 @48705 has 44 MA's), (30, 48666), (36, 48636), (37, 48627),

Gene: NothingSpecial\_81 Start: 48512, Stop: 48231, Start Num: 22

Candidate Starts for NothingSpecial\_81:

(4, 48719), (Start: 22 @48512 has 44 MA's), (30, 48473), (32, 48467), (36, 48443), (44, 48395), (59, 48332),

Gene: Odin\_85 Start: 48071, Stop: 47814, Start Num: 19

Candidate Starts for Odin\_85:

(Start: 19 @48071 has 16 MA's), (Start: 22 @48056 has 44 MA's), (50, 47957),

Gene: Onglai\_88 Start: 47351, Stop: 47097, Start Num: 25

Candidate Starts for Onglai\_88:

(Start: 19 @47378 has 16 MA's), (Start: 25 @47351 has 29 MA's), (37, 47288), (47, 47240), (56, 47219), (57, 47213), (61, 47168),

Gene: PackMan\_85 Start: 47110, Stop: 46865, Start Num: 25

Candidate Starts for PackMan\_85:

(Start: 19 @47137 has 16 MA's), (Start: 25 @47110 has 29 MA's), (33, 47074), (37, 47047),

Gene: PenguinLover67\_60 Start: 56278, Stop: 55991, Start Num: 23

Candidate Starts for PenguinLover67\_60:

(Start: 23 @56278 has 1 MA's), (58, 56119), (60, 56089), (65, 56017),

Gene: Ph8s\_87 Start: 47838, Stop: 47596, Start Num: 22

Candidate Starts for Ph8s\_87:

(Start: 19 @47853 has 16 MA's), (Start: 22 @47838 has 44 MA's), (43, 47760), (50, 47739),

Gene: Phaeder\_90 Start: 49071, Stop: 48826, Start Num: 25

Candidate Starts for Phaeder\_90:

(Start: 19 @49098 has 16 MA's), (Start: 25 @49071 has 29 MA's), (33, 49035), (37, 49008),

Gene: Phonnegut\_90 Start: 49083, Stop: 48838, Start Num: 25

Candidate Starts for Phonnegut\_90:

(Start: 19 @49110 has 16 MA's), (Start: 25 @49083 has 29 MA's), (33, 49047), (37, 49020),

Gene: Pioneer\_90 Start: 49083, Stop: 48838, Start Num: 25

Candidate Starts for Pioneer\_90:

(Start: 19 @49110 has 16 MA's), (Start: 25 @49083 has 29 MA's), (33, 49047), (37, 49020),

Gene: Power\_86 Start: 49167, Stop: 48871, Start Num: 22

Candidate Starts for Power\_86:

(9, 49311), (Start: 19 @49182 has 16 MA's), (Start: 22 @49167 has 44 MA's), (36, 49098), (44, 49053), (57, 49008), (65, 48900),

Gene: Priya\_88 Start: 48855, Stop: 48610, Start Num: 25

Candidate Starts for Priya\_88:

(Start: 19 @48882 has 16 MA's), (Start: 25 @48855 has 29 MA's), (33, 48819), (37, 48792),

Gene: Qobbit\_88 Start: 48817, Stop: 48572, Start Num: 25

Candidate Starts for Qobbit\_88:

(Start: 19 @48844 has 16 MA's), (Start: 25 @48817 has 29 MA's), (33, 48781), (37, 48754),

Gene: QueenB2\_83 Start: 48257, Stop: 47961, Start Num: 22

Candidate Starts for QueenB2\_83:

(9, 48401), (Start: 19 @48272 has 16 MA's), (Start: 22 @48257 has 44 MA's), (36, 48188), (44, 48143), (57, 48098), (65, 47990),

Gene: QueenBeesly\_86 Start: 48964, Stop: 48668, Start Num: 22

Candidate Starts for QueenBeesly\_86:

(Start: 19 @48979 has 16 MA's), (Start: 22 @48964 has 44 MA's), (36, 48895), (44, 48850), (57, 48805), (65, 48697),

Gene: Rahalelujah\_89 Start: 48618, Stop: 48364, Start Num: 25

Candidate Starts for Rahalelujah\_89:

(Start: 19 @48642 has 16 MA's), (Start: 25 @48618 has 29 MA's), (29, 48597), (37, 48555), (63, 48396),

Gene: Refuge\_88 Start: 50832, Stop: 50584, Start Num: 27

Candidate Starts for Refuge\_88:

(Start: 27 @50832 has 6 MA's), (37, 50775), (63, 50616),

Gene: Retro23\_86 Start: 48647, Stop: 48384, Start Num: 22

Candidate Starts for Retro23\_86:

(13, 48743), (Start: 19 @48662 has 16 MA's), (Start: 22 @48647 has 44 MA's), (32, 48602), (36, 48578),

Gene: Rinkes\_60 Start: 56279, Stop: 55929, Start Num: 22

Candidate Starts for Rinkes\_60:

(Start: 22 @56279 has 44 MA's), (39, 56165), (41, 56159), (42, 56153), (61, 56018), (66, 55943), (67, 55940),

Gene: RyeScarlet\_91 Start: 49069, Stop: 48815, Start Num: 25

Candidate Starts for RyeScarlet\_91:

(Start: 19 @49096 has 16 MA's), (Start: 25 @49069 has 29 MA's), (37, 49006), (47, 48958), (56, 48937), (57, 48931), (61, 48886),

Gene: Sachima\_86 Start: 49098, Stop: 48853, Start Num: 25

Candidate Starts for Sachima\_86:

(Start: 19 @49125 has 16 MA's), (Start: 25 @49098 has 29 MA's), (33, 49062), (37, 49035),

Gene: Scherzo\_88 Start: 49115, Stop: 48870, Start Num: 25

Candidate Starts for Scherzo\_88:

(Start: 19 @49142 has 16 MA's), (Start: 25 @49115 has 29 MA's), (33, 49079), (37, 49052),

Gene: SemperFi\_86 Start: 48867, Stop: 48556, Start Num: 19

Candidate Starts for SemperFi\_86:

(Start: 19 @48867 has 16 MA's), (Start: 22 @48852 has 44 MA's), (36, 48783), (44, 48738), (57, 48693), (65, 48585),

Gene: SheaKeira\_85 Start: 48361, Stop: 48110, Start Num: 25

Candidate Starts for SheaKeira\_85:

(Start: 25 @48361 has 29 MA's), (31, 48334), (37, 48298), (61, 48181),

Gene: Smeagan\_89 Start: 49397, Stop: 49101, Start Num: 22

Candidate Starts for Smeagan\_89:

(8, 49547), (Start: 19 @49412 has 16 MA's), (Start: 22 @49397 has 44 MA's), (36, 49328), (44, 49283), (58, 49229),

Gene: SnapTap\_86 Start: 48823, Stop: 48527, Start Num: 22

Candidate Starts for SnapTap\_86:

(9, 48967), (Start: 19 @48838 has 16 MA's), (Start: 22 @48823 has 44 MA's), (36, 48754), (44, 48709), (57, 48664), (65, 48556),

Gene: Spouty\_88 Start: 48854, Stop: 48609, Start Num: 25

Candidate Starts for Spouty\_88:

(Start: 19 @48881 has 16 MA's), (Start: 25 @48854 has 29 MA's), (33, 48818), (37, 48791),

Gene: Steamy\_85 Start: 49811, Stop: 49554, Start Num: 27

Candidate Starts for Steamy\_85:

(Start: 27 @49811 has 6 MA's), (37, 49751), (61, 49625),

Gene: Sunhee\_87 Start: 46599, Stop: 46327, Start Num: 22

Candidate Starts for Sunhee\_87:

(Start: 19 @46614 has 16 MA's), (Start: 22 @46599 has 44 MA's), (34, 46557), (37, 46536), (38, 46530), (46, 46488), (50, 46470),

Gene: Superchunk\_86 Start: 47583, Stop: 47341, Start Num: 22

Candidate Starts for Superchunk\_86:

(Start: 19 @47598 has 16 MA's), (Start: 22 @47583 has 44 MA's), (50, 47484),

Gene: SweetiePie\_86 Start: 48971, Stop: 48660, Start Num: 19

Candidate Starts for SweetiePie\_86:

(9, 49100), (Start: 19 @48971 has 16 MA's), (Start: 22 @48956 has 44 MA's), (36, 48887), (44, 48842), (57, 48797), (65, 48689),

Gene: SwirlSquare\_89 Start: 47313, Stop: 47071, Start Num: 22

Candidate Starts for SwirlSquare\_89:

(Start: 19 @47328 has 16 MA's), (Start: 22 @47313 has 44 MA's), (37, 47259), (43, 47235), (50, 47214), (60, 47148),

Gene: TarsusIV\_85 Start: 48814, Stop: 48545, Start Num: 22

Candidate Starts for TarsusIV\_85:

(7, 48976), (Start: 19 @48829 has 16 MA's), (Start: 22 @48814 has 44 MA's), (30, 48775), (36, 48745),

Gene: Toaka\_88 Start: 48957, Stop: 48709, Start Num: 25

Candidate Starts for Toaka\_88:

(17, 49023), (Start: 19 @48981 has 16 MA's), (20, 48969), (Start: 25 @48957 has 29 MA's), (33, 48921), (37, 48894), (49, 48846), (53, 48837), (61, 48780),

Gene: Trixie\_86 Start: 49391, Stop: 49113, Start Num: 19

Candidate Starts for Trixie\_86:

(5, 49589), (Start: 19 @49391 has 16 MA's), (Start: 22 @49376 has 44 MA's), (26, 49361), (37, 49313), (49, 49253), (51, 49244), (52, 49241), (61, 49181),

Gene: Trooper\_86 Start: 48532, Stop: 48263, Start Num: 22

Candidate Starts for Trooper\_86:

(3, 48766), (10, 48667), (Start: 19 @48547 has 16 MA's), (Start: 22 @48532 has 44 MA's), (32, 48487), (36, 48463),

Gene: Tubs\_90 Start: 49071, Stop: 48826, Start Num: 25

Candidate Starts for Tubs\_90:

(Start: 19 @49098 has 16 MA's), (Start: 25 @49071 has 29 MA's), (33, 49035), (37, 49008),

Gene: Turbido\_87 Start: 49118, Stop: 48822, Start Num: 22

Candidate Starts for Turbido\_87:

(8, 49268), (Start: 19 @49133 has 16 MA's), (Start: 22 @49118 has 44 MA's), (36, 49049), (44, 49004), (57, 48959), (58, 48950),

Gene: Ugenie5\_77 Start: 46559, Stop: 46314, Start Num: 25

Candidate Starts for Ugenie5\_77:

(Start: 19 @46586 has 16 MA's), (Start: 25 @46559 has 29 MA's), (33, 46523), (37, 46496),

Gene: VA6\_86 Start: 48761, Stop: 48450, Start Num: 19

Candidate Starts for VA6\_86:

(Start: 19 @48761 has 16 MA's), (Start: 22 @48746 has 44 MA's), (32, 48701), (36, 48677), (44, 48632), (64, 48482),

Gene: Vanisoa\_85 Start: 49296, Stop: 49042, Start Num: 25

Candidate Starts for Vanisoa\_85:

(17, 49362), (Start: 19 @49320 has 16 MA's), (20, 49308), (Start: 25 @49296 has 29 MA's), (29, 49275), (37, 49233), (50, 49185), (57, 49158), (61, 49113),

Gene: Whabigail7\_85 Start: 49116, Stop: 48820, Start Num: 22

Candidate Starts for Whabigail7\_85:

(8, 49266), (Start: 19 @49131 has 16 MA's), (Start: 22 @49116 has 44 MA's), (36, 49047), (44, 49002), (57, 48957), (58, 48948),

Gene: XianYue\_85 Start: 48882, Stop: 48607, Start Num: 22

Candidate Starts for XianYue\_85:

(13, 48981), (Start: 19 @48897 has 16 MA's), (Start: 22 @48882 has 44 MA's), (36, 48837), (44, 48789),

Gene: Yecey3\_91 Start: 48834, Stop: 48583, Start Num: 25

Candidate Starts for Yecey3\_91:

(Start: 25 @48834 has 29 MA's), (37, 48771), (63, 48615),

Gene: Zenteno07\_70 Start: 57108, Stop: 56800, Start Num: 22

Candidate Starts for Zenteno07\_70:

(Start: 22 @57108 has 44 MA's), (45, 56994),

Gene: Zimmer\_87 Start: 50279, Stop: 50019, Start Num: 27

Candidate Starts for Zimmer\_87:

(Start: 19 @50306 has 16 MA's), (Start: 27 @50279 has 6 MA's), (37, 50222), (54, 50153), (55, 50150), (57, 50135), (61, 50090),