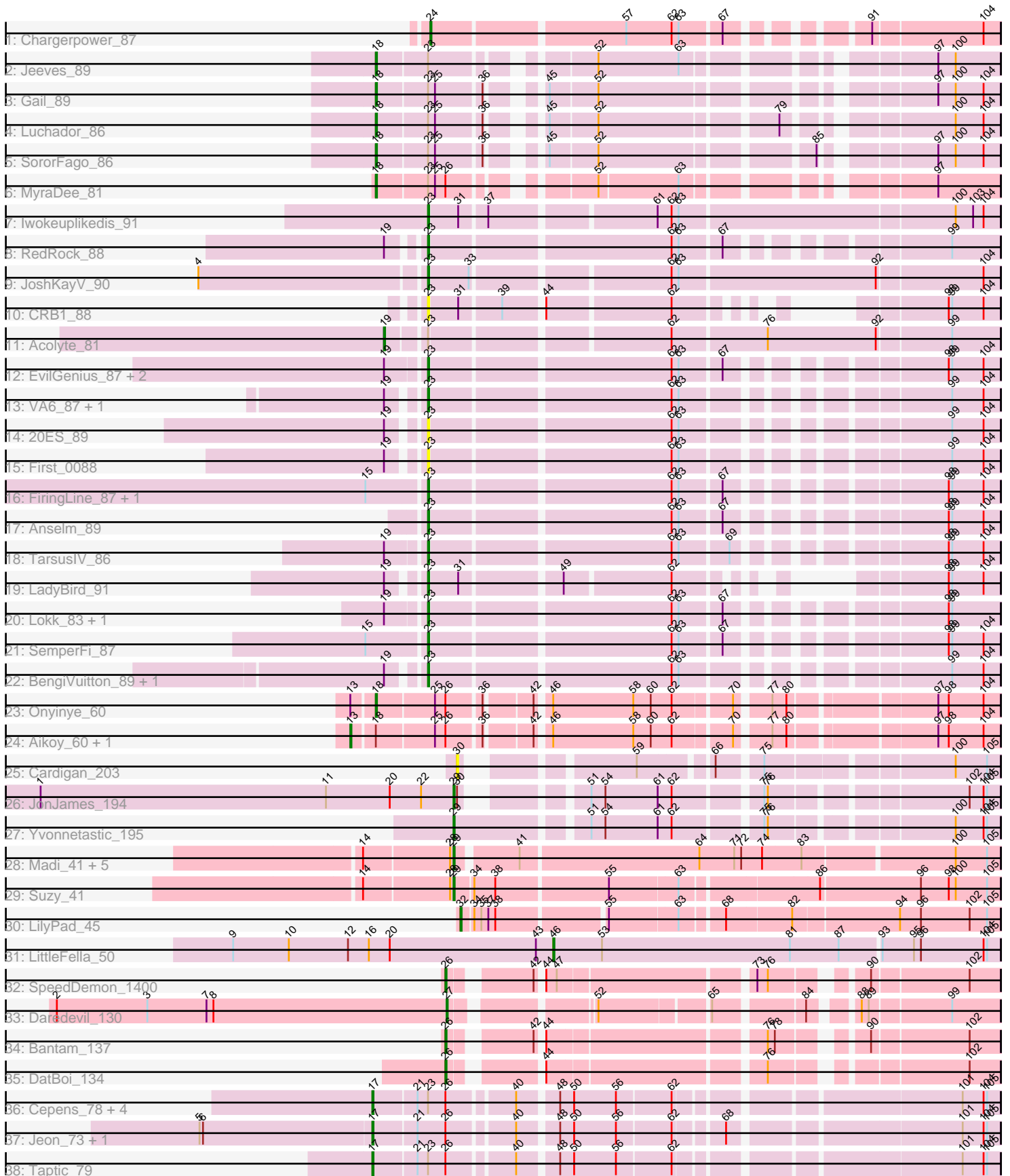


Pham 161899



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 161899 Report

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

Pham number 161899 has 55 members, 4 are drafts.

Phages represented in each track:

- Track 1 : Chargerpower\_87
- Track 2 : Jeeves\_89
- Track 3 : Gail\_89
- Track 4 : Luchador\_86
- Track 5 : SororFago\_86
- Track 6 : MyraDee\_81
- Track 7 : Iwokeuplikedis\_91
- Track 8 : RedRock\_88
- Track 9 : JoshKayV\_90
- Track 10 : CRB1\_88
- Track 11 : Acolyte\_81
- Track 12 : EvilGenius\_87, ChipMunk\_88, KingCyrus\_86
- Track 13 : VA6\_87, AN3\_87
- Track 14 : 20ES\_89
- Track 15 : First\_0088
- Track 16 : FiringLine\_87, QueenBeesly\_87
- Track 17 : Anselm\_89
- Track 18 : TarsusIV\_86
- Track 19 : LadyBird\_91
- Track 20 : Lokk\_83, BobSwaget\_82
- Track 21 : SemperFi\_87
- Track 22 : BengiVuitton\_89, Deloris\_89
- Track 23 : Onyinye\_60
- Track 24 : Aikoy\_60, Leopard\_59
- Track 25 : Cardigan\_203
- Track 26 : JonJames\_194
- Track 27 : Yvonnetastic\_195
- Track 28 : Madi\_41, Beyoncage\_41, Terapin\_42, BiteSize\_41, Sienna\_41, Djokovic\_41
- Track 29 : Suzy\_41
- Track 30 : LilyPad\_45
- Track 31 : LittleFella\_50
- Track 32 : SpeedDemon\_1400
- Track 33 : Daredevil\_130
- Track 34 : Bantam\_137
- Track 35 : DatBoi\_134
- Track 36 : Cepens\_78, Argie\_79, D12\_76, Megabear\_76, PR\_77

- Track 37 : Jeon\_73, GodPhather\_77
- Track 38 : Taptic\_79

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

The start number called the most often in the published annotations is 23, it was called in 18 of the 51 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 20ES\_89, AN3\_87, Anselm\_89, BengiVuitton\_89, BobSwaget\_82, CRB1\_88, ChipMunk\_88, Deloris\_89, EvilGenius\_87, FiringLine\_87, First\_0088, Iwokeuplikedis\_91, JoshKayV\_90, KingCyrus\_86, LadyBird\_91, Lokk\_83, QueenBeesly\_87, RedRock\_88, SemperFi\_87, TarsusIV\_86, VA6\_87,

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

- Acolyte\_81, Argie\_79, Cepens\_78, D12\_76, Gail\_89, Jeeves\_89, Luchador\_86, Megabear\_76, MyraDee\_81, PR\_77, SororFago\_86, Taptic\_79,

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

- Aikoy\_60, Bantam\_137, Beyoncage\_41, BiteSize\_41, Cardigan\_203, Chargerpower\_87, Daredevil\_130, DatBoi\_134, Djokovic\_41, GodPhather\_77, Jeon\_73, JonJames\_194, Leopard\_59, LilyPad\_45, LittleFella\_50, Madi\_41, Onyinye\_60, Sienna\_41, SpeedDemon\_1400, Suzy\_41, Terapin\_42, Yvonnestic\_195,

**Summary by start number:**

Start 13:

- Found in 3 of 55 ( 5.5% ) of genes in pham
- Manual Annotations of this start: 2 of 51
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Aikoy\_60 (AE), Leopard\_59 (AE),

Start 17:

- Found in 8 of 55 ( 14.5% ) of genes in pham
- Manual Annotations of this start: 8 of 51
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Argie\_79 (W), Cepens\_78 (W), D12\_76 (W), GodPhather\_77 (W), Jeon\_73 (W), Megabear\_76 (W), PR\_77 (W), Taptic\_79 (W),

Start 18:

- Found in 8 of 55 ( 14.5% ) of genes in pham
- Manual Annotations of this start: 6 of 51
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Gail\_89 (A14), Jeeves\_89 (A14), Luchador\_86 (A14), MyraDee\_81 (A18), Onyinye\_60 (AE), SororFago\_86 (A14),

Start 19:

- Found in 15 of 55 ( 27.3% ) of genes in pham

- Manual Annotations of this start: 1 of 51
- Called 6.7% of time when present
- Phage (with cluster) where this start called: Acolyte\_81 (A2),

#### Start 23:

- Found in 33 of 55 ( 60.0% ) of genes in pham
- Manual Annotations of this start: 18 of 51
- Called 63.6% of time when present
- Phage (with cluster) where this start called: 20ES\_89 (A2), AN3\_87 (A2), Anselm\_89 (A2), BengiVuitton\_89 (A2), BobSwaget\_82 (A2), CRB1\_88 (A2), ChipMunk\_88 (A2), Deloris\_89 (A2), EvilGenius\_87 (A2), FiringLine\_87 (A2), First\_0088 (A2), Iwokeuplikedis\_91 (A2), JoshKayV\_90 (A2), KingCyrus\_86 (A2), LadyBird\_91 (A2), Lokk\_83 (A2), QueenBeesly\_87 (A2), RedRock\_88 (A2), SemperFi\_87 (A2), TarsusIV\_86 (A2), VA6\_87 (A2),

#### Start 24:

- Found in 1 of 55 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 51
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chargerpower\_87 (A),

#### Start 26:

- Found in 15 of 55 ( 27.3% ) of genes in pham
- Manual Annotations of this start: 3 of 51
- Called 20.0% of time when present
- Phage (with cluster) where this start called: Bantam\_137 (DL), DatBoi\_134 (DL), SpeedDemon\_1400 (DL),

#### Start 27:

- Found in 1 of 55 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 51
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Daredevil\_130 (DL),

#### Start 29:

- Found in 9 of 55 ( 16.4% ) of genes in pham
- Manual Annotations of this start: 9 of 51
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beyoncage\_41 (DG1), BiteSize\_41 (DG1), Djokovic\_41 (DG1), JonJames\_194 (DD), Madi\_41 (DG1), Sienna\_41 (DG1), Suzy\_41 (DG1), Terapin\_42 (DG1), Yvonnestic\_195 (DD),

#### Start 30:

- Found in 2 of 55 ( 3.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Cardigan\_203 (DD),

#### Start 32:

- Found in 1 of 55 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 51
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LilyPad\_45 (DG1),

Start 46:

- Found in 4 of 55 ( 7.3% ) of genes in pham
- Manual Annotations of this start: 1 of 51
- Called 25.0% of time when present
- Phage (with cluster) where this start called: LittleFella\_50 (DG2),

**Summary by clusters:**

There are 10 clusters represented in this pham: A, A14, DL, AE, DD, A18, DG2, DG1, W, A2,

Info for manual annotations of cluster A:

- Start number 24 was manually annotated 1 time for cluster A.

Info for manual annotations of cluster A14:

- Start number 18 was manually annotated 4 times for cluster A14.

Info for manual annotations of cluster A18:

- Start number 18 was manually annotated 1 time for cluster A18.

Info for manual annotations of cluster A2:

- Start number 19 was manually annotated 1 time for cluster A2.
- Start number 23 was manually annotated 18 times for cluster A2.

Info for manual annotations of cluster AE:

- Start number 13 was manually annotated 2 times for cluster AE.
- Start number 18 was manually annotated 1 time for cluster AE.

Info for manual annotations of cluster DD:

- Start number 29 was manually annotated 2 times for cluster DD.

Info for manual annotations of cluster DG1:

- Start number 29 was manually annotated 7 times for cluster DG1.
- Start number 32 was manually annotated 1 time for cluster DG1.

Info for manual annotations of cluster DG2:

- Start number 46 was manually annotated 1 time for cluster DG2.

Info for manual annotations of cluster DL:

- Start number 26 was manually annotated 3 times for cluster DL.
- Start number 27 was manually annotated 1 time for cluster DL.

Info for manual annotations of cluster W:

- Start number 17 was manually annotated 8 times for cluster W.

**Gene Information:**

Gene: 20ES\_89 Start: 49404, Stop: 48979, Start Num: 23

Candidate Starts for 20ES\_89:

(Start: 19 @49428 has 1 MA's), (Start: 23 @49404 has 18 MA's), (62, 49209), (63, 49203), (99, 49020), (104, 48993),

Gene: AN3\_87 Start: 47668, Stop: 47243, Start Num: 23

Candidate Starts for AN3\_87:

(Start: 19 @47692 has 1 MA's), (Start: 23 @47668 has 18 MA's), (62, 47473), (63, 47467), (99, 47284), (104, 47257),

Gene: Acolyte\_81 Start: 48464, Stop: 47973, Start Num: 19

Candidate Starts for Acolyte\_81:

(Start: 19 @48464 has 1 MA's), (Start: 23 @48434 has 18 MA's), (62, 48245), (76, 48167), (92, 48074), (99, 48014),

Gene: Aikoy\_60 Start: 43844, Stop: 44341, Start Num: 13

Candidate Starts for Aikoy\_60:

(Start: 13 @43844 has 2 MA's), (Start: 18 @43862 has 6 MA's), (25, 43910), (Start: 26 @43919 has 3 MA's), (36, 43946), (42, 43982), (Start: 46 @43991 has 1 MA's), (58, 44060), (60, 44075), (62, 44093), (70, 44138), (77, 44162), (80, 44174), (97, 44288), (98, 44297), (104, 44327),

Gene: Anselm\_89 Start: 49507, Stop: 49082, Start Num: 23

Candidate Starts for Anselm\_89:

(Start: 23 @49507 has 18 MA's), (62, 49312), (63, 49306), (67, 49273), (98, 49126), (99, 49123), (104, 49096),

Gene: Argie\_79 Start: 55898, Stop: 56383, Start Num: 17

Candidate Starts for Argie\_79:

(Start: 17 @55898 has 8 MA's), (21, 55934), (Start: 23 @55943 has 18 MA's), (Start: 26 @55958 has 3 MA's), (40, 56009), (48, 56039), (50, 56051), (56, 56087), (62, 56135), (101, 56351), (104, 56369), (105, 56372),

Gene: Bantam\_137 Start: 80637, Stop: 80239, Start Num: 26

Candidate Starts for Bantam\_137:

(Start: 26 @80637 has 3 MA's), (42, 80580), (44, 80577), (76, 80406), (78, 80400), (90, 80343), (102, 80265),

Gene: BengiVuitton\_89 Start: 49509, Stop: 49084, Start Num: 23

Candidate Starts for BengiVuitton\_89:

(Start: 19 @49533 has 1 MA's), (Start: 23 @49509 has 18 MA's), (62, 49314), (63, 49308), (99, 49125), (104, 49098),

Gene: Beyoncage\_41 Start: 33094, Stop: 33540, Start Num: 29

Candidate Starts for Beyoncage\_41:

(14, 33019), (28, 33091), (Start: 29 @33094 has 9 MA's), (41, 33142), (64, 33292), (71, 33322), (72, 33328), (74, 33346), (83, 33379), (100, 33502), (105, 33529),

Gene: BiteSize\_41 Start: 33180, Stop: 33626, Start Num: 29

Candidate Starts for BiteSize\_41:

(14, 33105), (28, 33177), (Start: 29 @33180 has 9 MA's), (41, 33228), (64, 33378), (71, 33408), (72, 33414), (74, 33432), (83, 33465), (100, 33588), (105, 33615),

Gene: BobSwaget\_82 Start: 46976, Stop: 46551, Start Num: 23

Candidate Starts for BobSwaget\_82:

(Start: 19 @47006 has 1 MA's), (Start: 23 @46976 has 18 MA's), (62, 46781), (63, 46775), (67, 46742), (98, 46595), (99, 46592),

Gene: CRB1\_88 Start: 49600, Stop: 49232, Start Num: 23

Candidate Starts for CRB1\_88:

(Start: 23 @49600 has 18 MA's), (31, 49576), (39, 49543), (44, 49513), (62, 49411), (98, 49276), (99, 49273), (104, 49246),

Gene: Cardigan\_203 Start: 96758, Stop: 96372, Start Num: 30

Candidate Starts for Cardigan\_203:

(30, 96758), (59, 96644), (66, 96590), (75, 96557), (100, 96410), (105, 96383),

Gene: Cepens\_78 Start: 55010, Stop: 55492, Start Num: 17

Candidate Starts for Cepens\_78:

(Start: 17 @55010 has 8 MA's), (21, 55046), (Start: 23 @55055 has 18 MA's), (Start: 26 @55070 has 3 MA's), (40, 55121), (48, 55151), (50, 55163), (56, 55199), (62, 55244), (101, 55460), (104, 55478), (105, 55481),

Gene: Chargerpower\_87 Start: 47632, Stop: 47207, Start Num: 24

Candidate Starts for Chargerpower\_87:

(Start: 24 @47632 has 1 MA's), (57, 47476), (62, 47437), (63, 47431), (67, 47398), (91, 47311), (104, 47221),

Gene: ChipMunk\_88 Start: 50564, Stop: 50139, Start Num: 23

Candidate Starts for ChipMunk\_88:

(Start: 19 @50594 has 1 MA's), (Start: 23 @50564 has 18 MA's), (62, 50369), (63, 50363), (67, 50330), (98, 50183), (99, 50180), (104, 50153),

Gene: D12\_76 Start: 55645, Stop: 56127, Start Num: 17

Candidate Starts for D12\_76:

(Start: 17 @55645 has 8 MA's), (21, 55681), (Start: 23 @55690 has 18 MA's), (Start: 26 @55705 has 3 MA's), (40, 55756), (48, 55786), (50, 55798), (56, 55834), (62, 55879), (101, 56095), (104, 56113), (105, 56116),

Gene: Daredevil\_130 Start: 77242, Stop: 76841, Start Num: 27

Candidate Starts for Daredevil\_130:

(2, 77578), (3, 77500), (7, 77449), (8, 77443), (Start: 27 @77242 has 1 MA's), (52, 77140), (65, 77053), (84, 76984), (88, 76954), (89, 76948), (99, 76882),

Gene: DatBoi\_134 Start: 79614, Stop: 79216, Start Num: 26

Candidate Starts for DatBoi\_134:

(Start: 26 @79614 has 3 MA's), (44, 79554), (76, 79383), (102, 79242),

Gene: Deloris\_89 Start: 49202, Stop: 48777, Start Num: 23

Candidate Starts for Deloris\_89:

(Start: 19 @49226 has 1 MA's), (Start: 23 @49202 has 18 MA's), (62, 49007), (63, 49001), (99, 48818), (104, 48791),

Gene: Djokovic\_41 Start: 33093, Stop: 33539, Start Num: 29

Candidate Starts for Djokovic\_41:

(14, 33018), (28, 33090), (Start: 29 @33093 has 9 MA's), (41, 33141), (64, 33291), (71, 33321), (72, 33327), (74, 33345), (83, 33378), (100, 33501), (105, 33528),

Gene: EvilGenius\_87 Start: 50565, Stop: 50140, Start Num: 23

Candidate Starts for EvilGenius\_87:

(Start: 19 @50595 has 1 MA's), (Start: 23 @50565 has 18 MA's), (62, 50370), (63, 50364), (67, 50331), (98, 50184), (99, 50181), (104, 50154),

Gene: FiringLine\_87 Start: 49451, Stop: 49026, Start Num: 23

Candidate Starts for FiringLine\_87:

(15, 49499), (Start: 23 @49451 has 18 MA's), (62, 49256), (63, 49250), (67, 49217), (98, 49070), (99, 49067), (104, 49040),

Gene: First\_0088 Start: 49307, Stop: 48882, Start Num: 23

Candidate Starts for First\_0088:

(Start: 19 @49331 has 1 MA's), (Start: 23 @49307 has 18 MA's), (62, 49112), (63, 49106), (99, 48923), (104, 48896),

Gene: Gail\_89 Start: 48855, Stop: 48409, Start Num: 18

Candidate Starts for Gail\_89:

(Start: 18 @48855 has 6 MA's), (Start: 23 @48813 has 18 MA's), (25, 48807), (36, 48771), (45, 48741), (52, 48702), (97, 48462), (100, 48447), (104, 48423),

Gene: GodPhather\_77 Start: 55342, Stop: 55824, Start Num: 17

Candidate Starts for GodPhather\_77:

(5, 55195), (6, 55198), (Start: 17 @55342 has 8 MA's), (21, 55378), (Start: 26 @55402 has 3 MA's), (40, 55453), (48, 55483), (50, 55495), (56, 55531), (62, 55576), (68, 55612), (101, 55792), (104, 55810), (105, 55813),

Gene: Iwokeuplikedis\_91 Start: 49657, Stop: 49196, Start Num: 23

Candidate Starts for Iwokeuplikedis\_91:

(Start: 23 @49657 has 18 MA's), (31, 49633), (37, 49612), (61, 49480), (62, 49468), (63, 49462), (100, 49234), (103, 49219), (104, 49210),

Gene: Jeeves\_89 Start: 47635, Stop: 47189, Start Num: 18

Candidate Starts for Jeeves\_89:

(Start: 18 @47635 has 6 MA's), (Start: 23 @47593 has 18 MA's), (52, 47482), (63, 47413), (97, 47242), (100, 47227),

Gene: Jeon\_73 Start: 54835, Stop: 55317, Start Num: 17

Candidate Starts for Jeon\_73:

(5, 54688), (6, 54691), (Start: 17 @54835 has 8 MA's), (21, 54871), (Start: 26 @54895 has 3 MA's), (40, 54946), (48, 54976), (50, 54988), (56, 55024), (62, 55069), (68, 55105), (101, 55285), (104, 55303), (105, 55306),

Gene: JonJames\_194 Start: 97288, Stop: 96896, Start Num: 29

Candidate Starts for JonJames\_194:

(1, 97642), (11, 97396), (20, 97342), (22, 97315), (Start: 29 @97288 has 9 MA's), (30, 97285), (51, 97210), (54, 97198), (61, 97153), (62, 97141), (75, 97075), (76, 97072), (102, 96922), (104, 96910), (105, 96907),

Gene: JoshKayV\_90 Start: 49922, Stop: 49461, Start Num: 23

Candidate Starts for JoshKayV\_90:

(4, 50111), (Start: 23 @49922 has 18 MA's), (33, 49889), (62, 49733), (63, 49727), (92, 49562), (104, 49475),



Gene: KingCyrus\_86 Start: 50578, Stop: 50153, Start Num: 23

Candidate Starts for KingCyrus\_86:

(Start: 19 @50608 has 1 MA's), (Start: 23 @50578 has 18 MA's), (62, 50383), (63, 50377), (67, 50344), (98, 50197), (99, 50194), (104, 50167),

Gene: LadyBird\_91 Start: 49745, Stop: 49377, Start Num: 23

Candidate Starts for LadyBird\_91:

(Start: 19 @49769 has 1 MA's), (Start: 23 @49745 has 18 MA's), (31, 49721), (49, 49643), (62, 49556), (98, 49421), (99, 49418), (104, 49391),

Gene: Leopard\_59 Start: 44129, Stop: 44626, Start Num: 13

Candidate Starts for Leopard\_59:

(Start: 13 @44129 has 2 MA's), (Start: 18 @44147 has 6 MA's), (25, 44195), (Start: 26 @44204 has 3 MA's), (36, 44231), (42, 44267), (Start: 46 @44276 has 1 MA's), (58, 44345), (60, 44360), (62, 44378), (70, 44423), (77, 44447), (80, 44459), (97, 44573), (98, 44582), (104, 44612),

Gene: LilyPad\_45 Start: 34622, Stop: 35053, Start Num: 32

Candidate Starts for LilyPad\_45:

(Start: 32 @34622 has 1 MA's), (34, 34631), (35, 34637), (37, 34643), (38, 34649), (55, 34736), (63, 34793), (68, 34826), (82, 34880), (94, 34967), (96, 34985), (102, 35027), (105, 35042),

Gene: LittleFella\_50 Start: 36384, Stop: 36764, Start Num: 46

Candidate Starts for LittleFella\_50:

(9, 36108), (10, 36156), (12, 36207), (16, 36225), (20, 36243), (43, 36369), (Start: 46 @36384 has 1 MA's), (53, 36426), (81, 36588), (87, 36630), (93, 36663), (95, 36690), (96, 36696), (104, 36750), (105, 36753),

Gene: Lokk\_83 Start: 47597, Stop: 47172, Start Num: 23

Candidate Starts for Lokk\_83:

(Start: 19 @47627 has 1 MA's), (Start: 23 @47597 has 18 MA's), (62, 47402), (63, 47396), (67, 47363), (98, 47216), (99, 47213),

Gene: Luchador\_86 Start: 48736, Stop: 48290, Start Num: 18

Candidate Starts for Luchador\_86:

(Start: 18 @48736 has 6 MA's), (Start: 23 @48694 has 18 MA's), (25, 48688), (36, 48652), (45, 48622), (52, 48583), (79, 48445), (100, 48328), (104, 48304),

Gene: Madi\_41 Start: 33171, Stop: 33617, Start Num: 29

Candidate Starts for Madi\_41:

(14, 33096), (28, 33168), (Start: 29 @33171 has 9 MA's), (41, 33219), (64, 33369), (71, 33399), (72, 33405), (74, 33423), (83, 33456), (100, 33579), (105, 33606),

Gene: Megabear\_76 Start: 54933, Stop: 55415, Start Num: 17

Candidate Starts for Megabear\_76:

(Start: 17 @54933 has 8 MA's), (21, 54969), (Start: 23 @54978 has 18 MA's), (Start: 26 @54993 has 3 MA's), (40, 55044), (48, 55074), (50, 55086), (56, 55122), (62, 55167), (101, 55383), (104, 55401), (105, 55404),

Gene: MyraDee\_81 Start: 45138, Stop: 44695, Start Num: 18

Candidate Starts for MyraDee\_81:

(Start: 18 @45138 has 6 MA's), (Start: 23 @45096 has 18 MA's), (25, 45090), (Start: 26 @45081 has 3 MA's), (52, 44985), (63, 44919), (97, 44748),

Gene: Onyinye\_60 Start: 44029, Stop: 44508, Start Num: 18

Candidate Starts for Onyinye\_60:

(Start: 13 @44011 has 2 MA's), (Start: 18 @44029 has 6 MA's), (25, 44077), (Start: 26 @44086 has 3 MA's), (36, 44113), (42, 44149), (Start: 46 @44158 has 1 MA's), (58, 44227), (60, 44242), (62, 44260), (70, 44305), (77, 44329), (80, 44341), (97, 44455), (98, 44464), (104, 44494),

Gene: PR\_77 Start: 55622, Stop: 56104, Start Num: 17

Candidate Starts for PR\_77:

(Start: 17 @55622 has 8 MA's), (21, 55658), (Start: 23 @55667 has 18 MA's), (Start: 26 @55682 has 3 MA's), (40, 55733), (48, 55763), (50, 55775), (56, 55811), (62, 55856), (101, 56072), (104, 56090), (105, 56093),

Gene: QueenBeesly\_87 Start: 49451, Stop: 49026, Start Num: 23

Candidate Starts for QueenBeesly\_87:

(15, 49499), (Start: 23 @49451 has 18 MA's), (62, 49256), (63, 49250), (67, 49217), (98, 49070), (99, 49067), (104, 49040),

Gene: RedRock\_88 Start: 49617, Stop: 49192, Start Num: 23

Candidate Starts for RedRock\_88:

(Start: 19 @49641 has 1 MA's), (Start: 23 @49617 has 18 MA's), (62, 49422), (63, 49416), (67, 49383), (99, 49233),

Gene: SemperFi\_87 Start: 49339, Stop: 48914, Start Num: 23

Candidate Starts for SemperFi\_87:

(15, 49387), (Start: 23 @49339 has 18 MA's), (62, 49144), (63, 49138), (67, 49105), (98, 48958), (99, 48955), (104, 48928),

Gene: Sienna\_41 Start: 33171, Stop: 33617, Start Num: 29

Candidate Starts for Sienna\_41:

(14, 33096), (28, 33168), (Start: 29 @33171 has 9 MA's), (41, 33219), (64, 33369), (71, 33399), (72, 33405), (74, 33423), (83, 33456), (100, 33579), (105, 33606),

Gene: SororFago\_86 Start: 48617, Stop: 48171, Start Num: 18

Candidate Starts for SororFago\_86:

(Start: 18 @48617 has 6 MA's), (Start: 23 @48575 has 18 MA's), (25, 48569), (36, 48533), (45, 48503), (52, 48464), (85, 48302), (97, 48224), (100, 48209), (104, 48185),

Gene: SpeedDemon\_1400 Start: 83731, Stop: 83333, Start Num: 26

Candidate Starts for SpeedDemon\_1400:

(Start: 26 @83731 has 3 MA's), (42, 83674), (44, 83671), (47, 83662), (73, 83509), (76, 83500), (90, 83437), (102, 83359),

Gene: Suzy\_41 Start: 33689, Stop: 34132, Start Num: 29

Candidate Starts for Suzy\_41:

(14, 33614), (28, 33686), (Start: 29 @33689 has 9 MA's), (34, 33704), (38, 33722), (55, 33815), (63, 33872), (86, 33980), (96, 34064), (98, 34088), (100, 34094), (105, 34121),

Gene: Taptic\_79 Start: 55327, Stop: 55809, Start Num: 17

Candidate Starts for Taptic\_79:

(Start: 17 @55327 has 8 MA's), (21, 55363), (Start: 23 @55372 has 18 MA's), (Start: 26 @55387 has 3 MA's), (40, 55438), (48, 55468), (50, 55480), (56, 55516), (62, 55561), (101, 55777), (104, 55795), (105, 55798),

Gene: TarsusIV\_86 Start: 49301, Stop: 48876, Start Num: 23

Candidate Starts for TarsusIV\_86:

(Start: 19 @49331 has 1 MA's), (Start: 23 @49301 has 18 MA's), (62, 49106), (63, 49100), (69, 49061), (98, 48920), (99, 48917), (104, 48890),

Gene: Terapin\_42 Start: 33095, Stop: 33541, Start Num: 29

Candidate Starts for Terapin\_42:

(14, 33020), (28, 33092), (Start: 29 @33095 has 9 MA's), (41, 33143), (64, 33293), (71, 33323), (72, 33329), (74, 33347), (83, 33380), (100, 33503), (105, 33530),

Gene: VA6\_87 Start: 49239, Stop: 48814, Start Num: 23

Candidate Starts for VA6\_87:

(Start: 19 @49263 has 1 MA's), (Start: 23 @49239 has 18 MA's), (62, 49044), (63, 49038), (99, 48855), (104, 48828),

Gene: Yvonnetastic\_195 Start: 94338, Stop: 93922, Start Num: 29

Candidate Starts for Yvonnetastic\_195:

(Start: 29 @94338 has 9 MA's), (51, 94236), (54, 94224), (61, 94179), (62, 94167), (75, 94101), (76, 94098), (100, 93960), (104, 93936), (105, 93933),