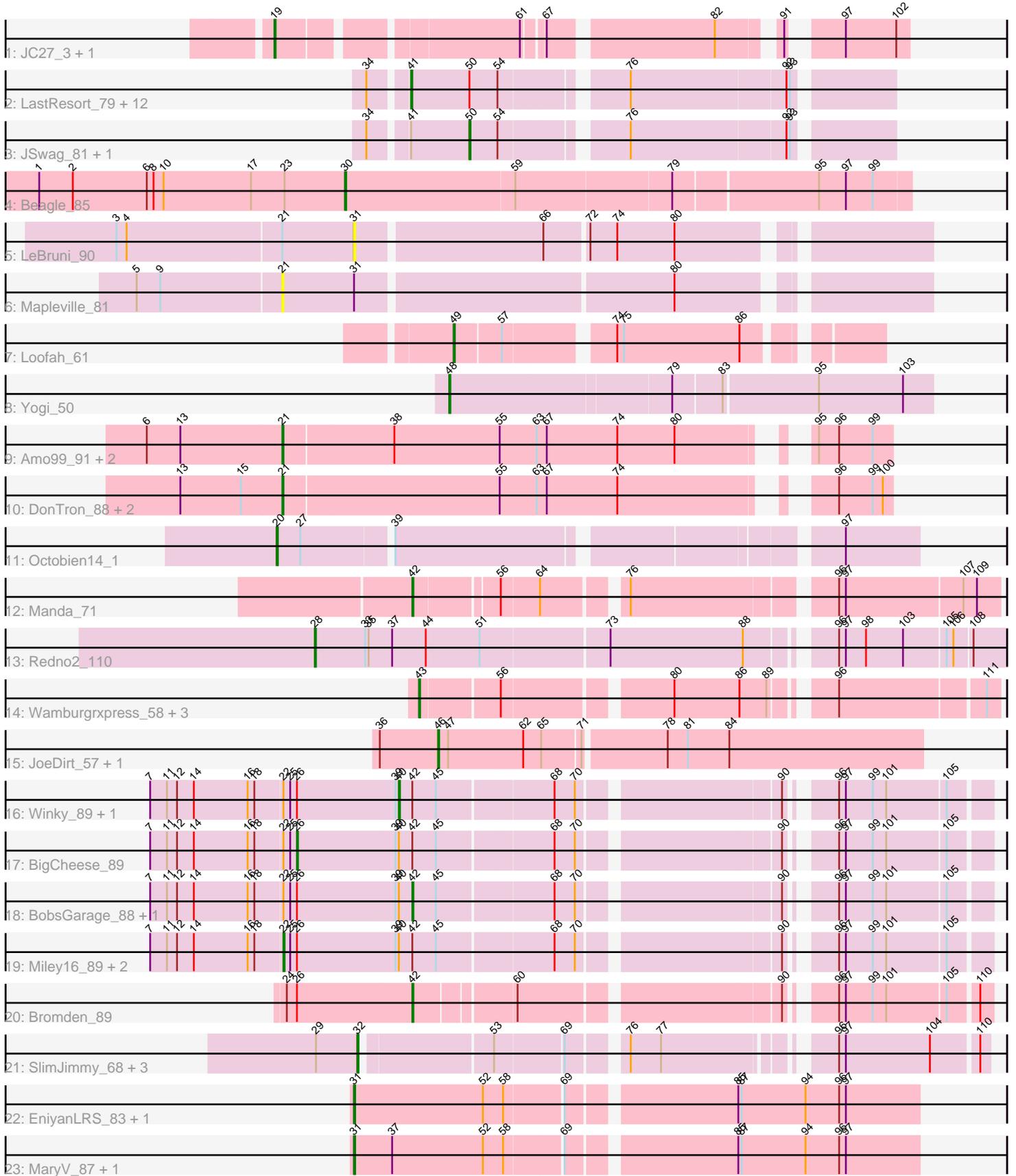


Pham 289461



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 289461 Report

This analysis was run 03/28/26 on database version 641.

Pham number 289461 has 54 members, 6 are drafts.

Phages represented in each track:

- Track 1 : JC27\_3, Peterson\_2
- Track 2 : LastResort\_79, Boohoo\_81, KatherineG\_81, Looper\_80, Nebulosus\_78, Switzerland\_80, ShayRa\_81, Rosalind\_79, Battleship\_83, Epsocamisio\_78, ReMo\_79, Anaysia\_81, DekHockey33\_82
- Track 3 : JSwag\_81, MinecraftSteve\_81
- Track 4 : Beagle\_85
- Track 5 : LeBruni\_90
- Track 6 : Mapleville\_81
- Track 7 : Loofah\_61
- Track 8 : Yogi\_50
- Track 9 : Amo99\_91, Jollymon\_88, ColdSoup\_91
- Track 10 : DonTron\_88, Soos\_84, Sting\_87
- Track 11 : Octobien14\_1
- Track 12 : Manda\_71
- Track 13 : Redno2\_110
- Track 14 : Wamburgexpress\_58, Calm\_59, Zaria\_59, OhShagHennessy\_56
- Track 15 : JoeDirt\_57, UPIE\_58
- Track 16 : Winky\_89, Sarshaun\_90
- Track 17 : BigCheese\_89
- Track 18 : BobsGarage\_88, Soap141\_89
- Track 19 : Miley16\_89, Breezona\_89, DrSeegs\_88
- Track 20 : Bromden\_89
- Track 21 : SlimJimmy\_68, Glaske16\_70, FreakyGoo\_70, Skinny\_71
- Track 22 : EniyanLRS\_83, Cosmo\_87
- Track 23 : MaryV\_87, Wildcat\_87

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

The start number called the most often in the published annotations is 41, it was called in 13 of the 48 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Anaysia\_81, Battleship\_83, Boohoo\_81, DekHockey33\_82, Epsocamisio\_78, KatherineG\_81, LastResort\_79, Looper\_80, Nebulosus\_78, ReMo\_79, Rosalind\_79,

ShayRa\_81, Switzerland\_80,

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

- JSwag\_81, MinecraftSteve\_81,

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

- Amo99\_91, Beagle\_85, BigCheese\_89, BobsGarage\_88, Breezona\_89, Bromden\_89, Calm\_59, ColdSoup\_91, Cosmo\_87, DonTron\_88, DrSeegs\_88, EniyanLRS\_83, FreakyGoo\_70, Glaske16\_70, JC27\_3, JoeDirt\_57, Jollymon\_88, LeBruni\_90, Loofah\_61, Manda\_71, Mapleville\_81, MaryV\_87, Miley16\_89, Octobien14\_1, OhShagHennessy\_56, Peterson\_2, Redno2\_110, Sarshaun\_90, Skinny\_71, SlimJimmy\_68, Soap141\_89, Soos\_84, Sting\_87, UPIE\_58, Wamburgxpress\_58, Wildcat\_87, Winky\_89, Yogi\_50, Zaria\_59,

### Summary by start number:

Start 19:

- Found in 2 of 54 ( 3.7% ) of genes in pham
- Manual Annotations of this start: 2 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JC27\_3 (A1), Peterson\_2 (A1),

Start 20:

- Found in 1 of 54 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Octobien14\_1 (DU1),

Start 21:

- Found in 8 of 54 ( 14.8% ) of genes in pham
- Manual Annotations of this start: 4 of 48
- Called 87.5% of time when present
- Phage (with cluster) where this start called: Amo99\_91 (CP), ColdSoup\_91 (CP), DonTron\_88 (CP), Jollymon\_88 (CP), Mapleville\_81 (AY), Soos\_84 (CP), Sting\_87 (CP),

Start 22:

- Found in 8 of 54 ( 14.8% ) of genes in pham
- Manual Annotations of this start: 3 of 48
- Called 37.5% of time when present
- Phage (with cluster) where this start called: Breezona\_89 (L2), DrSeegs\_88 (L2), Miley16\_89 (L2),

Start 26:

- Found in 9 of 54 ( 16.7% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 11.1% of time when present
- Phage (with cluster) where this start called: BigCheese\_89 (L2),

Start 28:

- Found in 1 of 54 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Redno2\_110 (J),

Start 30:

- Found in 1 of 54 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beagle\_85 (AP2),

Start 31:

- Found in 6 of 54 ( 11.1% ) of genes in pham
- Manual Annotations of this start: 4 of 48
- Called 83.3% of time when present
- Phage (with cluster) where this start called: Cosmo\_87 (V), EniyanLRS\_83 (V), LeBruni\_90 (AY), MaryV\_87 (V), Wildcat\_87 (V),

Start 32:

- Found in 4 of 54 ( 7.4% ) of genes in pham
- Manual Annotations of this start: 4 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: FreakyGoo\_70 (M1), Glaske16\_70 (M1), Skinny\_71 (M1), SlimJimmy\_68 (M1),

Start 40:

- Found in 8 of 54 ( 14.8% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Sarshaun\_90 (L2), Winky\_89 (L2),

Start 41:

- Found in 15 of 54 ( 27.8% ) of genes in pham
- Manual Annotations of this start: 13 of 48
- Called 86.7% of time when present
- Phage (with cluster) where this start called: Anaysia\_81 (A15), Battleship\_83 (A15), Boohoo\_81 (A15), DekHockey33\_82 (A15), Epsocamisio\_78 (A15), KatherineG\_81 (A15), LastResort\_79 (A15), Looper\_80 (A15), Nebulosus\_78 (A15), ReMo\_79 (A15), Rosalind\_79 (A15), ShayRa\_81 (A15), Switzerland\_80 (A15),

Start 42:

- Found in 10 of 54 ( 18.5% ) of genes in pham
- Manual Annotations of this start: 3 of 48
- Called 40.0% of time when present
- Phage (with cluster) where this start called: BobsGarage\_88 (L2), Bromden\_89 (L4), Manda\_71 (E), Soap141\_89 (L2),

Start 43:

- Found in 4 of 54 ( 7.4% ) of genes in pham
- Manual Annotations of this start: 4 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Calm\_59 (L1), OhShagHennessy\_56 (L1), Wamburgrxpress\_58 (L1), Zaria\_59 (L1),

Start 46:

- Found in 2 of 54 ( 3.7% ) of genes in pham

- Manual Annotations of this start: 2 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JoeDirt\_57 (L1), UPIE\_58 (L1),

Start 48:

- Found in 1 of 54 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Yogi\_50 (CA),

Start 49:

- Found in 1 of 54 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Loofah\_61 (BD2),

Start 50:

- Found in 15 of 54 ( 27.8% ) of genes in pham
- Manual Annotations of this start: 2 of 48
- Called 13.3% of time when present
- Phage (with cluster) where this start called: JSwag\_81 (A15), MinecraftSteve\_81 (A15),

### **Summary by clusters:**

There are 15 clusters represented in this pham: A15, J, E, AP2, CA, V, BD2, A1, L4, L2, L1, AY, M1, DU1, CP,

Info for manual annotations of cluster A1:

- Start number 19 was manually annotated 2 times for cluster A1.

Info for manual annotations of cluster A15:

- Start number 41 was manually annotated 13 times for cluster A15.
- Start number 50 was manually annotated 2 times for cluster A15.

Info for manual annotations of cluster AP2:

- Start number 30 was manually annotated 1 time for cluster AP2.

Info for manual annotations of cluster BD2:

- Start number 49 was manually annotated 1 time for cluster BD2.

Info for manual annotations of cluster CA:

- Start number 48 was manually annotated 1 time for cluster CA.

Info for manual annotations of cluster CP:

- Start number 21 was manually annotated 4 times for cluster CP.

Info for manual annotations of cluster DU1:

- Start number 20 was manually annotated 1 time for cluster DU1.

Info for manual annotations of cluster E:

- Start number 42 was manually annotated 1 time for cluster E.

Info for manual annotations of cluster J:

- Start number 28 was manually annotated 1 time for cluster J.

Info for manual annotations of cluster L1:

- Start number 43 was manually annotated 4 times for cluster L1.
- Start number 46 was manually annotated 2 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 22 was manually annotated 3 times for cluster L2.
- Start number 26 was manually annotated 1 time for cluster L2.
- Start number 40 was manually annotated 1 time for cluster L2.
- Start number 42 was manually annotated 1 time for cluster L2.

Info for manual annotations of cluster L4:

- Start number 42 was manually annotated 1 time for cluster L4.

Info for manual annotations of cluster M1:

- Start number 32 was manually annotated 4 times for cluster M1.

Info for manual annotations of cluster V:

- Start number 31 was manually annotated 4 times for cluster V.

### ***Gene Information:***

Gene: Amo99\_91 Start: 56649, Stop: 57140, Start Num: 21

Candidate Starts for Amo99\_91:

(6, 56529), (13, 56559), (Start: 21 @56649 has 4 MA's), (38, 56745), (55, 56838), (63, 56871), (67, 56880), (74, 56943), (80, 56994), (95, 57075), (96, 57093), (99, 57123),

Gene: Anaysia\_81 Start: 44115, Stop: 43726, Start Num: 41

Candidate Starts for Anaysia\_81:

(34, 44145), (Start: 41 @44115 has 13 MA's), (Start: 50 @44064 has 2 MA's), (54, 44040), (76, 43944), (92, 43809), (93, 43806),

Gene: Battleship\_83 Start: 43988, Stop: 43599, Start Num: 41

Candidate Starts for Battleship\_83:

(34, 44018), (Start: 41 @43988 has 13 MA's), (Start: 50 @43937 has 2 MA's), (54, 43913), (76, 43817), (92, 43682), (93, 43679),

Gene: Beagle\_85 Start: 50263, Stop: 49775, Start Num: 30

Candidate Starts for Beagle\_85:

(1, 50536), (2, 50506), (6, 50440), (8, 50434), (10, 50425), (17, 50347), (23, 50317), (Start: 30 @50263 has 1 MA's), (59, 50113), (79, 49978), (95, 49855), (97, 49831), (99, 49807),

Gene: BigCheese\_89 Start: 57485, Stop: 58045, Start Num: 26

Candidate Starts for BigCheese\_89:

(7, 57356), (11, 57371), (12, 57380), (14, 57395), (16, 57443), (18, 57449), (Start: 22 @57473 has 3 MA's), (25, 57479), (Start: 26 @57485 has 1 MA's), (39, 57572), (Start: 40 @57575 has 1 MA's), (Start: 42 @57587 has 3 MA's), (45, 57608), (68, 57707), (70, 57725), (90, 57887), (96, 57917), (97, 57923), (99, 57947), (101, 57959), (105, 58010),

Gene: BobsGarage\_88 Start: 57587, Stop: 58045, Start Num: 42

Candidate Starts for BobsGarage\_88:

(7, 57356), (11, 57371), (12, 57380), (14, 57395), (16, 57443), (18, 57449), (Start: 22 @57473 has 3 MA's), (25, 57479), (Start: 26 @57485 has 1 MA's), (39, 57572), (Start: 40 @57575 has 1 MA's), (Start: 42 @57587 has 3 MA's), (45, 57608), (68, 57707), (70, 57725), (90, 57887), (96, 57917), (97, 57923), (99, 57947), (101, 57959), (105, 58010),

Gene: Boohoo\_81 Start: 44115, Stop: 43726, Start Num: 41

Candidate Starts for Boohoo\_81:

(34, 44145), (Start: 41 @44115 has 13 MA's), (Start: 50 @44064 has 2 MA's), (54, 44040), (76, 43944), (92, 43809), (93, 43806),

Gene: Breezona\_89 Start: 57473, Stop: 58045, Start Num: 22

Candidate Starts for Breezona\_89:

(7, 57356), (11, 57371), (12, 57380), (14, 57395), (16, 57443), (18, 57449), (Start: 22 @57473 has 3 MA's), (25, 57479), (Start: 26 @57485 has 1 MA's), (39, 57572), (Start: 40 @57575 has 1 MA's), (Start: 42 @57587 has 3 MA's), (45, 57608), (68, 57707), (70, 57725), (90, 57887), (96, 57917), (97, 57923), (99, 57947), (101, 57959), (105, 58010),

Gene: Bromden\_89 Start: 57826, Stop: 58278, Start Num: 42

Candidate Starts for Bromden\_89:

(24, 57715), (Start: 26 @57724 has 1 MA's), (Start: 42 @57826 has 3 MA's), (60, 57907), (90, 58120), (96, 58150), (97, 58156), (99, 58180), (101, 58192), (105, 58243), (110, 58267),

Gene: Calm\_59 Start: 41416, Stop: 41874, Start Num: 43

Candidate Starts for Calm\_59:

(Start: 43 @41416 has 4 MA's), (56, 41482), (80, 41617), (86, 41674), (89, 41698), (96, 41740), (111, 41863),

Gene: ColdSoup\_91 Start: 56730, Stop: 57221, Start Num: 21

Candidate Starts for ColdSoup\_91:

(6, 56610), (13, 56640), (Start: 21 @56730 has 4 MA's), (38, 56826), (55, 56919), (63, 56952), (67, 56961), (74, 57024), (80, 57075), (95, 57156), (96, 57174), (99, 57204),

Gene: Cosmo\_87 Start: 53401, Stop: 53880, Start Num: 31

Candidate Starts for Cosmo\_87:

(Start: 31 @53401 has 4 MA's), (52, 53515), (58, 53533), (69, 53581), (85, 53719), (87, 53722), (94, 53779), (96, 53809), (97, 53815),

Gene: DekHockey33\_82 Start: 44073, Stop: 43684, Start Num: 41

Candidate Starts for DekHockey33\_82:

(34, 44103), (Start: 41 @44073 has 13 MA's), (Start: 50 @44022 has 2 MA's), (54, 43998), (76, 43902), (92, 43767), (93, 43764),

Gene: DonTron\_88 Start: 56608, Stop: 57099, Start Num: 21

Candidate Starts for DonTron\_88:

(13, 56518), (15, 56572), (Start: 21 @56608 has 4 MA's), (55, 56797), (63, 56830), (67, 56839), (74, 56902), (96, 57052), (99, 57082), (100, 57091),

Gene: DrSeegs\_88 Start: 57473, Stop: 58045, Start Num: 22

Candidate Starts for DrSeegs\_88:

(7, 57356), (11, 57371), (12, 57380), (14, 57395), (16, 57443), (18, 57449), (Start: 22 @57473 has 3 MA's), (25, 57479), (Start: 26 @57485 has 1 MA's), (39, 57572), (Start: 40 @57575 has 1 MA's), (Start: 42 @57587 has 3 MA's), (45, 57608), (68, 57707), (70, 57725), (90, 57887), (96, 57917), (97, 57923), (99, 57947), (101, 57959), (105, 58010),

Gene: EniyanLRS\_83 Start: 53140, Stop: 53619, Start Num: 31

Candidate Starts for EniyanLRS\_83:

(Start: 31 @53140 has 4 MA's), (52, 53254), (58, 53272), (69, 53320), (85, 53458), (87, 53461), (94, 53518), (96, 53548), (97, 53554),

Gene: Epsocamisio\_78 Start: 43363, Stop: 42974, Start Num: 41

Candidate Starts for Epsocamisio\_78:

(34, 43393), (Start: 41 @43363 has 13 MA's), (Start: 50 @43312 has 2 MA's), (54, 43288), (76, 43192), (92, 43057), (93, 43054),

Gene: FreakyGoo\_70 Start: 44854, Stop: 45342, Start Num: 32

Candidate Starts for FreakyGoo\_70:

(29, 44818), (Start: 32 @44854 has 4 MA's), (53, 44962), (69, 45019), (76, 45061), (77, 45088), (96, 45214), (97, 45220), (104, 45295), (110, 45334),

Gene: Glaske16\_70 Start: 44853, Stop: 45341, Start Num: 32

Candidate Starts for Glaske16\_70:

(29, 44817), (Start: 32 @44853 has 4 MA's), (53, 44961), (69, 45018), (76, 45060), (77, 45087), (96, 45213), (97, 45219), (104, 45294), (110, 45333),

Gene: JC27\_3 Start: 1139, Stop: 1612, Start Num: 19

Candidate Starts for JC27\_3:

(Start: 19 @1139 has 2 MA's), (61, 1331), (67, 1346), (82, 1481), (91, 1523), (97, 1556), (102, 1601),

Gene: JSwag\_81 Start: 43597, Stop: 43259, Start Num: 50

Candidate Starts for JSwag\_81:

(34, 43678), (Start: 41 @43648 has 13 MA's), (Start: 50 @43597 has 2 MA's), (54, 43573), (76, 43477), (92, 43342), (93, 43339),

Gene: JoeDirt\_57 Start: 41326, Stop: 41742, Start Num: 46

Candidate Starts for JoeDirt\_57:

(36, 41275), (Start: 46 @41326 has 2 MA's), (47, 41335), (62, 41401), (65, 41416), (71, 41449), (78, 41518), (81, 41536), (84, 41572),

Gene: Jollymon\_88 Start: 56730, Stop: 57221, Start Num: 21

Candidate Starts for Jollymon\_88:

(6, 56610), (13, 56640), (Start: 21 @56730 has 4 MA's), (38, 56826), (55, 56919), (63, 56952), (67, 56961), (74, 57024), (80, 57075), (95, 57156), (96, 57174), (99, 57204),

Gene: KatherineG\_81 Start: 43960, Stop: 43571, Start Num: 41

Candidate Starts for KatherineG\_81:

(34, 43990), (Start: 41 @43960 has 13 MA's), (Start: 50 @43909 has 2 MA's), (54, 43885), (76, 43789), (92, 43654), (93, 43651),

Gene: LastResort\_79 Start: 43891, Stop: 43502, Start Num: 41

Candidate Starts for LastResort\_79:

(34, 43921), (Start: 41 @43891 has 13 MA's), (Start: 50 @43840 has 2 MA's), (54, 43816), (76, 43720), (92, 43585), (93, 43582),

Gene: LeBruni\_90 Start: 48947, Stop: 49414, Start Num: 31

Candidate Starts for LeBruni\_90:

(3, 48740), (4, 48749), (Start: 21 @48884 has 4 MA's), (Start: 31 @48947 has 4 MA's), (66, 49106), (72, 49142), (74, 49166), (80, 49217),

Gene: Loofah\_61 Start: 41684, Stop: 41352, Start Num: 49

Candidate Starts for Loofah\_61:

(Start: 49 @41684 has 1 MA's), (57, 41645), (74, 41561), (75, 41555), (86, 41453),

Gene: Looper\_80 Start: 43803, Stop: 43414, Start Num: 41

Candidate Starts for Looper\_80:

(34, 43833), (Start: 41 @43803 has 13 MA's), (Start: 50 @43752 has 2 MA's), (54, 43728), (76, 43632), (92, 43497), (93, 43494),

Gene: Manda\_71 Start: 47070, Stop: 47540, Start Num: 42

Candidate Starts for Manda\_71:

(Start: 42 @47070 has 3 MA's), (56, 47139), (64, 47172), (76, 47235), (96, 47400), (97, 47406), (107, 47508), (109, 47520),

Gene: Mapleville\_81 Start: 47302, Stop: 47832, Start Num: 21

Candidate Starts for Mapleville\_81:

(5, 47176), (9, 47197), (Start: 21 @47302 has 4 MA's), (Start: 31 @47365 has 4 MA's), (80, 47635),

Gene: MaryV\_87 Start: 53222, Stop: 53701, Start Num: 31

Candidate Starts for MaryV\_87:

(Start: 31 @53222 has 4 MA's), (37, 53255), (52, 53336), (58, 53354), (69, 53402), (85, 53540), (87, 53543), (94, 53600), (96, 53630), (97, 53636),

Gene: Miley16\_89 Start: 57473, Stop: 58045, Start Num: 22

Candidate Starts for Miley16\_89:

(7, 57356), (11, 57371), (12, 57380), (14, 57395), (16, 57443), (18, 57449), (Start: 22 @57473 has 3 MA's), (25, 57479), (Start: 26 @57485 has 1 MA's), (39, 57572), (Start: 40 @57575 has 1 MA's), (Start: 42 @57587 has 3 MA's), (45, 57608), (68, 57707), (70, 57725), (90, 57887), (96, 57917), (97, 57923), (99, 57947), (101, 57959), (105, 58010),

Gene: MinecraftSteve\_81 Start: 43733, Stop: 43395, Start Num: 50

Candidate Starts for MinecraftSteve\_81:

(34, 43814), (Start: 41 @43784 has 13 MA's), (Start: 50 @43733 has 2 MA's), (54, 43709), (76, 43613), (92, 43478), (93, 43475),

Gene: Nebulosus\_78 Start: 43448, Stop: 43059, Start Num: 41

Candidate Starts for Nebulosus\_78:

(34, 43478), (Start: 41 @43448 has 13 MA's), (Start: 50 @43397 has 2 MA's), (54, 43373), (76, 43277), (92, 43142), (93, 43139),

Gene: Octobien14\_1 Start: 652, Stop: 131, Start Num: 20

Candidate Starts for Octobien14\_1:

(Start: 20 @652 has 1 MA's), (27, 631), (39, 556), (97, 196),

Gene: OhShagHennessy\_56 Start: 40304, Stop: 40762, Start Num: 43

Candidate Starts for OhShagHennessy\_56:

(Start: 43 @40304 has 4 MA's), (56, 40370), (80, 40505), (86, 40562), (89, 40586), (96, 40628), (111, 40751),

Gene: Peterson\_2 Start: 990, Stop: 1463, Start Num: 19

Candidate Starts for Peterson\_2:

(Start: 19 @990 has 2 MA's), (61, 1182), (67, 1197), (82, 1332), (91, 1374), (97, 1407), (102, 1452),

Gene: ReMo\_79 Start: 43888, Stop: 43499, Start Num: 41

Candidate Starts for ReMo\_79:

(34, 43918), (Start: 41 @43888 has 13 MA's), (Start: 50 @43837 has 2 MA's), (54, 43813), (76, 43717), (92, 43582), (93, 43579),

Gene: Redno2\_110 Start: 62847, Stop: 63428, Start Num: 28

Candidate Starts for Redno2\_110:

(Start: 28 @62847 has 1 MA's), (33, 62892), (35, 62895), (37, 62916), (44, 62946), (51, 62994), (73, 63105), (88, 63222), (96, 63285), (97, 63291), (98, 63309), (103, 63342), (105, 63378), (106, 63384), (108, 63399),

Gene: Rosalind\_79 Start: 43712, Stop: 43323, Start Num: 41

Candidate Starts for Rosalind\_79:

(34, 43742), (Start: 41 @43712 has 13 MA's), (Start: 50 @43661 has 2 MA's), (54, 43637), (76, 43541), (92, 43406), (93, 43403),

Gene: Sarshaun\_90 Start: 57970, Stop: 58440, Start Num: 40

Candidate Starts for Sarshaun\_90:

(7, 57751), (11, 57766), (12, 57775), (14, 57790), (16, 57838), (18, 57844), (Start: 22 @57868 has 3 MA's), (25, 57874), (Start: 26 @57880 has 1 MA's), (39, 57967), (Start: 40 @57970 has 1 MA's), (Start: 42 @57982 has 3 MA's), (45, 58003), (68, 58102), (70, 58120), (90, 58282), (96, 58312), (97, 58318), (99, 58342), (101, 58354), (105, 58405),

Gene: ShayRa\_81 Start: 43741, Stop: 43352, Start Num: 41

Candidate Starts for ShayRa\_81:

(34, 43771), (Start: 41 @43741 has 13 MA's), (Start: 50 @43690 has 2 MA's), (54, 43666), (76, 43570), (92, 43435), (93, 43432),

Gene: Skinny\_71 Start: 45287, Stop: 45775, Start Num: 32

Candidate Starts for Skinny\_71:

(29, 45251), (Start: 32 @45287 has 4 MA's), (53, 45395), (69, 45452), (76, 45494), (77, 45521), (96, 45647), (97, 45653), (104, 45728), (110, 45767),

Gene: SlimJimmy\_68 Start: 44842, Stop: 45330, Start Num: 32

Candidate Starts for SlimJimmy\_68:

(29, 44806), (Start: 32 @44842 has 4 MA's), (53, 44950), (69, 45007), (76, 45049), (77, 45076), (96, 45202), (97, 45208), (104, 45283), (110, 45322),

Gene: Soap141\_89 Start: 57982, Stop: 58440, Start Num: 42

Candidate Starts for Soap141\_89:

(7, 57751), (11, 57766), (12, 57775), (14, 57790), (16, 57838), (18, 57844), (Start: 22 @57868 has 3 MA's), (25, 57874), (Start: 26 @57880 has 1 MA's), (39, 57967), (Start: 40 @57970 has 1 MA's), (Start: 42 @57982 has 3 MA's), (45, 58003), (68, 58102), (70, 58120), (90, 58282), (96, 58312), (97, 58318), (99, 58342), (101, 58354), (105, 58405),

Gene: Soos\_84 Start: 55934, Stop: 56425, Start Num: 21

Candidate Starts for Soos\_84:

(13, 55844), (15, 55898), (Start: 21 @55934 has 4 MA's), (55, 56123), (63, 56156), (67, 56165), (74, 56228), (96, 56378), (99, 56408), (100, 56417),

Gene: Sting\_87 Start: 56373, Stop: 56864, Start Num: 21

Candidate Starts for Sting\_87:

(13, 56283), (15, 56337), (Start: 21 @56373 has 4 MA's), (55, 56562), (63, 56595), (67, 56604), (74, 56667), (96, 56817), (99, 56847), (100, 56856),

Gene: Switzerland\_80 Start: 43880, Stop: 43491, Start Num: 41

Candidate Starts for Switzerland\_80:

(34, 43910), (Start: 41 @43880 has 13 MA's), (Start: 50 @43829 has 2 MA's), (54, 43805), (76, 43709), (92, 43574), (93, 43571),

Gene: UPIE\_58 Start: 41340, Stop: 41756, Start Num: 46

Candidate Starts for UPIE\_58:

(36, 41289), (Start: 46 @41340 has 2 MA's), (47, 41349), (62, 41415), (65, 41430), (71, 41463), (78, 41532), (81, 41550), (84, 41586),

Gene: Wamburgexpress\_58 Start: 41304, Stop: 41762, Start Num: 43

Candidate Starts for Wamburgexpress\_58:

(Start: 43 @41304 has 4 MA's), (56, 41370), (80, 41505), (86, 41562), (89, 41586), (96, 41628), (111, 41751),

Gene: Wildcat\_87 Start: 53232, Stop: 53711, Start Num: 31

Candidate Starts for Wildcat\_87:

(Start: 31 @53232 has 4 MA's), (37, 53265), (52, 53346), (58, 53364), (69, 53412), (85, 53550), (87, 53553), (94, 53610), (96, 53640), (97, 53646),

Gene: Winky\_89 Start: 57575, Stop: 58045, Start Num: 40

Candidate Starts for Winky\_89:

(7, 57356), (11, 57371), (12, 57380), (14, 57395), (16, 57443), (18, 57449), (Start: 22 @57473 has 3 MA's), (25, 57479), (Start: 26 @57485 has 1 MA's), (39, 57572), (Start: 40 @57575 has 1 MA's), (Start: 42 @57587 has 3 MA's), (45, 57608), (68, 57707), (70, 57725), (90, 57887), (96, 57917), (97, 57923), (99, 57947), (101, 57959), (105, 58010),

Gene: Yogi\_50 Start: 36746, Stop: 36330, Start Num: 48

Candidate Starts for Yogi\_50:

(Start: 48 @36746 has 1 MA's), (79, 36554), (83, 36512), (95, 36431), (103, 36356),

Gene: Zaria\_59 Start: 41416, Stop: 41874, Start Num: 43

Candidate Starts for Zaria\_59:

(Start: 43 @41416 has 4 MA's), (56, 41482), (80, 41617), (86, 41674), (89, 41698), (96, 41740), (111, 41863),