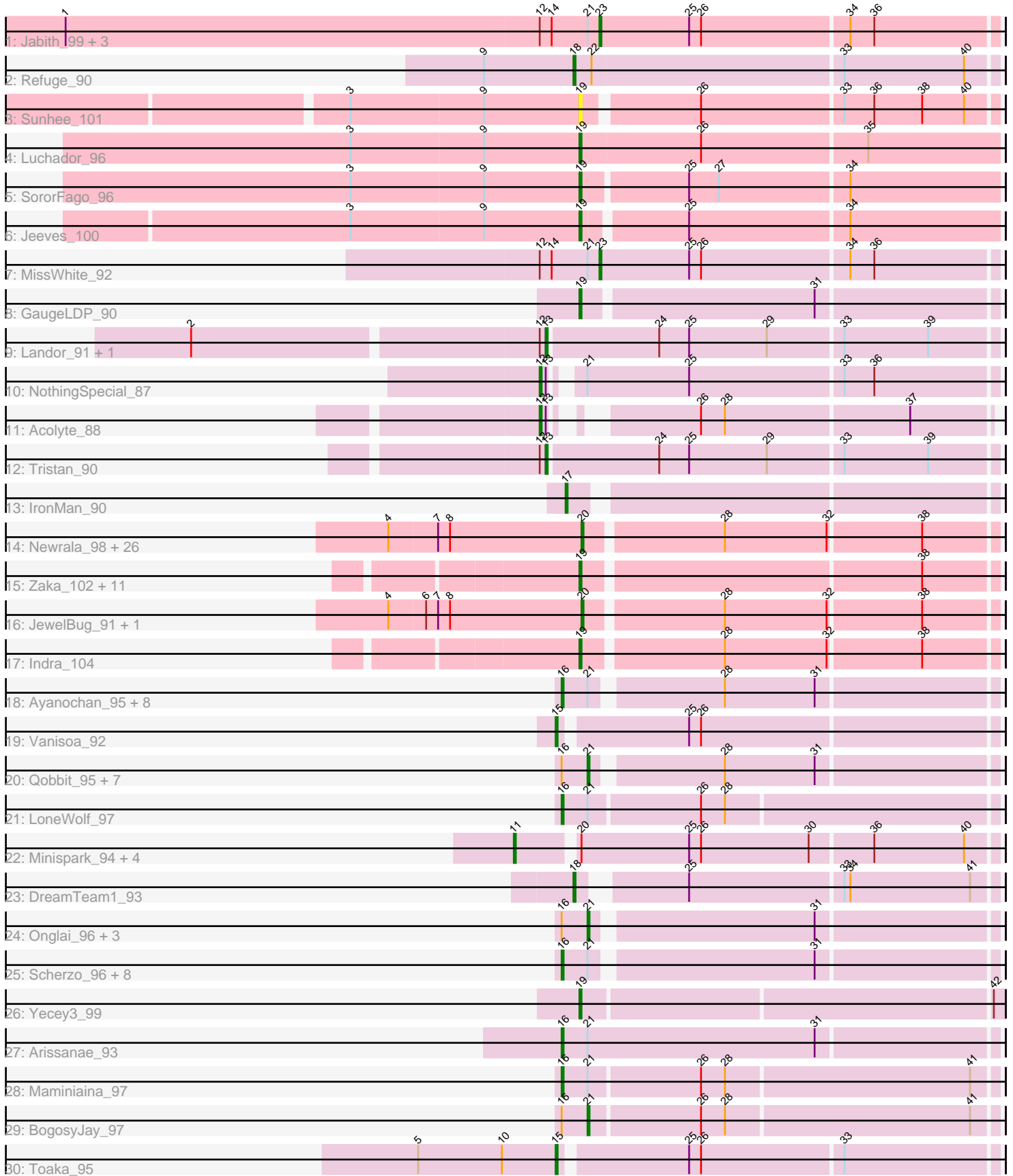


Pham 296421



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 296421 Report

This analysis was run 04/25/26 on database version 644.

Pham number 296421 has 102 members, 18 are drafts.

Phages represented in each track:

- Track 1 : Jabith\_99, Salz\_95, Et2Brutus\_99, Hutc2\_96
- Track 2 : Refuge\_90
- Track 3 : Sunhee\_101
- Track 4 : Luchador\_96
- Track 5 : SororFago\_96
- Track 6 : Jeeves\_100
- Track 7 : MissWhite\_92
- Track 8 : GaugeLDP\_90
- Track 9 : Landor\_91, Bactobuster\_86
- Track 10 : NothingSpecial\_87
- Track 11 : Acolyte\_88
- Track 12 : Tristan\_90
- Track 13 : IronMan\_90
- Track 14 : Newrala\_98, VohminGhazi\_99, Kazan\_100, EricB\_97, DaVinci\_97, Chartreuse\_98, Roksolana\_102, DelvinSonDorr\_95, Hexamo\_101, Helmet\_104, Dorothea\_99, Candra\_97, Hoot\_94, BABullseye\_92, Jeffabunny\_90, SuperAwesome\_99, Jordennis\_97, GreedyLawyer\_89, Artemis2UCLA\_101, SmellyB\_99, Isiphiwo\_96, Kipper29\_99, Priamo\_99, BennyP\_100, Pmask\_98, CloudWang3\_102, McFly\_99
- Track 15 : Zaka\_102, Yokurt\_101, Garak\_103, Zulu\_103, Lilbunny\_98, Wiks\_101, ToneTone\_98, WunderPhul\_90, Tucker\_102, Blue7\_103, Temprado\_103, BlessJoy\_102
- Track 16 : JewelBug\_91, Polyphemus\_92
- Track 17 : Indra\_104
- Track 18 : Ayanochan\_95, Alma\_95, Catalina\_100, Fayely\_95, Priya\_95, Conquerage\_95, ExplosioNervosa\_95, Spouty\_95, Eidsmoe\_95
- Track 19 : Vanisoa\_92
- Track 20 : Qobbit\_95, Aliter\_91, HortumSL17\_99, Tubs\_98, EmyBug\_94, Phaeder\_98, Myxus\_98, PackMan\_93
- Track 21 : LoneWolf\_97
- Track 22 : Minispark\_94, Rahalelujah\_96, CogOmlette\_94, WorldCup\_95, Bellris\_94
- Track 23 : DreamTeam1\_93
- Track 24 : Onglai\_96, Beemo\_98, Lilleskat\_95, Holec\_97
- Track 25 : Scherzo\_96, Phonnegut\_98, Sachima\_94, Pioneer\_98, Jiawan\_96, Hanray\_96, Ugenie5\_85, EdogawaKiddo\_97, RyeScarlet\_99
- Track 26 : Yecey3\_99
- Track 27 : Arissanae\_93

- Track 28 : Maminaiaina\_97
- Track 29 : BogosyJay\_97
- Track 30 : Toaka\_95

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

The start number called the most often in the published annotations is 20, it was called in 26 of the 84 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Artemis2UCLA\_101, BABullseye\_92, BennyP\_100, Candra\_97, Chartreuse\_98, CloudWang3\_102, DaVinci\_97, DelvinSonDorr\_95, Dorothea\_99, EricB\_97, GreedyLawyer\_89, Helmet\_104, Hexamo\_101, Hoot\_94, Isiphiwo\_96, Jeffabunny\_90, JewelBug\_91, Jordennis\_97, Kazan\_100, Kipper29\_99, McFly\_99, Newrala\_98, Pmask\_98, Polyphemus\_92, Priamo\_99, Roksolana\_102, SmellyB\_99, SuperAwesome\_99, VohminGhazi\_99,

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

- Bellris\_94, CogOmlette\_94, Minispark\_94, Rahalelujah\_96, WorldCup\_95,

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

- Acolyte\_88, Aliter\_91, Alma\_95, Arissanae\_93, Ayanochan\_95, Bactobuster\_86, Beemo\_98, BlessJoy\_102, Blue7\_103, BogosyJay\_97, Catalina\_100, Conquerage\_95, DreamTeam1\_93, EdogawaKiddo\_97, Eidsmoe\_95, EmyBug\_94, Et2Brutus\_99, ExplosioNervosa\_95, Fayely\_95, Garak\_103, GaugeLDP\_90, Hanray\_96, Halex\_97, HortumSL17\_99, Hutc2\_96, Indra\_104, IronMan\_90, Jabith\_99, Jeeves\_100, Jiawan\_96, Landor\_91, Lilbunny\_98, Lilleskat\_95, LoneWolf\_97, Luchador\_96, Maminaiaina\_97, MissWhite\_92, Myxus\_98, NothingSpecial\_87, Onglai\_96, PackMan\_93, Phaeder\_98, Phonnegut\_98, Pioneer\_98, Priya\_95, Qobbit\_95, Refuge\_90, RyeScarlet\_99, Sachima\_94, Salz\_95, Scherzo\_96, SororFago\_96, Spouty\_95, Sunhee\_101, Temprado\_103, Toaka\_95, ToneTone\_98, Tristan\_90, Tubs\_98, Tucker\_102, Ugenie5\_85, Vanisoa\_92, Wiks\_101, WunderPhul\_90, Yecy3\_99, Yokurt\_101, Zaka\_102, Zulu\_103,

**Summary by start number:**

Start 11:

- Found in 5 of 102 ( 4.9% ) of genes in pham
- Manual Annotations of this start: 1 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bellris\_94 (A9), CogOmlette\_94 (A9), Minispark\_94 (A9), Rahalelujah\_96 (A9), WorldCup\_95 (A9),

Start 12:

- Found in 10 of 102 ( 9.8% ) of genes in pham
- Manual Annotations of this start: 2 of 84
- Called 20.0% of time when present
- Phage (with cluster) where this start called: Acolyte\_88 (A2), NothingSpecial\_87 (A2),

Start 13:

- Found in 5 of 102 ( 4.9% ) of genes in pham
- Manual Annotations of this start: 3 of 84
- Called 60.0% of time when present
- Phage (with cluster) where this start called: Bactobuster\_86 (A2), Landor\_91 (A2), Tristan\_90 (A2),

Start 15:

- Found in 2 of 102 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Toaka\_95 (A9), Vanisoa\_92 (A9),

Start 16:

- Found in 34 of 102 ( 33.3% ) of genes in pham
- Manual Annotations of this start: 15 of 84
- Called 61.8% of time when present
- Phage (with cluster) where this start called: Alma\_95 (A9), Arissanae\_93 (A9), Ayanochan\_95 (A9), Catalina\_100 (A9), Conquerage\_95 (A9), EdogawaKiddo\_97 (A9), Eidsmoe\_95 (A9), ExplosioNervosa\_95 (A9), Fayely\_95 (A9), Hanray\_96 (A9), Jiawan\_96 (A9), LoneWolf\_97 (A9), Maminaiaina\_97 (A9), Phonnegut\_98 (A9), Pioneer\_98 (A9), Priya\_95 (A9), RyeScarlet\_99 (A9), Sachima\_94 (A9), Scherzo\_96 (A9), Spouty\_95 (A9), Ugenie5\_85 (A9),

Start 17:

- Found in 1 of 102 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: IronMan\_90 (A2),

Start 18:

- Found in 2 of 102 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DreamTeam1\_93 (A9), Refuge\_90 (A12),

Start 19:

- Found in 19 of 102 ( 18.6% ) of genes in pham
- Manual Annotations of this start: 17 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BlessJoy\_102 (A6), Blue7\_103 (A6), Garak\_103 (A6), GaugeLDP\_90 (A2), Indra\_104 (A6), Jeeves\_100 (A14), Lilbunny\_98 (A6), Luchador\_96 (A14), SororFago\_96 (A14), Sunhee\_101 (A14), Temprado\_103 (A6), ToneTone\_98 (A6), Tucker\_102 (A6), Wiks\_101 (A6), WunderPhul\_90 (A6), Yecey3\_99 (A9), Yokurt\_101 (A6), Zaka\_102 (A6), Zulu\_103 (A6),

Start 20:

- Found in 34 of 102 ( 33.3% ) of genes in pham
- Manual Annotations of this start: 26 of 84
- Called 85.3% of time when present

- Phage (with cluster) where this start called: Artemis2UCLA\_101 (A6), BABullseye\_92 (A6), BennyP\_100 (A6), Candra\_97 (A6), Chartreuse\_98 (A6), CloudWang3\_102 (A6), DaVinci\_97 (A6), DelvinSonDorr\_95 (A6), Dorothea\_99 (A6), EricB\_97 (A6), GreedyLawyer\_89 (A6), Helmet\_104 (A6), Hexamo\_101 (A6), Hoot\_94 (A6), Isiphiwo\_96 (A6), Jeffabunny\_90 (A6), JewelBug\_91 (A6), Jordennis\_97 (A6), Kazan\_100 (A6), Kipper29\_99 (A6), McFly\_99 (A6), Newrala\_98 (A6), Pmask\_98 (A6), Polyphemus\_92 (A6), Priamo\_99 (A6), Roksolana\_102 (A6), SmellyB\_99 (A6), SuperAwesome\_99 (A6), VohminGhazi\_99 (A6),

#### Start 21:

- Found in 40 of 102 ( 39.2% ) of genes in pham
- Manual Annotations of this start: 10 of 84
- Called 32.5% of time when present
- Phage (with cluster) where this start called: Aliter\_91 (A9), Beemo\_98 (A9), BogosyJay\_97 (A9), EmyBug\_94 (A9), Holecx\_97 (A9), HortumSL17\_99 (A9), Lilleskat\_95 (A9), Myxus\_98 (A9), Onglai\_96 (A9), PackMan\_93 (A9), Phaeder\_98 (A9), Qobbit\_95 (A9), Tubs\_98 (A9),

#### Start 23:

- Found in 5 of 102 ( 4.9% ) of genes in pham
- Manual Annotations of this start: 5 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Et2Brutus\_99 (A11), Hutc2\_96 (A11), Jabith\_99 (A11), MissWhite\_92 (A2), Salz\_95 (A11),

### Summary by clusters:

There are 6 clusters represented in this pham: A14, A11, A12, A2, A6, A9,

Info for manual annotations of cluster A11:

- Start number 23 was manually annotated 4 times for cluster A11.

Info for manual annotations of cluster A12:

- Start number 18 was manually annotated 1 time for cluster A12.

Info for manual annotations of cluster A14:

- Start number 19 was manually annotated 3 times for cluster A14.

Info for manual annotations of cluster A2:

- Start number 12 was manually annotated 2 times for cluster A2.
- Start number 13 was manually annotated 3 times for cluster A2.
- Start number 17 was manually annotated 1 time for cluster A2.
- Start number 19 was manually annotated 1 time for cluster A2.
- Start number 23 was manually annotated 1 time for cluster A2.

Info for manual annotations of cluster A6:

- Start number 19 was manually annotated 12 times for cluster A6.
- Start number 20 was manually annotated 26 times for cluster A6.

Info for manual annotations of cluster A9:

- Start number 11 was manually annotated 1 time for cluster A9.
- Start number 15 was manually annotated 2 times for cluster A9.
- Start number 16 was manually annotated 15 times for cluster A9.

- Start number 18 was manually annotated 1 time for cluster A9.
- Start number 19 was manually annotated 1 time for cluster A9.
- Start number 21 was manually annotated 10 times for cluster A9.

### **Gene Information:**

Gene: Acolyte\_88 Start: 50735, Stop: 50541, Start Num: 12

Candidate Starts for Acolyte\_88:

(Start: 12 @50735 has 2 MA's), (Start: 13 @50732 has 3 MA's), (26, 50681), (28, 50669), (37, 50579),

Gene: Aliter\_91 Start: 48577, Stop: 48383, Start Num: 21

Candidate Starts for Aliter\_91:

(Start: 16 @48589 has 15 MA's), (Start: 21 @48577 has 10 MA's), (28, 48514), (31, 48469),

Gene: Alma\_95 Start: 51299, Stop: 51096, Start Num: 16

Candidate Starts for Alma\_95:

(Start: 16 @51299 has 15 MA's), (Start: 21 @51287 has 10 MA's), (28, 51227), (31, 51182),

Gene: Arissanae\_93 Start: 51287, Stop: 51075, Start Num: 16

Candidate Starts for Arissanae\_93:

(Start: 16 @51287 has 15 MA's), (Start: 21 @51275 has 10 MA's), (31, 51161),

Gene: Artemis2UCLA\_101 Start: 50316, Stop: 50119, Start Num: 20

Candidate Starts for Artemis2UCLA\_101:

(4, 50412), (7, 50388), (8, 50382), (Start: 20 @50316 has 26 MA's), (28, 50250), (32, 50199), (38, 50154),

Gene: Ayanochan\_95 Start: 51090, Stop: 50887, Start Num: 16

Candidate Starts for Ayanochan\_95:

(Start: 16 @51090 has 15 MA's), (Start: 21 @51078 has 10 MA's), (28, 51018), (31, 50973),

Gene: BABullseye\_92 Start: 48454, Stop: 48257, Start Num: 20

Candidate Starts for BABullseye\_92:

(4, 48550), (7, 48526), (8, 48520), (Start: 20 @48454 has 26 MA's), (28, 48388), (32, 48337), (38, 48292),

Gene: Bactobuster\_86 Start: 50535, Stop: 50317, Start Num: 13

Candidate Starts for Bactobuster\_86:

(2, 50706), (Start: 12 @50538 has 2 MA's), (Start: 13 @50535 has 3 MA's), (24, 50481), (25, 50466), (29, 50427), (33, 50391), (39, 50349),

Gene: Beemo\_98 Start: 51408, Stop: 51217, Start Num: 21

Candidate Starts for Beemo\_98:

(Start: 16 @51420 has 15 MA's), (Start: 21 @51408 has 10 MA's), (31, 51303),

Gene: Bellris\_94 Start: 50894, Stop: 50664, Start Num: 11

Candidate Starts for Bellris\_94:

(Start: 11 @50894 has 1 MA's), (Start: 20 @50867 has 26 MA's), (25, 50813), (26, 50807), (30, 50753), (36, 50723), (40, 50678),

Gene: BennyP\_100 Start: 50300, Stop: 50103, Start Num: 20

Candidate Starts for BennyP\_100:

(4, 50396), (7, 50372), (8, 50366), (Start: 20 @50300 has 26 MA's), (28, 50234), (32, 50183), (38, 50138),

Gene: BlessJoy\_102 Start: 50840, Stop: 50643, Start Num: 19

Candidate Starts for BlessJoy\_102:

(Start: 19 @50840 has 17 MA's), (38, 50678),

Gene: Blue7\_103 Start: 50550, Stop: 50353, Start Num: 19

Candidate Starts for Blue7\_103:

(Start: 19 @50550 has 17 MA's), (38, 50388),

Gene: BogosyJay\_97 Start: 51415, Stop: 51218, Start Num: 21

Candidate Starts for BogosyJay\_97:

(Start: 16 @51427 has 15 MA's), (Start: 21 @51415 has 10 MA's), (26, 51361), (28, 51349), (41, 51229),

Gene: Candra\_97 Start: 50162, Stop: 49965, Start Num: 20

Candidate Starts for Candra\_97:

(4, 50258), (7, 50234), (8, 50228), (Start: 20 @50162 has 26 MA's), (28, 50096), (32, 50045), (38, 50000),

Gene: Catalina\_100 Start: 51533, Stop: 51330, Start Num: 16

Candidate Starts for Catalina\_100:

(Start: 16 @51533 has 15 MA's), (Start: 21 @51521 has 10 MA's), (28, 51461), (31, 51416),

Gene: Chartreuse\_98 Start: 49463, Stop: 49266, Start Num: 20

Candidate Starts for Chartreuse\_98:

(4, 49559), (7, 49535), (8, 49529), (Start: 20 @49463 has 26 MA's), (28, 49397), (32, 49346), (38, 49301),

Gene: CloudWang3\_102 Start: 50845, Stop: 50648, Start Num: 20

Candidate Starts for CloudWang3\_102:

(4, 50941), (7, 50917), (8, 50911), (Start: 20 @50845 has 26 MA's), (28, 50779), (32, 50728), (38, 50683),

Gene: CogOmlette\_94 Start: 50891, Stop: 50661, Start Num: 11

Candidate Starts for CogOmlette\_94:

(Start: 11 @50891 has 1 MA's), (Start: 20 @50864 has 26 MA's), (25, 50810), (26, 50804), (30, 50750), (36, 50720), (40, 50675),

Gene: Conquerage\_95 Start: 51075, Stop: 50872, Start Num: 16

Candidate Starts for Conquerage\_95:

(Start: 16 @51075 has 15 MA's), (Start: 21 @51063 has 10 MA's), (28, 51003), (31, 50958),

Gene: DaVinci\_97 Start: 49517, Stop: 49320, Start Num: 20

Candidate Starts for DaVinci\_97:

(4, 49613), (7, 49589), (8, 49583), (Start: 20 @49517 has 26 MA's), (28, 49451), (32, 49400), (38, 49355),

Gene: DelvinSonDorr\_95 Start: 49919, Stop: 49722, Start Num: 20

Candidate Starts for DelvinSonDorr\_95:

(4, 50015), (7, 49991), (8, 49985), (Start: 20 @49919 has 26 MA's), (28, 49853), (32, 49802), (38, 49757),

Gene: Dorothea\_99 Start: 50808, Stop: 50611, Start Num: 20

Candidate Starts for Dorothea\_99:

(4, 50904), (7, 50880), (8, 50874), (Start: 20 @50808 has 26 MA's), (28, 50742), (32, 50691), (38, 50646),

Gene: DreamTeam1\_93 Start: 50710, Stop: 50516, Start Num: 18

Candidate Starts for DreamTeam1\_93:

(Start: 18 @50710 has 2 MA's), (25, 50665), (33, 50590), (34, 50587), (41, 50527),

Gene: EdogawaKiddo\_97 Start: 51496, Stop: 51293, Start Num: 16

Candidate Starts for EdogawaKiddo\_97:

(Start: 16 @51496 has 15 MA's), (Start: 21 @51484 has 10 MA's), (31, 51379),

Gene: Eidsmoe\_95 Start: 51068, Stop: 50865, Start Num: 16

Candidate Starts for Eidsmoe\_95:

(Start: 16 @51068 has 15 MA's), (Start: 21 @51056 has 10 MA's), (28, 50996), (31, 50951),

Gene: EmyBug\_94 Start: 51058, Stop: 50867, Start Num: 21

Candidate Starts for EmyBug\_94:

(Start: 16 @51070 has 15 MA's), (Start: 21 @51058 has 10 MA's), (28, 50998), (31, 50953),

Gene: EricB\_97 Start: 49662, Stop: 49465, Start Num: 20

Candidate Starts for EricB\_97:

(4, 49758), (7, 49734), (8, 49728), (Start: 20 @49662 has 26 MA's), (28, 49596), (32, 49545), (38, 49500),

Gene: Et2Brutus\_99 Start: 50879, Stop: 50685, Start Num: 23

Candidate Starts for Et2Brutus\_99:

(1, 51146), (Start: 12 @50909 has 2 MA's), (14, 50903), (Start: 21 @50885 has 10 MA's), (Start: 23 @50879 has 5 MA's), (25, 50834), (26, 50828), (34, 50756), (36, 50744),

Gene: ExplosioNervosa\_95 Start: 51136, Stop: 50933, Start Num: 16

Candidate Starts for ExplosioNervosa\_95:

(Start: 16 @51136 has 15 MA's), (Start: 21 @51124 has 10 MA's), (28, 51064), (31, 51019),

Gene: Fayely\_95 Start: 51044, Stop: 50841, Start Num: 16

Candidate Starts for Fayely\_95:

(Start: 16 @51044 has 15 MA's), (Start: 21 @51032 has 10 MA's), (28, 50972), (31, 50927),

Gene: Garak\_103 Start: 50790, Stop: 50593, Start Num: 19

Candidate Starts for Garak\_103:

(Start: 19 @50790 has 17 MA's), (38, 50628),

Gene: GaugeLDP\_90 Start: 51345, Stop: 51148, Start Num: 19

Candidate Starts for GaugeLDP\_90:

(Start: 19 @51345 has 17 MA's), (31, 51234),

Gene: GreedyLawyer\_89 Start: 50095, Stop: 49898, Start Num: 20

Candidate Starts for GreedyLawyer\_89:

(4, 50191), (7, 50167), (8, 50161), (Start: 20 @50095 has 26 MA's), (28, 50029), (32, 49978), (38, 49933),

Gene: Hanray\_96 Start: 51485, Stop: 51282, Start Num: 16

Candidate Starts for Hanray\_96:

(Start: 16 @51485 has 15 MA's), (Start: 21 @51473 has 10 MA's), (31, 51368),

Gene: Helmet\_104 Start: 50790, Stop: 50593, Start Num: 20

Candidate Starts for Helmet\_104:

(4, 50886), (7, 50862), (8, 50856), (Start: 20 @50790 has 26 MA's), (28, 50724), (32, 50673), (38, 50628),

Gene: Hexamo\_101 Start: 50331, Stop: 50134, Start Num: 20

Candidate Starts for Hexamo\_101:

(4, 50427), (7, 50403), (8, 50397), (Start: 20 @50331 has 26 MA's), (28, 50265), (32, 50214), (38, 50169),

Gene: Horex\_97 Start: 51486, Stop: 51295, Start Num: 21

Candidate Starts for Horex\_97:

(Start: 16 @51498 has 15 MA's), (Start: 21 @51486 has 10 MA's), (31, 51381),

Gene: Hoot\_94 Start: 47979, Stop: 47782, Start Num: 20

Candidate Starts for Hoot\_94:

(4, 48075), (7, 48051), (8, 48045), (Start: 20 @47979 has 26 MA's), (28, 47913), (32, 47862), (38, 47817),

Gene: HortumSL17\_99 Start: 51522, Stop: 51328, Start Num: 21

Candidate Starts for HortumSL17\_99:

(Start: 16 @51534 has 15 MA's), (Start: 21 @51522 has 10 MA's), (28, 51459), (31, 51414),

Gene: Hutc2\_96 Start: 49769, Stop: 49575, Start Num: 23

Candidate Starts for Hutc2\_96:

(1, 50036), (Start: 12 @49799 has 2 MA's), (14, 49793), (Start: 21 @49775 has 10 MA's), (Start: 23 @49769 has 5 MA's), (25, 49724), (26, 49718), (34, 49646), (36, 49634),

Gene: Indra\_104 Start: 50791, Stop: 50594, Start Num: 19

Candidate Starts for Indra\_104:

(Start: 19 @50791 has 17 MA's), (28, 50725), (32, 50674), (38, 50629),

Gene: IronMan\_90 Start: 51924, Stop: 51724, Start Num: 17

Candidate Starts for IronMan\_90:

(Start: 17 @51924 has 1 MA's),

Gene: Isiphiwo\_96 Start: 49881, Stop: 49684, Start Num: 20

Candidate Starts for Isiphiwo\_96:

(4, 49977), (7, 49953), (8, 49947), (Start: 20 @49881 has 26 MA's), (28, 49815), (32, 49764), (38, 49719),

Gene: Jabith\_99 Start: 51077, Stop: 50883, Start Num: 23

Candidate Starts for Jabith\_99:

(1, 51344), (Start: 12 @51107 has 2 MA's), (14, 51101), (Start: 21 @51083 has 10 MA's), (Start: 23 @51077 has 5 MA's), (25, 51032), (26, 51026), (34, 50954), (36, 50942),

Gene: Jeeves\_100 Start: 50694, Stop: 50494, Start Num: 19  
Candidate Starts for Jeeves\_100:  
(3, 50808), (9, 50742), (Start: 19 @50694 has 17 MA's), (25, 50646), (34, 50568),

Gene: Jeffabunny\_90 Start: 46934, Stop: 46737, Start Num: 20  
Candidate Starts for Jeffabunny\_90:  
(4, 47030), (7, 47006), (8, 47000), (Start: 20 @46934 has 26 MA's), (28, 46868), (32, 46817), (38, 46772),

Gene: JewelBug\_91 Start: 48501, Stop: 48304, Start Num: 20  
Candidate Starts for JewelBug\_91:  
(4, 48597), (6, 48579), (7, 48573), (8, 48567), (Start: 20 @48501 has 26 MA's), (28, 48435), (32, 48384), (38, 48339),

Gene: Jiawan\_96 Start: 51515, Stop: 51312, Start Num: 16  
Candidate Starts for Jiawan\_96:  
(Start: 16 @51515 has 15 MA's), (Start: 21 @51503 has 10 MA's), (31, 51398),

Gene: Jordennis\_97 Start: 50405, Stop: 50208, Start Num: 20  
Candidate Starts for Jordennis\_97:  
(4, 50501), (7, 50477), (8, 50471), (Start: 20 @50405 has 26 MA's), (28, 50339), (32, 50288), (38, 50243),

Gene: Kazan\_100 Start: 50132, Stop: 49935, Start Num: 20  
Candidate Starts for Kazan\_100:  
(4, 50228), (7, 50204), (8, 50198), (Start: 20 @50132 has 26 MA's), (28, 50066), (32, 50015), (38, 49970),

Gene: Kipper29\_99 Start: 50180, Stop: 49983, Start Num: 20  
Candidate Starts for Kipper29\_99:  
(4, 50276), (7, 50252), (8, 50246), (Start: 20 @50180 has 26 MA's), (28, 50114), (32, 50063), (38, 50018),

Gene: Landor\_91 Start: 52081, Stop: 51863, Start Num: 13  
Candidate Starts for Landor\_91:  
(2, 52252), (Start: 12 @52084 has 2 MA's), (Start: 13 @52081 has 3 MA's), (24, 52027), (25, 52012), (29, 51973), (33, 51937), (39, 51895),

Gene: Lilbunny\_98 Start: 49038, Stop: 48841, Start Num: 19  
Candidate Starts for Lilbunny\_98:  
(Start: 19 @49038 has 17 MA's), (38, 48876),

Gene: Lilleskat\_95 Start: 51474, Stop: 51283, Start Num: 21  
Candidate Starts for Lilleskat\_95:  
(Start: 16 @51486 has 15 MA's), (Start: 21 @51474 has 10 MA's), (31, 51369),

Gene: LoneWolf\_97 Start: 51410, Stop: 51201, Start Num: 16  
Candidate Starts for LoneWolf\_97:  
(Start: 16 @51410 has 15 MA's), (Start: 21 @51398 has 10 MA's), (26, 51344), (28, 51332),

Gene: Luchador\_96 Start: 51613, Stop: 51407, Start Num: 19  
Candidate Starts for Luchador\_96:  
(3, 51727), (9, 51661), (Start: 19 @51613 has 17 MA's), (26, 51553), (35, 51472),

Gene: Maminaiaina\_97 Start: 51409, Stop: 51200, Start Num: 16

Candidate Starts for Maminaiaina\_97:

(Start: 16 @51409 has 15 MA's), (Start: 21 @51397 has 10 MA's), (26, 51343), (28, 51331), (41, 51211),

Gene: McFly\_99 Start: 50471, Stop: 50274, Start Num: 20

Candidate Starts for McFly\_99:

(4, 50567), (7, 50543), (8, 50537), (Start: 20 @50471 has 26 MA's), (28, 50405), (32, 50354), (38, 50309),

Gene: Minispark\_94 Start: 50888, Stop: 50658, Start Num: 11

Candidate Starts for Minispark\_94:

(Start: 11 @50888 has 1 MA's), (Start: 20 @50861 has 26 MA's), (25, 50807), (26, 50801), (30, 50747), (36, 50717), (40, 50672),

Gene: MissWhite\_92 Start: 48624, Stop: 48430, Start Num: 23

Candidate Starts for MissWhite\_92:

(Start: 12 @48654 has 2 MA's), (14, 48648), (Start: 21 @48630 has 10 MA's), (Start: 23 @48624 has 5 MA's), (25, 48579), (26, 48573), (34, 48501), (36, 48489),

Gene: Myxus\_98 Start: 51522, Stop: 51328, Start Num: 21

Candidate Starts for Myxus\_98:

(Start: 16 @51534 has 15 MA's), (Start: 21 @51522 has 10 MA's), (28, 51459), (31, 51414),

Gene: Newrala\_98 Start: 50570, Stop: 50373, Start Num: 20

Candidate Starts for Newrala\_98:

(4, 50666), (7, 50642), (8, 50636), (Start: 20 @50570 has 26 MA's), (28, 50504), (32, 50453), (38, 50408),

Gene: NothingSpecial\_87 Start: 50873, Stop: 50661, Start Num: 12

Candidate Starts for NothingSpecial\_87:

(Start: 12 @50873 has 2 MA's), (Start: 13 @50870 has 3 MA's), (Start: 21 @50861 has 10 MA's), (25, 50810), (33, 50735), (36, 50720),

Gene: Onglai\_96 Start: 49675, Stop: 49484, Start Num: 21

Candidate Starts for Onglai\_96:

(Start: 16 @49687 has 15 MA's), (Start: 21 @49675 has 10 MA's), (31, 49570),

Gene: PackMan\_93 Start: 49436, Stop: 49242, Start Num: 21

Candidate Starts for PackMan\_93:

(Start: 16 @49448 has 15 MA's), (Start: 21 @49436 has 10 MA's), (28, 49373), (31, 49328),

Gene: Phaeder\_98 Start: 51397, Stop: 51203, Start Num: 21

Candidate Starts for Phaeder\_98:

(Start: 16 @51409 has 15 MA's), (Start: 21 @51397 has 10 MA's), (28, 51334), (31, 51289),

Gene: Phonnegut\_98 Start: 51419, Stop: 51216, Start Num: 16

Candidate Starts for Phonnegut\_98:

(Start: 16 @51419 has 15 MA's), (Start: 21 @51407 has 10 MA's), (31, 51302),

Gene: Pioneer\_98 Start: 51419, Stop: 51216, Start Num: 16

Candidate Starts for Pioneer\_98:

(Start: 16 @51419 has 15 MA's), (Start: 21 @51407 has 10 MA's), (31, 51302),

Gene: Pmask\_98 Start: 50771, Stop: 50574, Start Num: 20

Candidate Starts for Pmask\_98:

(4, 50867), (7, 50843), (8, 50837), (Start: 20 @50771 has 26 MA's), (28, 50705), (32, 50654), (38, 50609),

Gene: Polyphemus\_92 Start: 48585, Stop: 48388, Start Num: 20

Candidate Starts for Polyphemus\_92:

(4, 48681), (6, 48663), (7, 48657), (8, 48651), (Start: 20 @48585 has 26 MA's), (28, 48519), (32, 48468), (38, 48423),

Gene: Priamo\_99 Start: 49814, Stop: 49617, Start Num: 20

Candidate Starts for Priamo\_99:

(4, 49910), (7, 49886), (8, 49880), (Start: 20 @49814 has 26 MA's), (28, 49748), (32, 49697), (38, 49652),

Gene: Priya\_95 Start: 51071, Stop: 50868, Start Num: 16

Candidate Starts for Priya\_95:

(Start: 16 @51071 has 15 MA's), (Start: 21 @51059 has 10 MA's), (28, 50999), (31, 50954),

Gene: Qobbit\_95 Start: 51021, Stop: 50830, Start Num: 21

Candidate Starts for Qobbit\_95:

(Start: 16 @51033 has 15 MA's), (Start: 21 @51021 has 10 MA's), (28, 50961), (31, 50916),

Gene: Rahalelujah\_96 Start: 50903, Stop: 50673, Start Num: 11

Candidate Starts for Rahalelujah\_96:

(Start: 11 @50903 has 1 MA's), (Start: 20 @50876 has 26 MA's), (25, 50822), (26, 50816), (30, 50762), (36, 50732), (40, 50687),

Gene: Refuge\_90 Start: 51776, Stop: 51570, Start Num: 18

Candidate Starts for Refuge\_90:

(9, 51821), (Start: 18 @51776 has 2 MA's), (22, 51767), (33, 51644), (40, 51584),

Gene: Roksolana\_102 Start: 50674, Stop: 50477, Start Num: 20

Candidate Starts for Roksolana\_102:

(4, 50770), (7, 50746), (8, 50740), (Start: 20 @50674 has 26 MA's), (28, 50608), (32, 50557), (38, 50512),

Gene: RyeScarlet\_99 Start: 51405, Stop: 51202, Start Num: 16

Candidate Starts for RyeScarlet\_99:

(Start: 16 @51405 has 15 MA's), (Start: 21 @51393 has 10 MA's), (31, 51288),

Gene: Sachima\_94 Start: 51433, Stop: 51230, Start Num: 16

Candidate Starts for Sachima\_94:

(Start: 16 @51433 has 15 MA's), (Start: 21 @51421 has 10 MA's), (31, 51316),

Gene: Salz\_95 Start: 49691, Stop: 49497, Start Num: 23

Candidate Starts for Salz\_95:

(1, 49958), (Start: 12 @49721 has 2 MA's), (14, 49715), (Start: 21 @49697 has 10 MA's), (Start: 23 @49691 has 5 MA's), (25, 49646), (26, 49640), (34, 49568), (36, 49556),

Gene: Scherzo\_96 Start: 51450, Stop: 51247, Start Num: 16

Candidate Starts for Scherzo\_96:

(Start: 16 @51450 has 15 MA's), (Start: 21 @51438 has 10 MA's), (31, 51333),

Gene: SmellyB\_99 Start: 50126, Stop: 49929, Start Num: 20

Candidate Starts for SmellyB\_99:

(4, 50222), (7, 50198), (8, 50192), (Start: 20 @50126 has 26 MA's), (28, 50060), (32, 50009), (38, 49964),

Gene: SororFago\_96 Start: 51668, Stop: 51465, Start Num: 19

Candidate Starts for SororFago\_96:

(3, 51782), (9, 51716), (Start: 19 @51668 has 17 MA's), (25, 51617), (27, 51602), (34, 51539),

Gene: Spouty\_95 Start: 51070, Stop: 50867, Start Num: 16

Candidate Starts for Spouty\_95:

(Start: 16 @51070 has 15 MA's), (Start: 21 @51058 has 10 MA's), (28, 50998), (31, 50953),

Gene: Sunhee\_101 Start: 50509, Stop: 50312, Start Num: 19

Candidate Starts for Sunhee\_101:

(3, 50623), (9, 50557), (Start: 19 @50509 has 17 MA's), (26, 50455), (33, 50386), (36, 50371), (38, 50347), (40, 50326),

Gene: SuperAwesome\_99 Start: 50810, Stop: 50613, Start Num: 20

Candidate Starts for SuperAwesome\_99:

(4, 50906), (7, 50882), (8, 50876), (Start: 20 @50810 has 26 MA's), (28, 50744), (32, 50693), (38, 50648),

Gene: Temprado\_103 Start: 50790, Stop: 50593, Start Num: 19

Candidate Starts for Temprado\_103:

(Start: 19 @50790 has 17 MA's), (38, 50628),

Gene: Toaka\_95 Start: 51213, Stop: 51004, Start Num: 15

Candidate Starts for Toaka\_95:

(5, 51282), (10, 51240), (Start: 15 @51213 has 2 MA's), (25, 51153), (26, 51147), (33, 51078),

Gene: ToneTone\_98 Start: 50341, Stop: 50144, Start Num: 19

Candidate Starts for ToneTone\_98:

(Start: 19 @50341 has 17 MA's), (38, 50179),

Gene: Tristan\_90 Start: 51880, Stop: 51662, Start Num: 13

Candidate Starts for Tristan\_90:

(Start: 12 @51883 has 2 MA's), (Start: 13 @51880 has 3 MA's), (24, 51826), (25, 51811), (29, 51772), (33, 51736), (39, 51694),

Gene: Tubs\_98 Start: 51397, Stop: 51203, Start Num: 21

Candidate Starts for Tubs\_98:

(Start: 16 @51409 has 15 MA's), (Start: 21 @51397 has 10 MA's), (28, 51334), (31, 51289),

Gene: Tucker\_102 Start: 50544, Stop: 50347, Start Num: 19

Candidate Starts for Tucker\_102:

(Start: 19 @50544 has 17 MA's), (38, 50382),

Gene: Ugenie5\_85 Start: 48894, Stop: 48691, Start Num: 16

Candidate Starts for Ugenie5\_85:

(Start: 16 @48894 has 15 MA's), (Start: 21 @48882 has 10 MA's), (31, 48777),

Gene: Vanisoa\_92 Start: 51506, Stop: 51297, Start Num: 15

Candidate Starts for Vanisoa\_92:

(Start: 15 @51506 has 2 MA's), (25, 51446), (26, 51440),

Gene: VohminGhazi\_99 Start: 50127, Stop: 49930, Start Num: 20

Candidate Starts for VohminGhazi\_99:

(4, 50223), (7, 50199), (8, 50193), (Start: 20 @50127 has 26 MA's), (28, 50061), (32, 50010), (38, 49965),

Gene: Wiks\_101 Start: 50421, Stop: 50224, Start Num: 19

Candidate Starts for Wiks\_101:

(Start: 19 @50421 has 17 MA's), (38, 50259),

Gene: WorldCup\_95 Start: 50989, Stop: 50759, Start Num: 11

Candidate Starts for WorldCup\_95:

(Start: 11 @50989 has 1 MA's), (Start: 20 @50962 has 26 MA's), (25, 50908), (26, 50902), (30, 50848), (36, 50818), (40, 50773),

Gene: WunderPhul\_90 Start: 47023, Stop: 46826, Start Num: 19

Candidate Starts for WunderPhul\_90:

(Start: 19 @47023 has 17 MA's), (38, 46861),

Gene: Yecey3\_99 Start: 51233, Stop: 51030, Start Num: 19

Candidate Starts for Yecey3\_99:

(Start: 19 @51233 has 17 MA's), (42, 51035),

Gene: Yokurt\_101 Start: 50421, Stop: 50224, Start Num: 19

Candidate Starts for Yokurt\_101:

(Start: 19 @50421 has 17 MA's), (38, 50259),

Gene: Zaka\_102 Start: 50421, Stop: 50224, Start Num: 19

Candidate Starts for Zaka\_102:

(Start: 19 @50421 has 17 MA's), (38, 50259),

Gene: Zulu\_103 Start: 50798, Stop: 50601, Start Num: 19

Candidate Starts for Zulu\_103:

(Start: 19 @50798 has 17 MA's), (38, 50636),