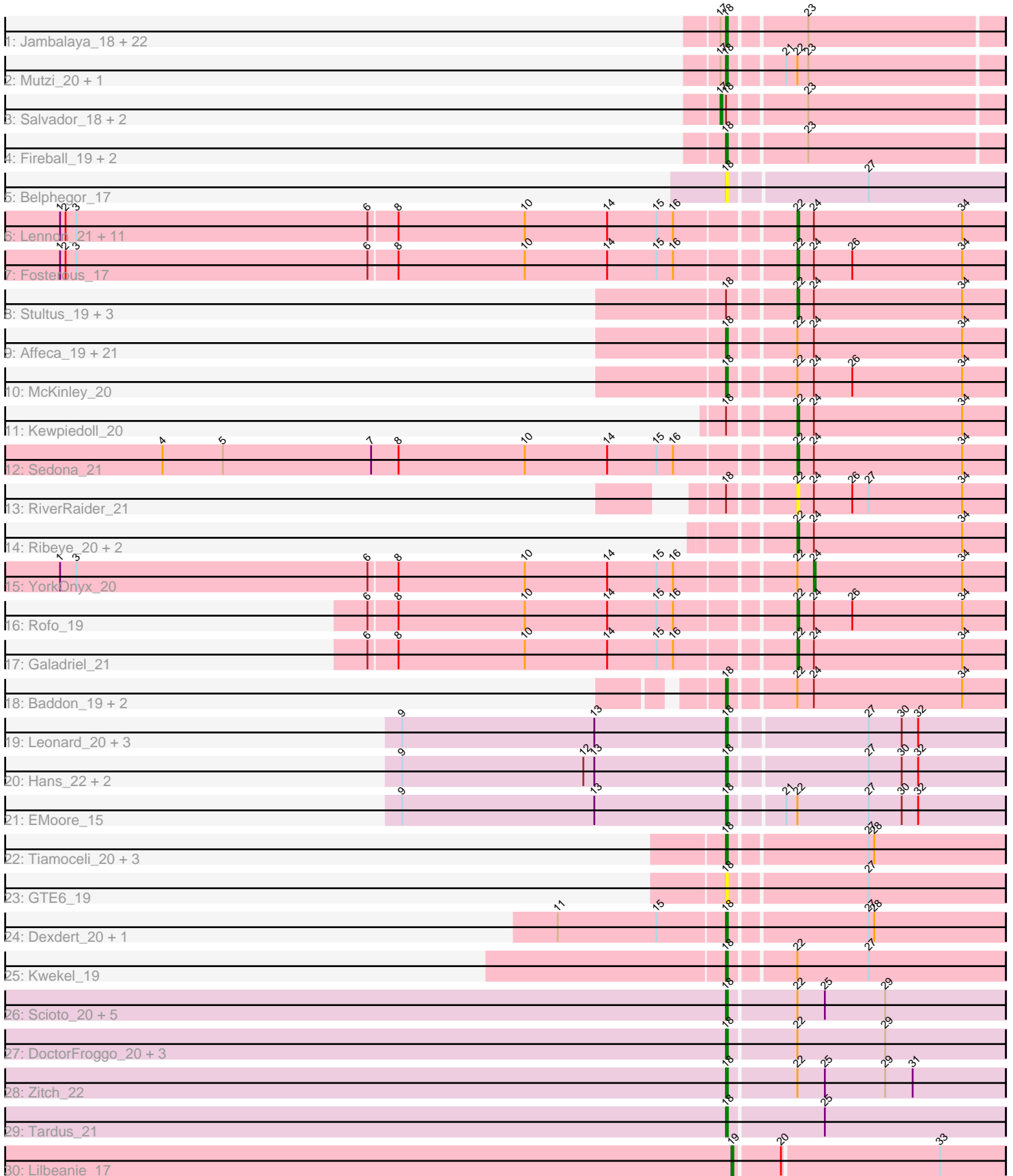


Pham 169846



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 169846 Report

This analysis was run 07/09/24 on database version 566.

Pham number 169846 has 113 members, 17 are drafts.

Phages represented in each track:

- Track 1 : Jambalaya\_18, Togo\_18, Danyall\_20, KimmyK\_20, TillyBobJoe\_18, Savbucketdawg\_18, SmokingBunny\_18, PinkCoffee\_20, ClamChowder\_20, Phlop\_18, YungMoney\_20, RogerDodger\_21, Nubi\_18, Fugax\_20, Evamon\_18, Twister6\_20, Arri\_21, Shinji\_18, Portcullis\_18, Barb\_20, VanDeWege\_21, Halo3\_19, PullumCavea\_18
- Track 2 : Mutzi\_20, Clown\_22
- Track 3 : Salvador\_18, Bakery\_19, Valary\_21
- Track 4 : Fireball\_19, Gezellig\_19, Wizard\_18
- Track 5 : Belphegor\_17
- Track 6 : Lennon\_21, Bibwit\_20, Love\_21, BobBob\_17, Barsten\_20, Tangent\_17, Keitabear\_21, Charming\_17, Paries\_20, Vivi2\_19, Sitar\_21, Nordenberg\_14
- Track 7 : Fosterous\_17
- Track 8 : Stultus\_19, Sanjuju\_17, Geodirt\_18, Jabberwocky\_17
- Track 9 : Affeca\_19, Saronaya\_19, Tycho\_19, Gustavo\_19, Brandonk123\_21, StorminNorm\_19, Tangerine\_19, ChadMasterC\_19, LilHam\_17, Ashertheman\_20, Gaea\_19, Kamashten\_20, Shivanishola\_19, Angelicage\_19, Flatwoods\_20, MoontowerMania\_18, Ailee\_19, Fitzgerald\_17, Baumdotcom\_19, Thing3\_20, SchottB\_18, Bizzy\_20
- Track 10 : McKinley\_20
- Track 11 : Kewpiedoll\_20
- Track 12 : Sedona\_21
- Track 13 : RiverRaider\_21
- Track 14 : Ribeye\_20, Kroos\_20, Kwobi\_20
- Track 15 : YorkOnyx\_20
- Track 16 : Rofo\_19
- Track 17 : Galadriel\_21
- Track 18 : Baddon\_19, Derg\_17, JKSyngboy\_18
- Track 19 : Leonard\_20, Ali17\_18, Phinally\_20, Inspectinfecti\_21
- Track 20 : Hans\_22, MelBins\_21, Phauci\_13
- Track 21 : EMoore\_15
- Track 22 : Tiamoceli\_20, Twonlo\_17, Chickadee\_19, RoadKill\_17
- Track 23 : GTE6\_19
- Track 24 : Dextert\_20, EdmundFerry\_18
- Track 25 : Kwekel\_19
- Track 26 : Scioto\_20, ViaConlectus\_21, Natkenzie\_20, Sampson\_20, APunk\_22, Abblin\_20
- Track 27 : DoctorFroggo\_20, Zipp\_20, Delrey21\_20, Verity\_20

- Track 28 : Zitch\_22
- Track 29 : Tardus\_21
- Track 30 : Lilbeanie\_17

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

The start number called the most often in the published annotations is 18, it was called in 68 of the 96 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- APunk\_22, Abblin\_20, Affeca\_19, Ailee\_19, Ali17\_18, Angelicage\_19, Arri\_21, Ashertheman\_20, Baddon\_19, Barb\_20, Baumdotcom\_19, Belphegor\_17, Bizzy\_20, Brandonk123\_21, ChadMasterC\_19, Chickadee\_19, ClamChowder\_20, Clown\_22, Danyall\_20, Delrey21\_20, Derg\_17, Dexdert\_20, DoctorFroggo\_20, EMOore\_15, EdmundFerry\_18, Evamon\_18, Fireball\_19, Fitzgerald\_17, Flatwoods\_20, Fugax\_20, GTE6\_19, Gaea\_19, Gezellig\_19, Gustavo\_19, Halo3\_19, Hans\_22, Inspectinfecti\_21, JKSyngboy\_18, Jambalaya\_18, Kamashten\_20, KimmyK\_20, Kwekel\_19, Leonard\_20, LilHam\_17, McKinley\_20, MelBins\_21, MoontowerMania\_18, Mutzi\_20, Natkenzie\_20, Nubi\_18, Phauci\_13, Phinally\_20, Phlop\_18, PinkCoffee\_20, Portcullis\_18, PullumCavea\_18, RoadKill\_17, RogerDodger\_21, Sampson\_20, Saronaya\_19, Savbucketdawg\_18, SchottB\_18, Scioto\_20, Shinji\_18, Shivanishola\_19, SmokingBunny\_18, StorminNorm\_19, Tangerine\_19, Tardus\_21, Thing3\_20, Tiamoceli\_20, TillyBobJoe\_18, Togo\_18, Twister6\_20, Twonlo\_17, Tycho\_19, VanDeWege\_21, Verity\_20, ViaConlectus\_21, Wizard\_18, YungMoney\_20, Zipp\_20, Zitch\_22,

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

- Bakery\_19, Geodirt\_18, Jabberwocky\_17, Kewpiedoll\_20, RiverRaider\_21, Salvador\_18, Sanjuju\_17, Stultus\_19, Valary\_21,

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

- Barsten\_20, Bibwit\_20, BobBob\_17, Charming\_17, Fosterous\_17, Galadriel\_21, Keitabear\_21, Kroos\_20, Kwobi\_20, Lennon\_21, Lilbeanie\_17, Love\_21, Nordenberg\_14, Paries\_20, Ribeye\_20, Rofo\_19, Sedona\_21, Sitar\_21, Tangent\_17, Vivi2\_19, YorkOnyx\_20,

**Summary by start number:**

Start 17:

- Found in 28 of 113 ( 24.8% ) of genes in pham
- Manual Annotations of this start: 3 of 96
- Called 10.7% of time when present
- Phage (with cluster) where this start called: Bakery\_19 (DC1), Salvador\_18 (DC1), Valary\_21 (DC1),

Start 18:

- Found in 92 of 113 ( 81.4% ) of genes in pham
- Manual Annotations of this start: 68 of 96
- Called 90.2% of time when present

- Phage (with cluster) where this start called: APunk\_22 (DE4), Abblin\_20 (DE4), Affeca\_19 (DE1), Ailee\_19 (DE1), Ali17\_18 (DE2), Angelicage\_19 (DE1), Arri\_21 (DC1), Ashertheman\_20 (DE1), Baddon\_19 (DE1), Barb\_20 (DC1), Baumdotcom\_19 (DE1), Belphegor\_17 (DE), Bizzy\_20 (DE1), Brandonk123\_21 (DE1), ChadMasterC\_19 (DE1), Chickadee\_19 (DE3), ClamChowder\_20 (DC1), Clown\_22 (DC2), Danyall\_20 (DC1), Delrey21\_20 (DE4), Derg\_17 (DE1), Dextert\_20 (DE3), DoctorFroggo\_20 (DE4), EMOore\_15 (DE2), EdmundFerry\_18 (DE3), Evamon\_18 (DC1), Fireball\_19 (DC1), Fitzgerald\_17 (DE1), Flatwoods\_20 (DE1), Fugax\_20 (DC1), GTE6\_19 (DE3), Gaea\_19 (DE1), Gezellig\_19 (DC1), Gustavo\_19 (DE1), Halo3\_19 (DC1), Hans\_22 (DE2), Inspectinfecti\_21 (DE2), JKSyngboy\_18 (DE1), Jambalaya\_18 (DC1), Kamashten\_20 (DE1), KimmyK\_20 (DC1), Kwekel\_19 (DE3), Leonard\_20 (DE2), LilHam\_17 (DE1), McKinley\_20 (DE1), MelBins\_21 (DE2), MoontowerMania\_18 (DE1), Mutzi\_20 (DC1), Natkenzie\_20 (DE4), Nubi\_18 (DC1), Phauci\_13 (DE2), Phinally\_20 (DE2), Phlop\_18 (DC1), PinkCoffee\_20 (DC1), Portcullis\_18 (DC1), PullumCavea\_18 (DC1), RoadKill\_17 (DE3), RogerDodger\_21 (DC1), Sampson\_20 (DE4), Saronaya\_19 (DE1), Savbucketdawg\_18 (DC1), SchottB\_18 (DE1), Scioto\_20 (DE4), Shinji\_18 (DC1), Shivanishola\_19 (DE1), SmokingBunny\_18 (DC1), StorminNorm\_19 (DE1), Tangerine\_19 (DE1), Tardus\_21 (DE4), Thing3\_20 (DE1), Tiamoceli\_20 (DE3), TillyBobJoe\_18 (DC1), Togo\_18 (DC1), Twister6\_20 (DC1), Twonlo\_17 (DE3), Tycho\_19 (DE1), VanDeWege\_21 (DC1), Verity\_20 (DE4), ViaConlectus\_21 (DE4), Wizard\_18 (DC1), YungMoney\_20 (DC1), Zipp\_20 (DE4), Zitch\_22 (DE4),

Start 19:

- Found in 1 of 113 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 96
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lilbeanie\_17 (DE5),

Start 22:

- Found in 67 of 113 ( 59.3% ) of genes in pham
- Manual Annotations of this start: 23 of 96
- Called 37.3% of time when present
- Phage (with cluster) where this start called: Barsten\_20 (DE1), Bibwit\_20 (DE1), BobBob\_17 (DE1), Charming\_17 (DE1), Fosterous\_17 (DE1), Galadriel\_21 (DE1), Geodirt\_18 (DE1), Jabberwocky\_17 (DE1), Keitabear\_21 (DE1), Kewpiedoll\_20 (DE1), Kroos\_20 (DE1), Kwobi\_20 (DE1), Lennon\_21 (DE1), Love\_21 (DE1), Nordenberg\_14 (DE1), Paries\_20 (DE1), Ribeye\_20 (DE1), RiverRaider\_21 (DE1), Rofo\_19 (DE1), Sanjuju\_17 (DE1), Sedona\_21 (DE1), Sitar\_21 (DE1), Stultus\_19 (DE1), Tangent\_17 (DE1), Vivi2\_19 (DE1),

Start 24:

- Found in 52 of 113 ( 46.0% ) of genes in pham
- Manual Annotations of this start: 1 of 96
- Called 1.9% of time when present
- Phage (with cluster) where this start called: YorkOnyx\_20 (DE1),

### Summary by clusters:

There are 8 clusters represented in this pham: DE, DE1, DE2, DE3, DE4, DE5, DC2, DC1,

Info for manual annotations of cluster DC1:

- Start number 17 was manually annotated 3 times for cluster DC1.
- Start number 18 was manually annotated 25 times for cluster DC1.

Info for manual annotations of cluster DC2:

- Start number 18 was manually annotated 1 time for cluster DC2.

Info for manual annotations of cluster DE1:

- Start number 18 was manually annotated 19 times for cluster DE1.
- Start number 22 was manually annotated 23 times for cluster DE1.
- Start number 24 was manually annotated 1 time for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 18 was manually annotated 7 times for cluster DE2.

Info for manual annotations of cluster DE3:

- Start number 18 was manually annotated 7 times for cluster DE3.

Info for manual annotations of cluster DE4:

- Start number 18 was manually annotated 9 times for cluster DE4.

Info for manual annotations of cluster DE5:

- Start number 19 was manually annotated 1 time for cluster DE5.

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

Gene: APunk\_22 Start: 16064, Stop: 16213, Start Num: 18

Candidate Starts for APunk\_22:

(Start: 18 @16064 has 68 MA's), (Start: 22 @16100 has 23 MA's), (25, 16115), (29, 16148),

Gene: Abblin\_20 Start: 15277, Stop: 15426, Start Num: 18

Candidate Starts for Abblin\_20:

(Start: 18 @15277 has 68 MA's), (Start: 22 @15313 has 23 MA's), (25, 15328), (29, 15361),

Gene: Affeca\_19 Start: 15092, Stop: 15238, Start Num: 18

Candidate Starts for Affeca\_19:

(Start: 18 @15092 has 68 MA's), (Start: 22 @15125 has 23 MA's), (Start: 24 @15134 has 1 MA's), (34, 15215),

Gene: Ailee\_19 Start: 15000, Stop: 15146, Start Num: 18

Candidate Starts for Ailee\_19:

(Start: 18 @15000 has 68 MA's), (Start: 22 @15033 has 23 MA's), (Start: 24 @15042 has 1 MA's), (34, 15123),

Gene: Ali17\_18 Start: 14404, Stop: 14550, Start Num: 18

Candidate Starts for Ali17\_18:

(9, 14227), (13, 14332), (Start: 18 @14404 has 68 MA's), (27, 14476), (30, 14494), (32, 14503),

Gene: Angelicage\_19 Start: 15515, Stop: 15661, Start Num: 18

Candidate Starts for Angelicage\_19:

(Start: 18 @15515 has 68 MA's), (Start: 22 @15548 has 23 MA's), (Start: 24 @15557 has 1 MA's), (34, 15638),

Gene: Arri\_21 Start: 12300, Stop: 12446, Start Num: 18

Candidate Starts for Arri\_21:

(Start: 17 @12297 has 3 MA's), (Start: 18 @12300 has 68 MA's), (23, 12342),

Gene: Ashertheman\_20 Start: 14598, Stop: 14744, Start Num: 18

Candidate Starts for Ashertheman\_20:

(Start: 18 @14598 has 68 MA's), (Start: 22 @14631 has 23 MA's), (Start: 24 @14640 has 1 MA's), (34, 14721),

Gene: Baddon\_19 Start: 15445, Stop: 15591, Start Num: 18

Candidate Starts for Baddon\_19:

(Start: 18 @15445 has 68 MA's), (Start: 22 @15478 has 23 MA's), (Start: 24 @15487 has 1 MA's), (34, 15568),

Gene: Bakery\_19 Start: 11498, Stop: 11644, Start Num: 17

Candidate Starts for Bakery\_19:

(Start: 17 @11498 has 3 MA's), (Start: 18 @11501 has 68 MA's), (23, 11540),

Gene: Barb\_20 Start: 12278, Stop: 12421, Start Num: 18

Candidate Starts for Barb\_20:

(Start: 17 @12275 has 3 MA's), (Start: 18 @12278 has 68 MA's), (23, 12317),

Gene: Barsten\_20 Start: 15061, Stop: 15174, Start Num: 22

Candidate Starts for Barsten\_20:

(1, 14668), (2, 14671), (3, 14677), (6, 14836), (8, 14851), (10, 14920), (14, 14965), (15, 14992), (16, 15001), (Start: 22 @15061 has 23 MA's), (Start: 24 @15070 has 1 MA's), (34, 15151),

Gene: Baumdotcom\_19 Start: 14214, Stop: 14360, Start Num: 18

Candidate Starts for Baumdotcom\_19:

(Start: 18 @14214 has 68 MA's), (Start: 22 @14247 has 23 MA's), (Start: 24 @14256 has 1 MA's), (34, 14337),

Gene: Belphegor\_17 Start: 13509, Stop: 13655, Start Num: 18

Candidate Starts for Belphegor\_17:

(Start: 18 @13509 has 68 MA's), (27, 13581),

Gene: Bibwit\_20 Start: 15305, Stop: 15418, Start Num: 22

Candidate Starts for Bibwit\_20:

(1, 14912), (2, 14915), (3, 14921), (6, 15080), (8, 15095), (10, 15164), (14, 15209), (15, 15236), (16, 15245), (Start: 22 @15305 has 23 MA's), (Start: 24 @15314 has 1 MA's), (34, 15395),

Gene: Bizzy\_20 Start: 14493, Stop: 14639, Start Num: 18

Candidate Starts for Bizzy\_20:

(Start: 18 @14493 has 68 MA's), (Start: 22 @14526 has 23 MA's), (Start: 24 @14535 has 1 MA's), (34, 14616),

Gene: BobBob\_17 Start: 13915, Stop: 14028, Start Num: 22

Candidate Starts for BobBob\_17:

(1, 13522), (2, 13525), (3, 13531), (6, 13690), (8, 13705), (10, 13774), (14, 13819), (15, 13846), (16, 13855), (Start: 22 @13915 has 23 MA's), (Start: 24 @13924 has 1 MA's), (34, 14005),

Gene: Brandonk123\_21 Start: 14574, Stop: 14720, Start Num: 18  
Candidate Starts for Brandonk123\_21:  
(Start: 18 @14574 has 68 MA's), (Start: 22 @14607 has 23 MA's), (Start: 24 @14616 has 1 MA's),  
(34, 14697),

Gene: ChadMasterC\_19 Start: 14992, Stop: 15138, Start Num: 18  
Candidate Starts for ChadMasterC\_19:  
(Start: 18 @14992 has 68 MA's), (Start: 22 @15025 has 23 MA's), (Start: 24 @15034 has 1 MA's),  
(34, 15115),

Gene: Charming\_17 Start: 13917, Stop: 14030, Start Num: 22  
Candidate Starts for Charming\_17:  
(1, 13524), (2, 13527), (3, 13533), (6, 13692), (8, 13707), (10, 13776), (14, 13821), (15, 13848), (16,  
13857), (Start: 22 @13917 has 23 MA's), (Start: 24 @13926 has 1 MA's), (34, 14007),

Gene: Chickadee\_19 Start: 13493, Stop: 13639, Start Num: 18  
Candidate Starts for Chickadee\_19:  
(Start: 18 @13493 has 68 MA's), (27, 13565), (28, 13568),

Gene: ClamChowder\_20 Start: 12278, Stop: 12421, Start Num: 18  
Candidate Starts for ClamChowder\_20:  
(Start: 17 @12275 has 3 MA's), (Start: 18 @12278 has 68 MA's), (23, 12317),

Gene: Clown\_22 Start: 14288, Stop: 14431, Start Num: 18  
Candidate Starts for Clown\_22:  
(Start: 17 @14285 has 3 MA's), (Start: 18 @14288 has 68 MA's), (21, 14315), (Start: 22 @14321 has  
23 MA's), (23, 14327),

Gene: Danyall\_20 Start: 12135, Stop: 12278, Start Num: 18  
Candidate Starts for Danyall\_20:  
(Start: 17 @12132 has 3 MA's), (Start: 18 @12135 has 68 MA's), (23, 12174),

Gene: Delrey21\_20 Start: 14740, Stop: 14889, Start Num: 18  
Candidate Starts for Delrey21\_20:  
(Start: 18 @14740 has 68 MA's), (Start: 22 @14776 has 23 MA's), (29, 14824),

Gene: Derg\_17 Start: 14088, Stop: 14234, Start Num: 18  
Candidate Starts for Derg\_17:  
(Start: 18 @14088 has 68 MA's), (Start: 22 @14121 has 23 MA's), (Start: 24 @14130 has 1 MA's),  
(34, 14211),

Gene: Dxdert\_20 Start: 13940, Stop: 14086, Start Num: 18  
Candidate Starts for Dxdert\_20:  
(11, 13850), (15, 13904), (Start: 18 @13940 has 68 MA's), (27, 14012), (28, 14015),

Gene: DoctorFroggo\_20 Start: 14740, Stop: 14889, Start Num: 18  
Candidate Starts for DoctorFroggo\_20:  
(Start: 18 @14740 has 68 MA's), (Start: 22 @14776 has 23 MA's), (29, 14824),

Gene: EMoore\_15 Start: 12766, Stop: 12912, Start Num: 18  
Candidate Starts for EMoore\_15:

(9, 12589), (13, 12694), (Start: 18 @12766 has 68 MA's), (21, 12793), (Start: 22 @12799 has 23 MA's), (27, 12838), (30, 12856), (32, 12865),

Gene: EdmundFerry\_18 Start: 13524, Stop: 13670, Start Num: 18

Candidate Starts for EdmundFerry\_18:

(11, 13434), (15, 13488), (Start: 18 @13524 has 68 MA's), (27, 13596), (28, 13599),

Gene: Evamon\_18 Start: 11610, Stop: 11753, Start Num: 18

Candidate Starts for Evamon\_18:

(Start: 17 @11607 has 3 MA's), (Start: 18 @11610 has 68 MA's), (23, 11649),

Gene: Fireball\_19 Start: 11748, Stop: 11891, Start Num: 18

Candidate Starts for Fireball\_19:

(Start: 18 @11748 has 68 MA's), (23, 11787),

Gene: Fitzgerald\_17 Start: 14310, Stop: 14456, Start Num: 18

Candidate Starts for Fitzgerald\_17:

(Start: 18 @14310 has 68 MA's), (Start: 22 @14343 has 23 MA's), (Start: 24 @14352 has 1 MA's), (34, 14433),

Gene: Flatwoods\_20 Start: 14500, Stop: 14646, Start Num: 18

Candidate Starts for Flatwoods\_20:

(Start: 18 @14500 has 68 MA's), (Start: 22 @14533 has 23 MA's), (Start: 24 @14542 has 1 MA's), (34, 14623),

Gene: Fosterous\_17 Start: 14806, Stop: 14919, Start Num: 22

Candidate Starts for Fosterous\_17:

(1, 14413), (2, 14416), (3, 14422), (6, 14581), (8, 14596), (10, 14665), (14, 14710), (15, 14737), (16, 14746), (Start: 22 @14806 has 23 MA's), (Start: 24 @14815 has 1 MA's), (26, 14836), (34, 14896),

Gene: Fugax\_20 Start: 12278, Stop: 12421, Start Num: 18

Candidate Starts for Fugax\_20:

(Start: 17 @12275 has 3 MA's), (Start: 18 @12278 has 68 MA's), (23, 12317),

Gene: GTE6\_19 Start: 14009, Stop: 14155, Start Num: 18

Candidate Starts for GTE6\_19:

(Start: 18 @14009 has 68 MA's), (27, 14081),

Gene: Gaea\_19 Start: 14194, Stop: 14340, Start Num: 18

Candidate Starts for Gaea\_19:

(Start: 18 @14194 has 68 MA's), (Start: 22 @14227 has 23 MA's), (Start: 24 @14236 has 1 MA's), (34, 14317),

Gene: Galadriel\_21 Start: 14665, Stop: 14778, Start Num: 22

Candidate Starts for Galadriel\_21:

(6, 14440), (8, 14455), (10, 14524), (14, 14569), (15, 14596), (16, 14605), (Start: 22 @14665 has 23 MA's), (Start: 24 @14674 has 1 MA's), (34, 14755),

Gene: Geodirt\_18 Start: 14870, Stop: 14983, Start Num: 22

Candidate Starts for Geodirt\_18:

(Start: 18 @14837 has 68 MA's), (Start: 22 @14870 has 23 MA's), (Start: 24 @14879 has 1 MA's), (34, 14960),



Gene: Gezellig\_19 Start: 11748, Stop: 11891, Start Num: 18

Candidate Starts for Gezellig\_19:

(Start: 18 @11748 has 68 MA's), (23, 11787),

Gene: Gustavo\_19 Start: 14305, Stop: 14451, Start Num: 18

Candidate Starts for Gustavo\_19:

(Start: 18 @14305 has 68 MA's), (Start: 22 @14338 has 23 MA's), (Start: 24 @14347 has 1 MA's), (34, 14428),

Gene: Halo3\_19 Start: 12063, Stop: 12206, Start Num: 18

Candidate Starts for Halo3\_19:

(Start: 17 @12060 has 3 MA's), (Start: 18 @12063 has 68 MA's), (23, 12102),

Gene: Hans\_22 Start: 15065, Stop: 15211, Start Num: 18

Candidate Starts for Hans\_22:

(9, 14888), (12, 14987), (13, 14993), (Start: 18 @15065 has 68 MA's), (27, 15137), (30, 15155), (32, 15164),

Gene: Inspectinfecti\_21 Start: 15487, Stop: 15633, Start Num: 18

Candidate Starts for Inspectinfecti\_21:

(9, 15310), (13, 15415), (Start: 18 @15487 has 68 MA's), (27, 15559), (30, 15577), (32, 15586),

Gene: JKSyngboy\_18 Start: 14964, Stop: 15110, Start Num: 18

Candidate Starts for JKSyngboy\_18:

(Start: 18 @14964 has 68 MA's), (Start: 22 @14997 has 23 MA's), (Start: 24 @15006 has 1 MA's), (34, 15087),

Gene: Jabberwocky\_17 Start: 14777, Stop: 14890, Start Num: 22

Candidate Starts for Jabberwocky\_17:

(Start: 18 @14744 has 68 MA's), (Start: 22 @14777 has 23 MA's), (Start: 24 @14786 has 1 MA's), (34, 14867),

Gene: Jambalaya\_18 Start: 11401, Stop: 11544, Start Num: 18

Candidate Starts for Jambalaya\_18:

(Start: 17 @11398 has 3 MA's), (Start: 18 @11401 has 68 MA's), (23, 11440),

Gene: Kamashten\_20 Start: 15427, Stop: 15573, Start Num: 18

Candidate Starts for Kamashten\_20:

(Start: 18 @15427 has 68 MA's), (Start: 22 @15460 has 23 MA's), (Start: 24 @15469 has 1 MA's), (34, 15550),

Gene: Keitabear\_21 Start: 17009, Stop: 17122, Start Num: 22

Candidate Starts for Keitabear\_21:

(1, 16616), (2, 16619), (3, 16625), (6, 16784), (8, 16799), (10, 16868), (14, 16913), (15, 16940), (16, 16949), (Start: 22 @17009 has 23 MA's), (Start: 24 @17018 has 1 MA's), (34, 17099),

Gene: Kewpiedoll\_20 Start: 14846, Stop: 14959, Start Num: 22

Candidate Starts for Kewpiedoll\_20:

(Start: 18 @14813 has 68 MA's), (Start: 22 @14846 has 23 MA's), (Start: 24 @14855 has 1 MA's), (34, 14936),

Gene: KimmyK\_20 Start: 12278, Stop: 12421, Start Num: 18

Candidate Starts for KimmyK\_20:

(Start: 17 @12275 has 3 MA's), (Start: 18 @12278 has 68 MA's), (23, 12317),

Gene: Kroos\_20 Start: 15090, Stop: 15203, Start Num: 22

Candidate Starts for Kroos\_20:

(Start: 22 @15090 has 23 MA's), (Start: 24 @15099 has 1 MA's), (34, 15180),

Gene: Kwekel\_19 Start: 13460, Stop: 13606, Start Num: 18

Candidate Starts for Kwekel\_19:

(Start: 18 @13460 has 68 MA's), (Start: 22 @13493 has 23 MA's), (27, 13532),

Gene: Kwobi\_20 Start: 15066, Stop: 15179, Start Num: 22

Candidate Starts for Kwobi\_20:

(Start: 22 @15066 has 23 MA's), (Start: 24 @15075 has 1 MA's), (34, 15156),

Gene: Lennon\_21 Start: 16113, Stop: 16226, Start Num: 22

Candidate Starts for Lennon\_21:

(1, 15720), (2, 15723), (3, 15729), (6, 15888), (8, 15903), (10, 15972), (14, 16017), (15, 16044), (16, 16053), (Start: 22 @16113 has 23 MA's), (Start: 24 @16122 has 1 MA's), (34, 16203),

Gene: Leonard\_20 Start: 15082, Stop: 15228, Start Num: 18

Candidate Starts for Leonard\_20:

(9, 14905), (13, 15010), (Start: 18 @15082 has 68 MA's), (27, 15154), (30, 15172), (32, 15181),

Gene: LilHam\_17 Start: 13612, Stop: 13758, Start Num: 18

Candidate Starts for LilHam\_17:

(Start: 18 @13612 has 68 MA's), (Start: 22 @13645 has 23 MA's), (Start: 24 @13654 has 1 MA's), (34, 13735),

Gene: Lilbeanie\_17 Start: 10420, Stop: 10563, Start Num: 19

Candidate Starts for Lilbeanie\_17:

(Start: 19 @10420 has 1 MA's), (20, 10444), (33, 10528),

Gene: Love\_21 Start: 14976, Stop: 15089, Start Num: 22

Candidate Starts for Love\_21:

(1, 14583), (2, 14586), (3, 14592), (6, 14751), (8, 14766), (10, 14835), (14, 14880), (15, 14907), (16, 14916), (Start: 22 @14976 has 23 MA's), (Start: 24 @14985 has 1 MA's), (34, 15066),

Gene: McKinley\_20 Start: 14965, Stop: 15111, Start Num: 18

Candidate Starts for McKinley\_20:

(Start: 18 @14965 has 68 MA's), (Start: 22 @14998 has 23 MA's), (Start: 24 @15007 has 1 MA's), (26, 15028), (34, 15088),

Gene: MelBins\_21 Start: 15286, Stop: 15432, Start Num: 18

Candidate Starts for MelBins\_21:

(9, 15109), (12, 15208), (13, 15214), (Start: 18 @15286 has 68 MA's), (27, 15358), (30, 15376), (32, 15385),

Gene: MoontowerMania\_18 Start: 13949, Stop: 14095, Start Num: 18

Candidate Starts for MoontowerMania\_18:

(Start: 18 @13949 has 68 MA's), (Start: 22 @13982 has 23 MA's), (Start: 24 @13991 has 1 MA's), (34, 14072),

Gene: Mutzi\_20 Start: 12002, Stop: 12145, Start Num: 18

Candidate Starts for Mutzi\_20:

(Start: 17 @11999 has 3 MA's), (Start: 18 @12002 has 68 MA's), (21, 12029), (Start: 22 @12035 has 23 MA's), (23, 12041),

Gene: Natkenzie\_20 Start: 15277, Stop: 15426, Start Num: 18

Candidate Starts for Natkenzie\_20:

(Start: 18 @15277 has 68 MA's), (Start: 22 @15313 has 23 MA's), (25, 15328), (29, 15361),

Gene: Nordenberg\_14 Start: 13296, Stop: 13409, Start Num: 22

Candidate Starts for Nordenberg\_14:

(1, 12903), (2, 12906), (3, 12912), (6, 13071), (8, 13086), (10, 13155), (14, 13200), (15, 13227), (16, 13236), (Start: 22 @13296 has 23 MA's), (Start: 24 @13305 has 1 MA's), (34, 13386),

Gene: Nubi\_18 Start: 11630, Stop: 11773, Start Num: 18

Candidate Starts for Nubi\_18:

(Start: 17 @11627 has 3 MA's), (Start: 18 @11630 has 68 MA's), (23, 11669),

Gene: Paries\_20 Start: 14664, Stop: 14777, Start Num: 22

Candidate Starts for Paries\_20:

(1, 14271), (2, 14274), (3, 14280), (6, 14439), (8, 14454), (10, 14523), (14, 14568), (15, 14595), (16, 14604), (Start: 22 @14664 has 23 MA's), (Start: 24 @14673 has 1 MA's), (34, 14754),

Gene: Phauci\_13 Start: 11649, Stop: 11795, Start Num: 18

Candidate Starts for Phauci\_13:

(9, 11472), (12, 11571), (13, 11577), (Start: 18 @11649 has 68 MA's), (27, 11721), (30, 11739), (32, 11748),

Gene: Phinally\_20 Start: 15079, Stop: 15225, Start Num: 18

Candidate Starts for Phinally\_20:

(9, 14902), (13, 15007), (Start: 18 @15079 has 68 MA's), (27, 15151), (30, 15169), (32, 15178),

Gene: Phlop\_18 Start: 11703, Stop: 11846, Start Num: 18

Candidate Starts for Phlop\_18:

(Start: 17 @11700 has 3 MA's), (Start: 18 @11703 has 68 MA's), (23, 11742),

Gene: PinkCoffee\_20 Start: 12287, Stop: 12430, Start Num: 18

Candidate Starts for PinkCoffee\_20:

(Start: 17 @12284 has 3 MA's), (Start: 18 @12287 has 68 MA's), (23, 12326),

Gene: Portcullis\_18 Start: 11649, Stop: 11792, Start Num: 18

Candidate Starts for Portcullis\_18:

(Start: 17 @11646 has 3 MA's), (Start: 18 @11649 has 68 MA's), (23, 11688),

Gene: PullumCavea\_18 Start: 11703, Stop: 11846, Start Num: 18

Candidate Starts for PullumCavea\_18:

(Start: 17 @11700 has 3 MA's), (Start: 18 @11703 has 68 MA's), (23, 11742),

Gene: Ribeye\_20 Start: 15544, Stop: 15657, Start Num: 22

Candidate Starts for Ribeye\_20:

(Start: 22 @15544 has 23 MA's), (Start: 24 @15553 has 1 MA's), (34, 15634),

Gene: RiverRaider\_21 Start: 13948, Stop: 14061, Start Num: 22

Candidate Starts for RiverRaider\_21:

(Start: 18 @13915 has 68 MA's), (Start: 22 @13948 has 23 MA's), (Start: 24 @13957 has 1 MA's),  
(26, 13978), (27, 13987), (34, 14038),

Gene: RoadKill\_17 Start: 12997, Stop: 13143, Start Num: 18  
Candidate Starts for RoadKill\_17:  
(Start: 18 @12997 has 68 MA's), (27, 13069), (28, 13072),

Gene: Rofo\_19 Start: 14916, Stop: 15029, Start Num: 22  
Candidate Starts for Rofo\_19:  
(6, 14691), (8, 14706), (10, 14775), (14, 14820), (15, 14847), (16, 14856), (Start: 22 @14916 has 23  
MA's), (Start: 24 @14925 has 1 MA's), (26, 14946), (34, 15006),

Gene: RogerDodger\_21 Start: 12499, Stop: 12642, Start Num: 18  
Candidate Starts for RogerDodger\_21:  
(Start: 17 @12496 has 3 MA's), (Start: 18 @12499 has 68 MA's), (23, 12538),

Gene: Salvador\_18 Start: 11605, Stop: 11751, Start Num: 17  
Candidate Starts for Salvador\_18:  
(Start: 17 @11605 has 3 MA's), (Start: 18 @11608 has 68 MA's), (23, 11647),

Gene: Sampson\_20 Start: 15222, Stop: 15371, Start Num: 18  
Candidate Starts for Sampson\_20:  
(Start: 18 @15222 has 68 MA's), (Start: 22 @15258 has 23 MA's), (25, 15273), (29, 15306),

Gene: Sanjuju\_17 Start: 14428, Stop: 14541, Start Num: 22  
Candidate Starts for Sanjuju\_17:  
(Start: 18 @14395 has 68 MA's), (Start: 22 @14428 has 23 MA's), (Start: 24 @14437 has 1 MA's),  
(34, 14518),

Gene: Saronaya\_19 Start: 14305, Stop: 14451, Start Num: 18  
Candidate Starts for Saronaya\_19:  
(Start: 18 @14305 has 68 MA's), (Start: 22 @14338 has 23 MA's), (Start: 24 @14347 has 1 MA's),  
(34, 14428),

Gene: Savbucketdawg\_18 Start: 11401, Stop: 11544, Start Num: 18  
Candidate Starts for Savbucketdawg\_18:  
(Start: 17 @11398 has 3 MA's), (Start: 18 @11401 has 68 MA's), (23, 11440),

Gene: SchottB\_18 Start: 15294, Stop: 15440, Start Num: 18  
Candidate Starts for SchottB\_18:  
(Start: 18 @15294 has 68 MA's), (Start: 22 @15327 has 23 MA's), (Start: 24 @15336 has 1 MA's),  
(34, 15417),

Gene: Scioto\_20 Start: 15277, Stop: 15426, Start Num: 18  
Candidate Starts for Scioto\_20:  
(Start: 18 @15277 has 68 MA's), (Start: 22 @15313 has 23 MA's), (25, 15328), (29, 15361),

Gene: Sedona\_21 Start: 16744, Stop: 16857, Start Num: 22  
Candidate Starts for Sedona\_21:  
(4, 16405), (5, 16438), (7, 16519), (8, 16534), (10, 16603), (14, 16648), (15, 16675), (16, 16684),  
(Start: 22 @16744 has 23 MA's), (Start: 24 @16753 has 1 MA's), (34, 16834),

Gene: Shinji\_18 Start: 11590, Stop: 11733, Start Num: 18

Candidate Starts for Shinji\_18:

(Start: 17 @11587 has 3 MA's), (Start: 18 @11590 has 68 MA's), (23, 11629),

Gene: Shivanishola\_19 Start: 14688, Stop: 14834, Start Num: 18

Candidate Starts for Shivanishola\_19:

(Start: 18 @14688 has 68 MA's), (Start: 22 @14721 has 23 MA's), (Start: 24 @14730 has 1 MA's), (34, 14811),

Gene: Sitar\_21 Start: 16113, Stop: 16226, Start Num: 22

Candidate Starts for Sitar\_21:

(1, 15720), (2, 15723), (3, 15729), (6, 15888), (8, 15903), (10, 15972), (14, 16017), (15, 16044), (16, 16053), (Start: 22 @16113 has 23 MA's), (Start: 24 @16122 has 1 MA's), (34, 16203),

Gene: SmokingBunny\_18 Start: 11608, Stop: 11751, Start Num: 18

Candidate Starts for SmokingBunny\_18:

(Start: 17 @11605 has 3 MA's), (Start: 18 @11608 has 68 MA's), (23, 11647),

Gene: StorminNorm\_19 Start: 14185, Stop: 14331, Start Num: 18

Candidate Starts for StorminNorm\_19:

(Start: 18 @14185 has 68 MA's), (Start: 22 @14218 has 23 MA's), (Start: 24 @14227 has 1 MA's), (34, 14308),

Gene: Stultus\_19 Start: 14723, Stop: 14836, Start Num: 22

Candidate Starts for Stultus\_19:

(Start: 18 @14690 has 68 MA's), (Start: 22 @14723 has 23 MA's), (Start: 24 @14732 has 1 MA's), (34, 14813),

Gene: Tangent\_17 Start: 13917, Stop: 14030, Start Num: 22

Candidate Starts for Tangent\_17:

(1, 13524), (2, 13527), (3, 13533), (6, 13692), (8, 13707), (10, 13776), (14, 13821), (15, 13848), (16, 13857), (Start: 22 @13917 has 23 MA's), (Start: 24 @13926 has 1 MA's), (34, 14007),

Gene: Tangerine\_19 Start: 14191, Stop: 14337, Start Num: 18

Candidate Starts for Tangerine\_19:

(Start: 18 @14191 has 68 MA's), (Start: 22 @14224 has 23 MA's), (Start: 24 @14233 has 1 MA's), (34, 14314),

Gene: Tardus\_21 Start: 14557, Stop: 14706, Start Num: 18

Candidate Starts for Tardus\_21:

(Start: 18 @14557 has 68 MA's), (25, 14608),

Gene: Thing3\_20 Start: 15427, Stop: 15573, Start Num: 18

Candidate Starts for Thing3\_20:

(Start: 18 @15427 has 68 MA's), (Start: 22 @15460 has 23 MA's), (Start: 24 @15469 has 1 MA's), (34, 15550),

Gene: Tiamoceli\_20 Start: 14350, Stop: 14496, Start Num: 18

Candidate Starts for Tiamoceli\_20:

(Start: 18 @14350 has 68 MA's), (27, 14422), (28, 14425),

Gene: TillyBobJoe\_18 Start: 11404, Stop: 11547, Start Num: 18

Candidate Starts for TillyBobJoe\_18:

(Start: 17 @11401 has 3 MA's), (Start: 18 @11404 has 68 MA's), (23, 11443),

Gene: Togo\_18 Start: 11608, Stop: 11751, Start Num: 18  
Candidate Starts for Togo\_18:  
(Start: 17 @11605 has 3 MA's), (Start: 18 @11608 has 68 MA's), (23, 11647),

Gene: Twister6\_20 Start: 12046, Stop: 12189, Start Num: 18  
Candidate Starts for Twister6\_20:  
(Start: 17 @12043 has 3 MA's), (Start: 18 @12046 has 68 MA's), (23, 12085),

Gene: Twonlo\_17 Start: 12967, Stop: 13113, Start Num: 18  
Candidate Starts for Twonlo\_17:  
(Start: 18 @12967 has 68 MA's), (27, 13039), (28, 13042),

Gene: Tycho\_19 Start: 14308, Stop: 14454, Start Num: 18  
Candidate Starts for Tycho\_19:  
(Start: 18 @14308 has 68 MA's), (Start: 22 @14341 has 23 MA's), (Start: 24 @14350 has 1 MA's),  
(34, 14431),

Gene: Valary\_21 Start: 12496, Stop: 12642, Start Num: 17  
Candidate Starts for Valary\_21:  
(Start: 17 @12496 has 3 MA's), (Start: 18 @12499 has 68 MA's), (23, 12538),

Gene: VanDeWege\_21 Start: 12427, Stop: 12570, Start Num: 18  
Candidate Starts for VanDeWege\_21:  
(Start: 17 @12424 has 3 MA's), (Start: 18 @12427 has 68 MA's), (23, 12466),

Gene: Verity\_20 Start: 14740, Stop: 14889, Start Num: 18  
Candidate Starts for Verity\_20:  
(Start: 18 @14740 has 68 MA's), (Start: 22 @14776 has 23 MA's), (29, 14824),

Gene: ViaConlectus\_21 Start: 15292, Stop: 15441, Start Num: 18  
Candidate Starts for ViaConlectus\_21:  
(Start: 18 @15292 has 68 MA's), (Start: 22 @15328 has 23 MA's), (25, 15343), (29, 15376),

Gene: Vivi2\_19 Start: 15088, Stop: 15201, Start Num: 22  
Candidate Starts for Vivi2\_19:  
(1, 14695), (2, 14698), (3, 14704), (6, 14863), (8, 14878), (10, 14947), (14, 14992), (15, 15019), (16,  
15028), (Start: 22 @15088 has 23 MA's), (Start: 24 @15097 has 1 MA's), (34, 15178),

Gene: Wizard\_18 Start: 11748, Stop: 11891, Start Num: 18  
Candidate Starts for Wizard\_18:  
(Start: 18 @11748 has 68 MA's), (23, 11787),

Gene: YorkOnyx\_20 Start: 14619, Stop: 14723, Start Num: 24  
Candidate Starts for YorkOnyx\_20:  
(1, 14217), (3, 14226), (6, 14385), (8, 14400), (10, 14469), (14, 14514), (15, 14541), (16, 14550),  
(Start: 22 @14610 has 23 MA's), (Start: 24 @14619 has 1 MA's), (34, 14700),

Gene: YungMoney\_20 Start: 13058, Stop: 13201, Start Num: 18  
Candidate Starts for YungMoney\_20:  
(Start: 17 @13055 has 3 MA's), (Start: 18 @13058 has 68 MA's), (23, 13097),

Gene: Zipp\_20 Start: 15389, Stop: 15538, Start Num: 18

Candidate Starts for Zipp\_20:

(Start: 18 @15389 has 68 MA's), (Start: 22 @15425 has 23 MA's), (29, 15473),

Gene: Zitch\_22 Start: 14519, Stop: 14668, Start Num: 18

Candidate Starts for Zitch\_22:

(Start: 18 @14519 has 68 MA's), (Start: 22 @14555 has 23 MA's), (25, 14570), (29, 14603), (31, 14618),