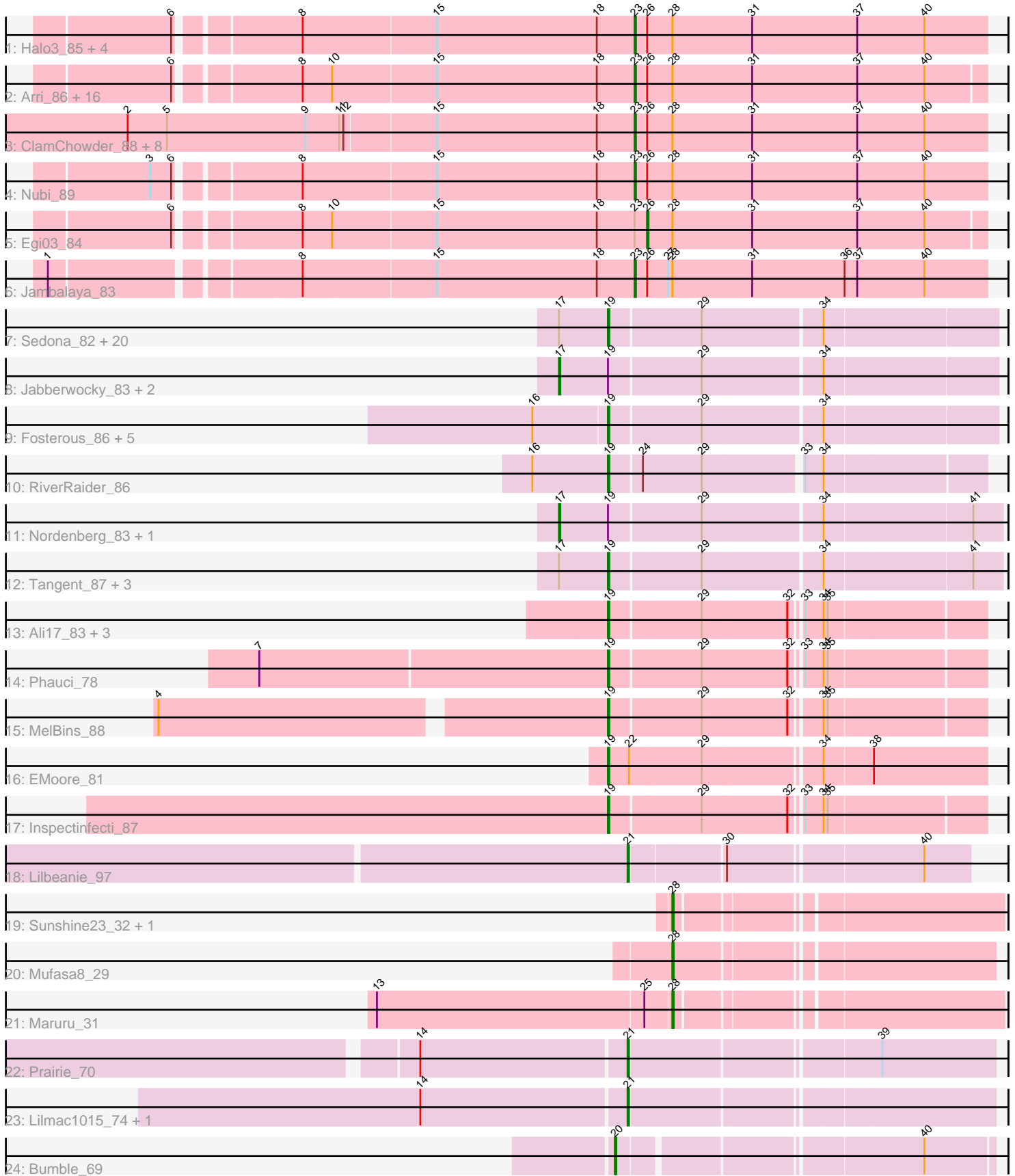


Pham 296458



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 296458 Report

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

Pham number 296458 has 88 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Halo3\_85, SmokingBunny\_87, Salvador\_86, Evamon\_86, Togo\_86
- Track 2 : Arri\_86, PullumCavea\_84, Twister6\_85, VanDeWege\_88, Fireball\_89, Gezellig\_82, CherryCola\_85, JohnPork\_87, Portcullis\_86, RogerDodger\_89, Savbucketdawg\_81, Phlop\_83, KimmyK\_84, Sendy\_88, Wizard\_81, Valary\_87, Shinji\_85
- Track 3 : ClamChowder\_88, Barb\_89, PinkCoffee\_87, Danyall\_86, TillyBobJoe\_84, YungMoney\_85, Fugax\_89, CoveyB\_87, Mutzi\_85
- Track 4 : Nubi\_89
- Track 5 : Egi03\_84
- Track 6 : Jambalaya\_83
- Track 7 : Sedona\_82, Paries\_88, Brawn1\_81, Lennon\_84, BobBob\_86, Stultus\_79, FuegoCuervo\_89, Fitzgerald\_82, ChadMasterC\_83, Angelicage\_83, Shivanishola\_86, Sanjuju\_82, Ailee\_82, Baddon\_82, Bibwit\_82, McKinley\_87, Sitar\_83, Love\_90, Brandonk123\_88, Kewpiedoll\_85, Affeca\_86
- Track 8 : Jabberwocky\_83, MoontowerMania\_85, Keitabear\_82
- Track 9 : Fosterous\_86, Kamashten\_85, Galadriel\_85, McCrothy\_83, Thing3\_85, Rofo\_84
- Track 10 : RiverRaider\_86
- Track 11 : Nordenberg\_83, Charming\_87
- Track 12 : Tangent\_87, Vivi2\_88, Barsten\_87, Geodirt\_84
- Track 13 : Ali17\_83, Leonard\_86, Hans\_87, Phinally\_86
- Track 14 : Phauci\_78
- Track 15 : MelBins\_88
- Track 16 : EMOore\_81
- Track 17 : Inspectinfecti\_87
- Track 18 : Lilbeanie\_97
- Track 19 : Sunshine23\_32, Sonali\_32
- Track 20 : Mufasa8\_29
- Track 21 : Maruru\_31
- Track 22 : Prairie\_70
- Track 23 : Lilmac1015\_74, CalWood4100\_74
- Track 24 : Bumble\_69

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

The start number called the most often in the published annotations is 19, it was called in 38 of the 81 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Affeca\_86, Ailee\_82, Ali17\_83, Angelicage\_83, Baddon\_82, Barsten\_87, Bibwit\_82, BobBob\_86, Brandonk123\_88, Brawn1\_81, ChadMasterC\_83, EMOore\_81, Fitzgerald\_82, Fosterous\_86, FuegoCuervo\_89, Galadriel\_85, Geodirt\_84, Hans\_87, Inspectinfecti\_87, Kamashten\_85, Kewpiedoll\_85, Lennon\_84, Leonard\_86, Love\_90, McCrothy\_83, McKinley\_87, MelBins\_88, Paries\_88, Phauci\_78, Phinally\_86, RiverRaider\_86, Rofo\_84, Sanjuju\_82, Sedona\_82, Shivanishola\_86, Sitar\_83, Stultus\_79, Tangent\_87, Thing3\_85, Vivi2\_88,

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

- Charming\_87, Jabberwocky\_83, Keitabear\_82, MoontowerMania\_85, Nordenberg\_83,

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

- Arri\_86, Barb\_89, Bumble\_69, CalWood4100\_74, CherryCola\_85, ClamChowder\_88, CoveyB\_87, Danyall\_86, Egi03\_84, Evamon\_86, Fireball\_89, Fugax\_89, Gezellig\_82, Halo3\_85, Jambalaya\_83, JohnPork\_87, KimmyK\_84, Lilbeanie\_97, Lilmac1015\_74, Maruru\_31, Mufasa8\_29, Mutzi\_85, Nubi\_89, Phlop\_83, PinkCoffee\_87, Portcullis\_86, Prairie\_70, PullumCavea\_84, RogerDodger\_89, Salvador\_86, Savbucketdawg\_81, Sendy\_88, Shinji\_85, SmokingBunny\_87, Sonali\_32, Sunshine23\_32, TillyBobJoe\_84, Togo\_86, Twister6\_85, Valary\_87, VanDeWege\_88, Wizard\_81, YungMoney\_85,

### Summary by start number:

Start 17:

- Found in 30 of 88 ( 34.1% ) of genes in pham
- Manual Annotations of this start: 5 of 81
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Charming\_87 (DE1), Jabberwocky\_83 (DE1), Keitabear\_82 (DE1), MoontowerMania\_85 (DE1), Nordenberg\_83 (DE1),

Start 19:

- Found in 45 of 88 ( 51.1% ) of genes in pham
- Manual Annotations of this start: 38 of 81
- Called 88.9% of time when present
- Phage (with cluster) where this start called: Affeca\_86 (DE1), Ailee\_82 (DE1), Ali17\_83 (DE2), Angelicage\_83 (DE1), Baddon\_82 (DE1), Barsten\_87 (DE1), Bibwit\_82 (DE1), BobBob\_86 (DE1), Brandonk123\_88 (DE1), Brawn1\_81 (DE1), ChadMasterC\_83 (DE1), EMOore\_81 (DE2), Fitzgerald\_82 (DE1), Fosterous\_86 (DE1), FuegoCuervo\_89 (DE1), Galadriel\_85 (DE1), Geodirt\_84 (DE1), Hans\_87 (DE2), Inspectinfecti\_87 (DE2), Kamashten\_85 (DE1), Kewpiedoll\_85 (DE1), Lennon\_84 (DE1), Leonard\_86 (DE2), Love\_90 (DE1), McCrothy\_83 (DE1), McKinley\_87 (DE1), MelBins\_88 (DE2), Paries\_88 (DE1), Phauci\_78 (DE2), Phinally\_86 (DE2), RiverRaider\_86 (DE1), Rofo\_84 (DE1), Sanjuju\_82 (DE1), Sedona\_82 (DE1), Shivanishola\_86 (DE1), Sitar\_83 (DE1), Stultus\_79 (DE1), Tangent\_87 (DE1), Thing3\_85 (DE1), Vivi2\_88 (DE1),

Start 20:

- Found in 1 of 88 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bumble\_69 (FH),

#### Start 21:

- Found in 4 of 88 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 3 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CalWood4100\_74 (FH), Lilbeanie\_97 (DE5), Lilmac1015\_74 (FH), Prairie\_70 (FH),

#### Start 23:

- Found in 34 of 88 ( 38.6% ) of genes in pham
- Manual Annotations of this start: 30 of 81
- Called 97.1% of time when present
- Phage (with cluster) where this start called: Arri\_86 (DC1), Barb\_89 (DC1), CherryCola\_85 (DC1), ClamChowder\_88 (DC1), CoveyB\_87 (DC1), Danyall\_86 (DC1), Evamon\_86 (DC1), Fireball\_89 (DC1), Fugax\_89 (DC1), Gezellig\_82 (DC1), Halo3\_85 (DC1), Jambalaya\_83 (DC1), JohnPork\_87 (DC), KimmyK\_84 (DC1), Mutzi\_85 (DC1), Nubi\_89 (DC1), Phlop\_83 (DC1), PinkCoffee\_87 (DC1), Portcullis\_86 (DC1), PullumCavea\_84 (DC1), RogerDodger\_89 (DC1), Salvador\_86 (DC1), Savbucketdawg\_81 (DC1), Sendy\_88 (DC), Shinji\_85 (DC1), SmokingBunny\_87 (DC1), TillyBobJoe\_84 (DC1), Togo\_86 (DC1), Twister6\_85 (DC1), Valary\_87 (DC1), VanDeWege\_88 (DC1), Wizard\_81 (DC1), YungMoney\_85 (DC1),

#### Start 26:

- Found in 34 of 88 ( 38.6% ) of genes in pham
- Manual Annotations of this start: 1 of 81
- Called 2.9% of time when present
- Phage (with cluster) where this start called: Egi03\_84 (DC1),

#### Start 28:

- Found in 38 of 88 ( 43.2% ) of genes in pham
- Manual Annotations of this start: 3 of 81
- Called 10.5% of time when present
- Phage (with cluster) where this start called: Maruru\_31 (FG), Mufasa8\_29 (FG), Sonali\_32 (FG), Sunshine23\_32 (FG),

### Summary by clusters:

There are 7 clusters represented in this pham: DE1, DE2, DC, DE5, FG, FH, DC1,

#### Info for manual annotations of cluster DC1:

- Start number 23 was manually annotated 30 times for cluster DC1.
- Start number 26 was manually annotated 1 time for cluster DC1.

#### Info for manual annotations of cluster DE1:

- Start number 17 was manually annotated 5 times for cluster DE1.
- Start number 19 was manually annotated 30 times for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 19 was manually annotated 8 times for cluster DE2.

Info for manual annotations of cluster DE5:

- Start number 21 was manually annotated 1 time for cluster DE5.

Info for manual annotations of cluster FG:

- Start number 28 was manually annotated 3 times for cluster FG.

Info for manual annotations of cluster FH:

- Start number 20 was manually annotated 1 time for cluster FH.
- Start number 21 was manually annotated 2 times for cluster FH.

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

Gene: Affeca\_86 Start: 58157, Stop: 58420, Start Num: 19

Candidate Starts for Affeca\_86:

(Start: 17 @58124 has 5 MA's), (Start: 19 @58157 has 38 MA's), (29, 58220), (34, 58301),

Gene: Ailee\_82 Start: 57328, Stop: 57591, Start Num: 19

Candidate Starts for Ailee\_82:

(Start: 17 @57295 has 5 MA's), (Start: 19 @57328 has 38 MA's), (29, 57391), (34, 57472),

Gene: Ali17\_83 Start: 57614, Stop: 57865, Start Num: 19

Candidate Starts for Ali17\_83:

(Start: 19 @57614 has 38 MA's), (29, 57677), (32, 57737), (33, 57743), (34, 57755), (35, 57758),

Gene: Angelicage\_83 Start: 58231, Stop: 58494, Start Num: 19

Candidate Starts for Angelicage\_83:

(Start: 17 @58198 has 5 MA's), (Start: 19 @58231 has 38 MA's), (29, 58294), (34, 58375),

Gene: Arri\_86 Start: 56263, Stop: 56015, Start Num: 23

Candidate Starts for Arri\_86:

(6, 56575), (8, 56497), (10, 56476), (15, 56404), (18, 56290), (Start: 23 @56263 has 30 MA's), (Start: 26 @56254 has 1 MA's), (Start: 28 @56236 has 3 MA's), (31, 56179), (37, 56104), (40, 56056),

Gene: Baddon\_82 Start: 57243, Stop: 57506, Start Num: 19

Candidate Starts for Baddon\_82:

(Start: 17 @57210 has 5 MA's), (Start: 19 @57243 has 38 MA's), (29, 57306), (34, 57387),

Gene: Barb\_89 Start: 56790, Stop: 56539, Start Num: 23

Candidate Starts for Barb\_89:

(2, 57147), (5, 57120), (9, 57021), (11, 56997), (12, 56994), (15, 56931), (18, 56817), (Start: 23 @56790 has 30 MA's), (Start: 26 @56781 has 1 MA's), (Start: 28 @56763 has 3 MA's), (31, 56706), (37, 56631), (40, 56583),

Gene: Barsten\_87 Start: 58499, Stop: 58765, Start Num: 19

Candidate Starts for Barsten\_87:

(Start: 17 @58466 has 5 MA's), (Start: 19 @58499 has 38 MA's), (29, 58562), (34, 58643), (41, 58745),

Gene: Bibwit\_82 Start: 56692, Stop: 56955, Start Num: 19

Candidate Starts for Bibwit\_82:

(Start: 17 @56659 has 5 MA's), (Start: 19 @56692 has 38 MA's), (29, 56755), (34, 56836),

Gene: BobBob\_86 Start: 57531, Stop: 57794, Start Num: 19

Candidate Starts for BobBob\_86:

(Start: 17 @57498 has 5 MA's), (Start: 19 @57531 has 38 MA's), (29, 57594), (34, 57675),

Gene: Brandonk123\_88 Start: 57696, Stop: 57959, Start Num: 19

Candidate Starts for Brandonk123\_88:

(Start: 17 @57663 has 5 MA's), (Start: 19 @57696 has 38 MA's), (29, 57759), (34, 57840),

Gene: Brawn1\_81 Start: 56836, Stop: 57099, Start Num: 19

Candidate Starts for Brawn1\_81:

(Start: 17 @56803 has 5 MA's), (Start: 19 @56836 has 38 MA's), (29, 56899), (34, 56980),

Gene: Bumble\_69 Start: 44314, Stop: 44069, Start Num: 20

Candidate Starts for Bumble\_69:

(Start: 20 @44314 has 1 MA's), (40, 44116),

Gene: CalWood4100\_74 Start: 45377, Stop: 45132, Start Num: 21

Candidate Starts for CalWood4100\_74:

(14, 45521), (Start: 21 @45377 has 3 MA's),

Gene: ChadMasterC\_83 Start: 58686, Stop: 58949, Start Num: 19

Candidate Starts for ChadMasterC\_83:

(Start: 17 @58653 has 5 MA's), (Start: 19 @58686 has 38 MA's), (29, 58749), (34, 58830),

Gene: Charming\_87 Start: 56965, Stop: 57264, Start Num: 17

Candidate Starts for Charming\_87:

(Start: 17 @56965 has 5 MA's), (Start: 19 @56998 has 38 MA's), (29, 57061), (34, 57142), (41, 57244),

Gene: CherryCola\_85 Start: 56676, Stop: 56428, Start Num: 23

Candidate Starts for CherryCola\_85:

(6, 56988), (8, 56910), (10, 56889), (15, 56817), (18, 56703), (Start: 23 @56676 has 30 MA's), (Start: 26 @56667 has 1 MA's), (Start: 28 @56649 has 3 MA's), (31, 56592), (37, 56517), (40, 56469),

Gene: ClamChowder\_88 Start: 56790, Stop: 56539, Start Num: 23

Candidate Starts for ClamChowder\_88:

(2, 57147), (5, 57120), (9, 57021), (11, 56997), (12, 56994), (15, 56931), (18, 56817), (Start: 23 @56790 has 30 MA's), (Start: 26 @56781 has 1 MA's), (Start: 28 @56763 has 3 MA's), (31, 56706), (37, 56631), (40, 56583),

Gene: CoveyB\_87 Start: 56277, Stop: 56026, Start Num: 23

Candidate Starts for CoveyB\_87:

(2, 56634), (5, 56607), (9, 56508), (11, 56484), (12, 56481), (15, 56418), (18, 56304), (Start: 23 @56277 has 30 MA's), (Start: 26 @56268 has 1 MA's), (Start: 28 @56250 has 3 MA's), (31, 56193), (37, 56118), (40, 56070),

Gene: Danyall\_86 Start: 55971, Stop: 55720, Start Num: 23

Candidate Starts for Danyall\_86:

(2, 56328), (5, 56301), (9, 56202), (11, 56178), (12, 56175), (15, 56112), (18, 55998), (Start: 23 @55971 has 30 MA's), (Start: 26 @55962 has 1 MA's), (Start: 28 @55944 has 3 MA's), (31, 55887), (37, 55812), (40, 55764),

Gene: EMoore\_81 Start: 58164, Stop: 58421, Start Num: 19

Candidate Starts for EMoore\_81:

(Start: 19 @58164 has 38 MA's), (22, 58179), (29, 58230), (34, 58308), (38, 58341),

Gene: Egi03\_84 Start: 55689, Stop: 55450, Start Num: 26

Candidate Starts for Egi03\_84:

(6, 56010), (8, 55932), (10, 55911), (15, 55839), (18, 55725), (Start: 23 @55698 has 30 MA's), (Start: 26 @55689 has 1 MA's), (Start: 28 @55671 has 3 MA's), (31, 55614), (37, 55539), (40, 55491),

Gene: Evamon\_86 Start: 56075, Stop: 55827, Start Num: 23

Candidate Starts for Evamon\_86:

(6, 56387), (8, 56309), (15, 56216), (18, 56102), (Start: 23 @56075 has 30 MA's), (Start: 26 @56066 has 1 MA's), (Start: 28 @56048 has 3 MA's), (31, 55991), (37, 55916), (40, 55868),

Gene: Fireball\_89 Start: 56537, Stop: 56289, Start Num: 23

Candidate Starts for Fireball\_89:

(6, 56849), (8, 56771), (10, 56750), (15, 56678), (18, 56564), (Start: 23 @56537 has 30 MA's), (Start: 26 @56528 has 1 MA's), (Start: 28 @56510 has 3 MA's), (31, 56453), (37, 56378), (40, 56330),

Gene: Fitzgerald\_82 Start: 57842, Stop: 58105, Start Num: 19

Candidate Starts for Fitzgerald\_82:

(Start: 17 @57809 has 5 MA's), (Start: 19 @57842 has 38 MA's), (29, 57905), (34, 57986),

Gene: Fosterous\_86 Start: 57990, Stop: 58253, Start Num: 19

Candidate Starts for Fosterous\_86:

(16, 57939), (Start: 19 @57990 has 38 MA's), (29, 58053), (34, 58134),

Gene: FuegoCuervo\_89 Start: 58028, Stop: 58291, Start Num: 19

Candidate Starts for FuegoCuervo\_89:

(Start: 17 @57995 has 5 MA's), (Start: 19 @58028 has 38 MA's), (29, 58091), (34, 58172),

Gene: Fugax\_89 Start: 56782, Stop: 56531, Start Num: 23

Candidate Starts for Fugax\_89:

(2, 57139), (5, 57112), (9, 57013), (11, 56989), (12, 56986), (15, 56923), (18, 56809), (Start: 23 @56782 has 30 MA's), (Start: 26 @56773 has 1 MA's), (Start: 28 @56755 has 3 MA's), (31, 56698), (37, 56623), (40, 56575),

Gene: Galadriel\_85 Start: 58206, Stop: 58469, Start Num: 19

Candidate Starts for Galadriel\_85:

(16, 58155), (Start: 19 @58206 has 38 MA's), (29, 58269), (34, 58350),

Gene: Geodirt\_84 Start: 58493, Stop: 58759, Start Num: 19

Candidate Starts for Geodirt\_84:

(Start: 17 @58460 has 5 MA's), (Start: 19 @58493 has 38 MA's), (29, 58556), (34, 58637), (41, 58739),

Gene: Gezellig\_82 Start: 55921, Stop: 55673, Start Num: 23

Candidate Starts for Gezellig\_82:

(6, 56233), (8, 56155), (10, 56134), (15, 56062), (18, 55948), (Start: 23 @55921 has 30 MA's), (Start: 26 @55912 has 1 MA's), (Start: 28 @55894 has 3 MA's), (31, 55837), (37, 55762), (40, 55714),

Gene: Halo3\_85 Start: 56796, Stop: 56545, Start Num: 23

Candidate Starts for Halo3\_85:

(6, 57108), (8, 57030), (15, 56937), (18, 56823), (Start: 23 @56796 has 30 MA's), (Start: 26 @56787 has 1 MA's), (Start: 28 @56769 has 3 MA's), (31, 56712), (37, 56637), (40, 56589),

Gene: Hans\_87 Start: 58571, Stop: 58822, Start Num: 19

Candidate Starts for Hans\_87:

(Start: 19 @58571 has 38 MA's), (29, 58634), (32, 58694), (33, 58700), (34, 58712), (35, 58715),

Gene: Inspectinfecti\_87 Start: 58519, Stop: 58770, Start Num: 19

Candidate Starts for Inspectinfecti\_87:

(Start: 19 @58519 has 38 MA's), (29, 58582), (32, 58642), (33, 58648), (34, 58660), (35, 58663),

Gene: Jabberwocky\_83 Start: 58270, Stop: 58566, Start Num: 17

Candidate Starts for Jabberwocky\_83:

(Start: 17 @58270 has 5 MA's), (Start: 19 @58303 has 38 MA's), (29, 58366), (34, 58447),

Gene: Jambalaya\_83 Start: 55378, Stop: 55127, Start Num: 23

Candidate Starts for Jambalaya\_83:

(1, 55774), (8, 55612), (15, 55519), (18, 55405), (Start: 23 @55378 has 30 MA's), (Start: 26 @55369 has 1 MA's), (27, 55354), (Start: 28 @55351 has 3 MA's), (31, 55294), (36, 55228), (37, 55219), (40, 55171),

Gene: JohnPork\_87 Start: 55977, Stop: 55729, Start Num: 23

Candidate Starts for JohnPork\_87:

(6, 56289), (8, 56211), (10, 56190), (15, 56118), (18, 56004), (Start: 23 @55977 has 30 MA's), (Start: 26 @55968 has 1 MA's), (Start: 28 @55950 has 3 MA's), (31, 55893), (37, 55818), (40, 55770),

Gene: Kamashten\_85 Start: 58100, Stop: 58363, Start Num: 19

Candidate Starts for Kamashten\_85:

(16, 58049), (Start: 19 @58100 has 38 MA's), (29, 58163), (34, 58244),

Gene: Keitabear\_82 Start: 58580, Stop: 58876, Start Num: 17

Candidate Starts for Keitabear\_82:

(Start: 17 @58580 has 5 MA's), (Start: 19 @58613 has 38 MA's), (29, 58676), (34, 58757),

Gene: Kewpiedoll\_85 Start: 58474, Stop: 58737, Start Num: 19

Candidate Starts for Kewpiedoll\_85:

(Start: 17 @58441 has 5 MA's), (Start: 19 @58474 has 38 MA's), (29, 58537), (34, 58618),

Gene: KimmyK\_84 Start: 56368, Stop: 56120, Start Num: 23

Candidate Starts for KimmyK\_84:

(6, 56680), (8, 56602), (10, 56581), (15, 56509), (18, 56395), (Start: 23 @56368 has 30 MA's), (Start: 26 @56359 has 1 MA's), (Start: 28 @56341 has 3 MA's), (31, 56284), (37, 56209), (40, 56161),

Gene: Lennon\_84 Start: 59043, Stop: 59306, Start Num: 19

Candidate Starts for Lennon\_84:

(Start: 17 @59010 has 5 MA's), (Start: 19 @59043 has 38 MA's), (29, 59106), (34, 59187),

Gene: Leonard\_86 Start: 58581, Stop: 58832, Start Num: 19

Candidate Starts for Leonard\_86:

(Start: 19 @58581 has 38 MA's), (29, 58644), (32, 58704), (33, 58710), (34, 58722), (35, 58725),

Gene: Lilbeanie\_97 Start: 58823, Stop: 59047, Start Num: 21

Candidate Starts for Lilbeanie\_97:

(Start: 21 @58823 has 3 MA's), (30, 58886), (40, 59015),

Gene: Lilmac1015\_74 Start: 45377, Stop: 45132, Start Num: 21

Candidate Starts for Lilmac1015\_74:

(14, 45521), (Start: 21 @45377 has 3 MA's),

Gene: Love\_90 Start: 58854, Stop: 59117, Start Num: 19

Candidate Starts for Love\_90:

(Start: 17 @58821 has 5 MA's), (Start: 19 @58854 has 38 MA's), (29, 58917), (34, 58998),

Gene: Maruru\_31 Start: 29698, Stop: 29486, Start Num: 28

Candidate Starts for Maruru\_31:

(13, 29905), (25, 29716), (Start: 28 @29698 has 3 MA's),

Gene: McCrothy\_83 Start: 58830, Stop: 59093, Start Num: 19

Candidate Starts for McCrothy\_83:

(16, 58779), (Start: 19 @58830 has 38 MA's), (29, 58893), (34, 58974),

Gene: McKinley\_87 Start: 57834, Stop: 58097, Start Num: 19

Candidate Starts for McKinley\_87:

(Start: 17 @57801 has 5 MA's), (Start: 19 @57834 has 38 MA's), (29, 57897), (34, 57978),

Gene: MelBins\_88 Start: 59070, Stop: 59321, Start Num: 19

Candidate Starts for MelBins\_88:

(4, 58767), (Start: 19 @59070 has 38 MA's), (29, 59133), (32, 59193), (34, 59211), (35, 59214),

Gene: MoontowerMania\_85 Start: 58915, Stop: 59211, Start Num: 17

Candidate Starts for MoontowerMania\_85:

(Start: 17 @58915 has 5 MA's), (Start: 19 @58948 has 38 MA's), (29, 59011), (34, 59092),

Gene: Mufasa8\_29 Start: 27032, Stop: 26823, Start Num: 28

Candidate Starts for Mufasa8\_29:

(Start: 28 @27032 has 3 MA's),

Gene: Mutzi\_85 Start: 56931, Stop: 56680, Start Num: 23

Candidate Starts for Mutzi\_85:

(2, 57288), (5, 57261), (9, 57162), (11, 57138), (12, 57135), (15, 57072), (18, 56958), (Start: 23 @56931 has 30 MA's), (Start: 26 @56922 has 1 MA's), (Start: 28 @56904 has 3 MA's), (31, 56847), (37, 56772), (40, 56724),

Gene: Nordenberg\_83 Start: 56540, Stop: 56839, Start Num: 17

Candidate Starts for Nordenberg\_83:

(Start: 17 @56540 has 5 MA's), (Start: 19 @56573 has 38 MA's), (29, 56636), (34, 56717), (41, 56819),

Gene: Nubi\_89 Start: 56334, Stop: 56083, Start Num: 23

Candidate Starts for Nubi\_89:

(3, 56661), (6, 56646), (8, 56568), (15, 56475), (18, 56361), (Start: 23 @56334 has 30 MA's), (Start: 26 @56325 has 1 MA's), (Start: 28 @56307 has 3 MA's), (31, 56250), (37, 56175), (40, 56127),

Gene: Paries\_88 Start: 59125, Stop: 59388, Start Num: 19

Candidate Starts for Paries\_88:

(Start: 17 @59092 has 5 MA's), (Start: 19 @59125 has 38 MA's), (29, 59188), (34, 59269),

Gene: Phauci\_78 Start: 55646, Stop: 55897, Start Num: 19

Candidate Starts for Phauci\_78:

(7, 55400), (Start: 19 @55646 has 38 MA's), (29, 55709), (32, 55769), (33, 55775), (34, 55787), (35, 55790),

Gene: Phinally\_86 Start: 58578, Stop: 58829, Start Num: 19

Candidate Starts for Phinally\_86:

(Start: 19 @58578 has 38 MA's), (29, 58641), (32, 58701), (33, 58707), (34, 58719), (35, 58722),

Gene: Phlop\_83 Start: 55971, Stop: 55723, Start Num: 23

Candidate Starts for Phlop\_83:

(6, 56283), (8, 56205), (10, 56184), (15, 56112), (18, 55998), (Start: 23 @55971 has 30 MA's), (Start: 26 @55962 has 1 MA's), (Start: 28 @55944 has 3 MA's), (31, 55887), (37, 55812), (40, 55764),

Gene: PinkCoffee\_87 Start: 55835, Stop: 55587, Start Num: 23

Candidate Starts for PinkCoffee\_87:

(2, 56192), (5, 56165), (9, 56066), (11, 56042), (12, 56039), (15, 55976), (18, 55862), (Start: 23 @55835 has 30 MA's), (Start: 26 @55826 has 1 MA's), (Start: 28 @55808 has 3 MA's), (31, 55751), (37, 55676), (40, 55628),

Gene: Portcullis\_86 Start: 55977, Stop: 55729, Start Num: 23

Candidate Starts for Portcullis\_86:

(6, 56289), (8, 56211), (10, 56190), (15, 56118), (18, 56004), (Start: 23 @55977 has 30 MA's), (Start: 26 @55968 has 1 MA's), (Start: 28 @55950 has 3 MA's), (31, 55893), (37, 55818), (40, 55770),

Gene: Prairie\_70 Start: 44683, Stop: 44438, Start Num: 21

Candidate Starts for Prairie\_70:

(14, 44827), (Start: 21 @44683 has 3 MA's), (39, 44518),

Gene: PullumCavea\_84 Start: 56148, Stop: 55900, Start Num: 23

Candidate Starts for PullumCavea\_84:

(6, 56460), (8, 56382), (10, 56361), (15, 56289), (18, 56175), (Start: 23 @56148 has 30 MA's), (Start: 26 @56139 has 1 MA's), (Start: 28 @56121 has 3 MA's), (31, 56064), (37, 55989), (40, 55941),

Gene: RiverRaider\_86 Start: 55943, Stop: 56194, Start Num: 19

Candidate Starts for RiverRaider\_86:

(16, 55889), (Start: 19 @55943 has 38 MA's), (24, 55964), (29, 56006), (33, 56072), (34, 56084),

Gene: Rofo\_84 Start: 57573, Stop: 57836, Start Num: 19

Candidate Starts for Rofo\_84:

(16, 57522), (Start: 19 @57573 has 38 MA's), (29, 57636), (34, 57717),

Gene: RogerDodger\_89 Start: 56736, Stop: 56488, Start Num: 23

Candidate Starts for RogerDodger\_89:

(6, 57048), (8, 56970), (10, 56949), (15, 56877), (18, 56763), (Start: 23 @56736 has 30 MA's), (Start: 26 @56727 has 1 MA's), (Start: 28 @56709 has 3 MA's), (31, 56652), (37, 56577), (40, 56529),

Gene: Salvador\_86 Start: 56073, Stop: 55825, Start Num: 23

Candidate Starts for Salvador\_86:

(6, 56385), (8, 56307), (15, 56214), (18, 56100), (Start: 23 @56073 has 30 MA's), (Start: 26 @56064 has 1 MA's), (Start: 28 @56046 has 3 MA's), (31, 55989), (37, 55914), (40, 55866),

Gene: Sanjuju\_82 Start: 57928, Stop: 58191, Start Num: 19

Candidate Starts for Sanjuju\_82:

(Start: 17 @57895 has 5 MA's), (Start: 19 @57928 has 38 MA's), (29, 57991), (34, 58072),

Gene: Savbucketdawg\_81 Start: 55415, Stop: 55167, Start Num: 23

Candidate Starts for Savbucketdawg\_81:

(6, 55727), (8, 55649), (10, 55628), (15, 55556), (18, 55442), (Start: 23 @55415 has 30 MA's), (Start: 26 @55406 has 1 MA's), (Start: 28 @55388 has 3 MA's), (31, 55331), (37, 55256), (40, 55208),

Gene: Sedona\_82 Start: 58425, Stop: 58688, Start Num: 19

Candidate Starts for Sedona\_82:

(Start: 17 @58392 has 5 MA's), (Start: 19 @58425 has 38 MA's), (29, 58488), (34, 58569),

Gene: Sendy\_88 Start: 56153, Stop: 55905, Start Num: 23

Candidate Starts for Sendy\_88:

(6, 56465), (8, 56387), (10, 56366), (15, 56294), (18, 56180), (Start: 23 @56153 has 30 MA's), (Start: 26 @56144 has 1 MA's), (Start: 28 @56126 has 3 MA's), (31, 56069), (37, 55994), (40, 55946),

Gene: Shinji\_85 Start: 56154, Stop: 55906, Start Num: 23

Candidate Starts for Shinji\_85:

(6, 56466), (8, 56388), (10, 56367), (15, 56295), (18, 56181), (Start: 23 @56154 has 30 MA's), (Start: 26 @56145 has 1 MA's), (Start: 28 @56127 has 3 MA's), (31, 56070), (37, 55995), (40, 55947),

Gene: Shivanishola\_86 Start: 56589, Stop: 56852, Start Num: 19

Candidate Starts for Shivanishola\_86:

(Start: 17 @56556 has 5 MA's), (Start: 19 @56589 has 38 MA's), (29, 56652), (34, 56733),

Gene: Sitar\_83 Start: 58447, Stop: 58710, Start Num: 19

Candidate Starts for Sitar\_83:

(Start: 17 @58414 has 5 MA's), (Start: 19 @58447 has 38 MA's), (29, 58510), (34, 58591),

Gene: SmokingBunny\_87 Start: 57069, Stop: 56821, Start Num: 23

Candidate Starts for SmokingBunny\_87:

(6, 57381), (8, 57303), (15, 57210), (18, 57096), (Start: 23 @57069 has 30 MA's), (Start: 26 @57060 has 1 MA's), (Start: 28 @57042 has 3 MA's), (31, 56985), (37, 56910), (40, 56862),

Gene: Sonali\_32 Start: 30335, Stop: 30120, Start Num: 28

Candidate Starts for Sonali\_32:

(Start: 28 @30335 has 3 MA's),

Gene: Stultus\_79 Start: 56719, Stop: 56982, Start Num: 19

Candidate Starts for Stultus\_79:

(Start: 17 @56686 has 5 MA's), (Start: 19 @56719 has 38 MA's), (29, 56782), (34, 56863),

Gene: Sunshine23\_32 Start: 29942, Stop: 29730, Start Num: 28

Candidate Starts for Sunshine23\_32:

(Start: 28 @29942 has 3 MA's),

Gene: Tangent\_87 Start: 57279, Stop: 57545, Start Num: 19

Candidate Starts for Tangent\_87:

(Start: 17 @57246 has 5 MA's), (Start: 19 @57279 has 38 MA's), (29, 57342), (34, 57423), (41, 57525),

Gene: Thing3\_85 Start: 58100, Stop: 58363, Start Num: 19

Candidate Starts for Thing3\_85:

(16, 58049), (Start: 19 @58100 has 38 MA's), (29, 58163), (34, 58244),

Gene: TillyBobJoe\_84 Start: 55955, Stop: 55707, Start Num: 23

Candidate Starts for TillyBobJoe\_84:

(2, 56312), (5, 56285), (9, 56186), (11, 56162), (12, 56159), (15, 56096), (18, 55982), (Start: 23 @55955 has 30 MA's), (Start: 26 @55946 has 1 MA's), (Start: 28 @55928 has 3 MA's), (31, 55871), (37, 55796), (40, 55748),

Gene: Togo\_86 Start: 57069, Stop: 56821, Start Num: 23

Candidate Starts for Togo\_86:

(6, 57381), (8, 57303), (15, 57210), (18, 57096), (Start: 23 @57069 has 30 MA's), (Start: 26 @57060 has 1 MA's), (Start: 28 @57042 has 3 MA's), (31, 56985), (37, 56910), (40, 56862),

Gene: Twister6\_85 Start: 55418, Stop: 55170, Start Num: 23

Candidate Starts for Twister6\_85:

(6, 55730), (8, 55652), (10, 55631), (15, 55559), (18, 55445), (Start: 23 @55418 has 30 MA's), (Start: 26 @55409 has 1 MA's), (Start: 28 @55391 has 3 MA's), (31, 55334), (37, 55259), (40, 55211),

Gene: Valary\_87 Start: 57061, Stop: 56813, Start Num: 23

Candidate Starts for Valary\_87:

(6, 57373), (8, 57295), (10, 57274), (15, 57202), (18, 57088), (Start: 23 @57061 has 30 MA's), (Start: 26 @57052 has 1 MA's), (Start: 28 @57034 has 3 MA's), (31, 56977), (37, 56902), (40, 56854),

Gene: VanDeWege\_88 Start: 56586, Stop: 56338, Start Num: 23

Candidate Starts for VanDeWege\_88:

(6, 56898), (8, 56820), (10, 56799), (15, 56727), (18, 56613), (Start: 23 @56586 has 30 MA's), (Start: 26 @56577 has 1 MA's), (Start: 28 @56559 has 3 MA's), (31, 56502), (37, 56427), (40, 56379),

Gene: Vivi2\_88 Start: 58335, Stop: 58601, Start Num: 19

Candidate Starts for Vivi2\_88:

(Start: 17 @58302 has 5 MA's), (Start: 19 @58335 has 38 MA's), (29, 58398), (34, 58479), (41, 58581),

Gene: Wizard\_81 Start: 55921, Stop: 55673, Start Num: 23

Candidate Starts for Wizard\_81:

(6, 56233), (8, 56155), (10, 56134), (15, 56062), (18, 55948), (Start: 23 @55921 has 30 MA's), (Start: 26 @55912 has 1 MA's), (Start: 28 @55894 has 3 MA's), (31, 55837), (37, 55762), (40, 55714),

Gene: YungMoney\_85 Start: 57771, Stop: 57520, Start Num: 23

Candidate Starts for YungMoney\_85:

(2, 58128), (5, 58101), (9, 58002), (11, 57978), (12, 57975), (15, 57912), (18, 57798), (Start: 23 @57771 has 30 MA's), (Start: 26 @57762 has 1 MA's), (Start: 28 @57744 has 3 MA's), (31, 57687), (37, 57612), (40, 57564),