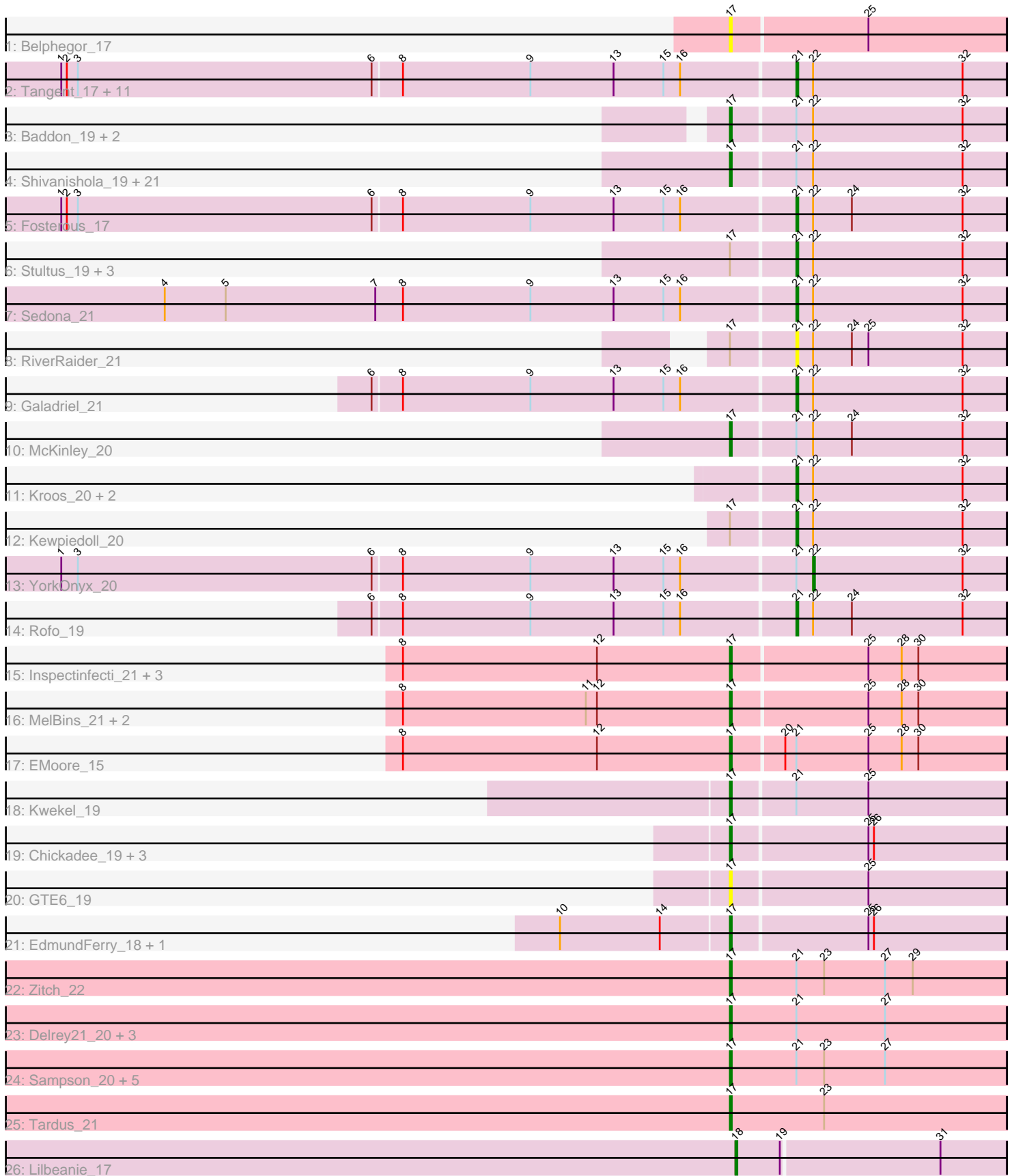


Pham 163546



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 163546 Report

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

Pham number 163546 has 82 members, 17 are drafts.

Phages represented in each track:

- Track 1 : Belphegor_17
- Track 2 : Tangent_17, Paries_20, Bibwit_20, Barsten_20, Lennon_21, Vivi2_19, Sitar_21, Nordenberg_14, Love_21, Keitabear_21, Charming_17, BobBob_17
- Track 3 : Baddon_19, Derg_17, JKSyngboy_18
- Track 4 : Shivanishola_19, ChadMasterC_19, Tangerine_19, Flatwoods_20, LilHam_17, Ashertheman_20, Affeca_19, Angelicage_19, Gustavo_19, Saronaya_19, Thing3_20, Kamashten_20, Gaea_19, StorminNorm_19, Brandonk123_21, MoontowerMania_18, Ailee_19, Fitzgerald_17, Tycho_19, Bizzy_20, Baumdotcom_19, SchottB_18
- Track 5 : Fosterous_17
- Track 6 : Stultus_19, Geodirt_18, Sanjuju_17, Jabberwocky_17
- Track 7 : Sedona_21
- Track 8 : RiverRaider_21
- Track 9 : Galadriel_21
- Track 10 : McKinley_20
- Track 11 : Kroos_20, Kwobi_20, Ribeye_20
- Track 12 : Kewpiedoll_20
- Track 13 : YorkOnyx_20
- Track 14 : Rofo_19
- Track 15 : Inspectinfecti_21, Ali17_18, Phinally_20, Leonard_20
- Track 16 : MelBins_21, Phauci_13, Hans_22
- Track 17 : EMoore_15
- Track 18 : Kwekel_19
- Track 19 : Chickadee_19, RoadKill_17, Tiamoceli_20, Twonlo_17
- Track 20 : GTE6_19
- Track 21 : EdmundFerry_18, Dextert_20
- Track 22 : Zitch_22
- Track 23 : Delrey21_20, Verity_20, DoctorFroggo_20, Zipp_20
- Track 24 : Sampson_20, Scioto_20, APunk_22, ViaConlectus_21, Abblin_20, Natkenzie_20
- Track 25 : Tardus_21
- Track 26 : 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 17, it was called in 40 of the 65 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, Ashertheman_20, Baddon_19, Baumdotcom_19, Belphegor_17, Bizzy_20, Brandonk123_21, ChadMasterC_19, Chickadee_19, Delrey21_20, Derg_17, Dxdert_20, DoctorFroggo_20, EMOore_15, EdmundFerry_18, Fitzgerald_17, Flatwoods_20, GTE6_19, Gaea_19, Gustavo_19, Hans_22, Inspectinfecti_21, JKSyngboy_18, Kamashten_20, Kwekel_19, Leonard_20, LilHam_17, McKinley_20, MelBins_21, MoontowerMania_18, Natkenzie_20, Phauci_13, Phinally_20, RoadKill_17, Sampson_20, Saronaya_19, SchottB_18, Scioto_20, Shivanishola_19, StorminNorm_19, Tangerine_19, Tardus_21, Thing3_20, Tiamoceli_20, Twonlo_17, Tycho_19, Verity_20, ViaConlectus_21, Zipp_20, Zitch_22,

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

- Geodirt_18, Jabberwocky_17, Kewpiedoll_20, RiverRaider_21, Sanjuju_17, Stultus_19,

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 61 of 82 (74.4%) of genes in pham
- Manual Annotations of this start: 40 of 65
- 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), Ashertheman_20 (DE1), Baddon_19 (DE1), Baumdotcom_19 (DE1), Belphegor_17 (DE), Bizzy_20 (DE1), Brandonk123_21 (DE1), ChadMasterC_19 (DE1), Chickadee_19 (DE3), Delrey21_20 (DE4), Derg_17 (DE1), Dxdert_20 (DE3), DoctorFroggo_20 (DE4), EMOore_15 (DE2), EdmundFerry_18 (DE3), Fitzgerald_17 (DE1), Flatwoods_20 (DE1), GTE6_19 (DE3), Gaea_19 (DE1), Gustavo_19 (DE1), Hans_22 (DE2), Inspectinfecti_21 (DE2), JKSyngboy_18 (DE1), Kamashten_20 (DE1), Kwekel_19 (DE3), Leonard_20 (DE2), LilHam_17 (DE1), McKinley_20 (DE1), MelBins_21 (DE2), MoontowerMania_18 (DE1), Natkenzie_20 (DE4), Phauci_13 (DE2), Phinally_20 (DE2), RoadKill_17 (DE3), Sampson_20 (DE4), Saronaya_19 (DE1), SchottB_18 (DE1), Scioto_20 (DE4), Shivanishola_19 (DE1), StorminNorm_19 (DE1), Tangerine_19 (DE1), Tardus_21 (DE4), Thing3_20 (DE1), Tiamoceli_20 (DE3), Twonlo_17 (DE3), Tycho_19 (DE1), Verity_20 (DE4), ViaConlectus_21 (DE4), Zipp_20 (DE4), Zitch_22 (DE4),

Start 18:

- Found in 1 of 82 (1.2%) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lilbeanie_17 (DE5),

Start 21:

- Found in 65 of 82 (79.3%) of genes in pham
- Manual Annotations of this start: 23 of 65
- Called 38.5% 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 22:

- Found in 52 of 82 (63.4%) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 1.9% of time when present
- Phage (with cluster) where this start called: YorkOnyx_20 (DE1),

Summary by clusters:

There are 6 clusters represented in this pham: DE, DE1, DE2, DE3, DE4, DE5,

Info for manual annotations of cluster DE1:

- Start number 17 was manually annotated 18 times for cluster DE1.
- Start number 21 was manually annotated 23 times for cluster DE1.
- Start number 22 was manually annotated 1 time for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 17 was manually annotated 7 times for cluster DE2.

Info for manual annotations of cluster DE3:

- Start number 17 was manually annotated 6 times for cluster DE3.

Info for manual annotations of cluster DE4:

- Start number 17 was manually annotated 9 times for cluster DE4.

Info for manual annotations of cluster DE5:

- Start number 18 was manually annotated 1 time for cluster DE5.

Gene Information:

Gene: APunk_22 Start: 16064, Stop: 16213, Start Num: 17

Candidate Starts for APunk_22:

(Start: 17 @16064 has 40 MA's), (Start: 21 @16100 has 23 MA's), (23, 16115), (27, 16148),

Gene: Abblin_20 Start: 15277, Stop: 15426, Start Num: 17

Candidate Starts for Abblin_20:

(Start: 17 @15277 has 40 MA's), (Start: 21 @15313 has 23 MA's), (23, 15328), (27, 15361),

Gene: Affeca_19 Start: 15092, Stop: 15238, Start Num: 17

Candidate Starts for Affeca_19:

(Start: 17 @15092 has 40 MA's), (Start: 21 @15125 has 23 MA's), (Start: 22 @15134 has 1 MA's), (32, 15215),

Gene: Ailee_19 Start: 15000, Stop: 15146, Start Num: 17

Candidate Starts for Ailee_19:

(Start: 17 @15000 has 40 MA's), (Start: 21 @15033 has 23 MA's), (Start: 22 @15042 has 1 MA's), (32, 15123),

Gene: Ali17_18 Start: 14404, Stop: 14550, Start Num: 17

Candidate Starts for Ali17_18:

(8, 14227), (12, 14332), (Start: 17 @14404 has 40 MA's), (25, 14476), (28, 14494), (30, 14503),

Gene: Angelicage_19 Start: 15515, Stop: 15661, Start Num: 17

Candidate Starts for Angelicage_19:

(Start: 17 @15515 has 40 MA's), (Start: 21 @15548 has 23 MA's), (Start: 22 @15557 has 1 MA's), (32, 15638),

Gene: Ashertheman_20 Start: 14598, Stop: 14744, Start Num: 17

Candidate Starts for Ashertheman_20:

(Start: 17 @14598 has 40 MA's), (Start: 21 @14631 has 23 MA's), (Start: 22 @14640 has 1 MA's), (32, 14721),

Gene: Baddon_19 Start: 15445, Stop: 15591, Start Num: 17

Candidate Starts for Baddon_19:

(Start: 17 @15445 has 40 MA's), (Start: 21 @15478 has 23 MA's), (Start: 22 @15487 has 1 MA's), (32, 15568),

Gene: Barsten_20 Start: 15061, Stop: 15174, Start Num: 21

Candidate Starts for Barsten_20:

(1, 14668), (2, 14671), (3, 14677), (6, 14836), (8, 14851), (9, 14920), (13, 14965), (15, 14992), (16, 15001), (Start: 21 @15061 has 23 MA's), (Start: 22 @15070 has 1 MA's), (32, 15151),

Gene: Baumdotcom_19 Start: 14214, Stop: 14360, Start Num: 17

Candidate Starts for Baumdotcom_19:

(Start: 17 @14214 has 40 MA's), (Start: 21 @14247 has 23 MA's), (Start: 22 @14256 has 1 MA's), (32, 14337),

Gene: Belphegor_17 Start: 13509, Stop: 13655, Start Num: 17

Candidate Starts for Belphegor_17:

(Start: 17 @13509 has 40 MA's), (25, 13581),

Gene: Bibwit_20 Start: 15305, Stop: 15418, Start Num: 21

Candidate Starts for Bibwit_20:

(1, 14912), (2, 14915), (3, 14921), (6, 15080), (8, 15095), (9, 15164), (13, 15209), (15, 15236), (16, 15245), (Start: 21 @15305 has 23 MA's), (Start: 22 @15314 has 1 MA's), (32, 15395),

Gene: Bizzy_20 Start: 14493, Stop: 14639, Start Num: 17

Candidate Starts for Bizzy_20:

(Start: 17 @14493 has 40 MA's), (Start: 21 @14526 has 23 MA's), (Start: 22 @14535 has 1 MA's), (32, 14616),

Gene: BobBob_17 Start: 13915, Stop: 14028, Start Num: 21

Candidate Starts for BobBob_17:

(1, 13522), (2, 13525), (3, 13531), (6, 13690), (8, 13705), (9, 13774), (13, 13819), (15, 13846), (16, 13855), (Start: 21 @13915 has 23 MA's), (Start: 22 @13924 has 1 MA's), (32, 14005),

Gene: Brandonk123_21 Start: 14574, Stop: 14720, Start Num: 17

Candidate Starts for Brandonk123_21:

(Start: 17 @14574 has 40 MA's), (Start: 21 @14607 has 23 MA's), (Start: 22 @14616 has 1 MA's), (32, 14697),

Gene: ChadMasterC_19 Start: 14992, Stop: 15138, Start Num: 17

Candidate Starts for ChadMasterC_19:

(Start: 17 @14992 has 40 MA's), (Start: 21 @15025 has 23 MA's), (Start: 22 @15034 has 1 MA's), (32, 15115),

Gene: Charming_17 Start: 13917, Stop: 14030, Start Num: 21

Candidate Starts for Charming_17:

(1, 13524), (2, 13527), (3, 13533), (6, 13692), (8, 13707), (9, 13776), (13, 13821), (15, 13848), (16, 13857), (Start: 21 @13917 has 23 MA's), (Start: 22 @13926 has 1 MA's), (32, 14007),

Gene: Chickadee_19 Start: 13493, Stop: 13639, Start Num: 17

Candidate Starts for Chickadee_19:

(Start: 17 @13493 has 40 MA's), (25, 13565), (26, 13568),

Gene: Delrey21_20 Start: 14740, Stop: 14889, Start Num: 17

Candidate Starts for Delrey21_20:

(Start: 17 @14740 has 40 MA's), (Start: 21 @14776 has 23 MA's), (27, 14824),

Gene: Derg_17 Start: 14088, Stop: 14234, Start Num: 17

Candidate Starts for Derg_17:

(Start: 17 @14088 has 40 MA's), (Start: 21 @14121 has 23 MA's), (Start: 22 @14130 has 1 MA's), (32, 14211),

Gene: Dxdert_20 Start: 13940, Stop: 14086, Start Num: 17

Candidate Starts for Dxdert_20:

(10, 13850), (14, 13904), (Start: 17 @13940 has 40 MA's), (25, 14012), (26, 14015),

Gene: DoctorFroggo_20 Start: 14740, Stop: 14889, Start Num: 17

Candidate Starts for DoctorFroggo_20:

(Start: 17 @14740 has 40 MA's), (Start: 21 @14776 has 23 MA's), (27, 14824),

Gene: EMoore_15 Start: 12766, Stop: 12912, Start Num: 17

Candidate Starts for EMoore_15:

(8, 12589), (12, 12694), (Start: 17 @12766 has 40 MA's), (20, 12793), (Start: 21 @12799 has 23 MA's), (25, 12838), (28, 12856), (30, 12865),

Gene: EdmundFerry_18 Start: 13524, Stop: 13670, Start Num: 17

Candidate Starts for EdmundFerry_18:

(10, 13434), (14, 13488), (Start: 17 @13524 has 40 MA's), (25, 13596), (26, 13599),

Gene: Fitzgerald_17 Start: 14310, Stop: 14456, Start Num: 17

Candidate Starts for Fitzgerald_17:

(Start: 17 @14310 has 40 MA's), (Start: 21 @14343 has 23 MA's), (Start: 22 @14352 has 1 MA's), (32, 14433),

Gene: Flatwoods_20 Start: 14500, Stop: 14646, Start Num: 17

Candidate Starts for Flatwoods_20:

(Start: 17 @14500 has 40 MA's), (Start: 21 @14533 has 23 MA's), (Start: 22 @14542 has 1 MA's), (32, 14623),

Gene: Fosterous_17 Start: 14806, Stop: 14919, Start Num: 21

Candidate Starts for Fosterous_17:

(1, 14413), (2, 14416), (3, 14422), (6, 14581), (8, 14596), (9, 14665), (13, 14710), (15, 14737), (16, 14746), (Start: 21 @14806 has 23 MA's), (Start: 22 @14815 has 1 MA's), (24, 14836), (32, 14896),

Gene: GTE6_19 Start: 14009, Stop: 14155, Start Num: 17

Candidate Starts for GTE6_19:

(Start: 17 @14009 has 40 MA's), (25, 14081),

Gene: Gaea_19 Start: 14194, Stop: 14340, Start Num: 17

Candidate Starts for Gaea_19:

(Start: 17 @14194 has 40 MA's), (Start: 21 @14227 has 23 MA's), (Start: 22 @14236 has 1 MA's), (32, 14317),

Gene: Galadriel_21 Start: 14665, Stop: 14778, Start Num: 21

Candidate Starts for Galadriel_21:

(6, 14440), (8, 14455), (9, 14524), (13, 14569), (15, 14596), (16, 14605), (Start: 21 @14665 has 23 MA's), (Start: 22 @14674 has 1 MA's), (32, 14755),

Gene: Geodirt_18 Start: 14870, Stop: 14983, Start Num: 21

Candidate Starts for Geodirt_18:

(Start: 17 @14837 has 40 MA's), (Start: 21 @14870 has 23 MA's), (Start: 22 @14879 has 1 MA's), (32, 14960),

Gene: Gustavo_19 Start: 14305, Stop: 14451, Start Num: 17

Candidate Starts for Gustavo_19:

(Start: 17 @14305 has 40 MA's), (Start: 21 @14338 has 23 MA's), (Start: 22 @14347 has 1 MA's), (32, 14428),

Gene: Hans_22 Start: 15065, Stop: 15211, Start Num: 17

Candidate Starts for Hans_22:

(8, 14888), (11, 14987), (12, 14993), (Start: 17 @15065 has 40 MA's), (25, 15137), (28, 15155), (30, 15164),

Gene: Inspectinfecti_21 Start: 15487, Stop: 15633, Start Num: 17

Candidate Starts for Inspectinfecti_21:

(8, 15310), (12, 15415), (Start: 17 @15487 has 40 MA's), (25, 15559), (28, 15577), (30, 15586),

Gene: JKSyngboy_18 Start: 14964, Stop: 15110, Start Num: 17

Candidate Starts for JKSyngboy_18:

(Start: 17 @14964 has 40 MA's), (Start: 21 @14997 has 23 MA's), (Start: 22 @15006 has 1 MA's), (32, 15087),

Gene: Jabberwocky_17 Start: 14777, Stop: 14890, Start Num: 21

Candidate Starts for Jabberwocky_17:

(Start: 17 @14744 has 40 MA's), (Start: 21 @14777 has 23 MA's), (Start: 22 @14786 has 1 MA's), (32, 14867),

Gene: Kamashten_20 Start: 15427, Stop: 15573, Start Num: 17

Candidate Starts for Kamashten_20:

(Start: 17 @15427 has 40 MA's), (Start: 21 @15460 has 23 MA's), (Start: 22 @15469 has 1 MA's), (32, 15550),

Gene: Keitabear_21 Start: 17009, Stop: 17122, Start Num: 21

Candidate Starts for Keitabear_21:

(1, 16616), (2, 16619), (3, 16625), (6, 16784), (8, 16799), (9, 16868), (13, 16913), (15, 16940), (16, 16949), (Start: 21 @17009 has 23 MA's), (Start: 22 @17018 has 1 MA's), (32, 17099),

Gene: Kewpiedoll_20 Start: 14846, Stop: 14959, Start Num: 21

Candidate Starts for Kewpiedoll_20:

(Start: 17 @14813 has 40 MA's), (Start: 21 @14846 has 23 MA's), (Start: 22 @14855 has 1 MA's), (32, 14936),

Gene: Kroos_20 Start: 15090, Stop: 15203, Start Num: 21

Candidate Starts for Kroos_20:

(Start: 21 @15090 has 23 MA's), (Start: 22 @15099 has 1 MA's), (32, 15180),

Gene: Kwekel_19 Start: 13460, Stop: 13606, Start Num: 17

Candidate Starts for Kwekel_19:

(Start: 17 @13460 has 40 MA's), (Start: 21 @13493 has 23 MA's), (25, 13532),

Gene: Kwobi_20 Start: 15066, Stop: 15179, Start Num: 21

Candidate Starts for Kwobi_20:

(Start: 21 @15066 has 23 MA's), (Start: 22 @15075 has 1 MA's), (32, 15156),

Gene: Lennon_21 Start: 16113, Stop: 16226, Start Num: 21

Candidate Starts for Lennon_21:

(1, 15720), (2, 15723), (3, 15729), (6, 15888), (8, 15903), (9, 15972), (13, 16017), (15, 16044), (16, 16053), (Start: 21 @16113 has 23 MA's), (Start: 22 @16122 has 1 MA's), (32, 16203),

Gene: Leonard_20 Start: 15082, Stop: 15228, Start Num: 17

Candidate Starts for Leonard_20:

(8, 14905), (12, 15010), (Start: 17 @15082 has 40 MA's), (25, 15154), (28, 15172), (30, 15181),

Gene: LilHam_17 Start: 13612, Stop: 13758, Start Num: 17

Candidate Starts for LilHam_17:

(Start: 17 @13612 has 40 MA's), (Start: 21 @13645 has 23 MA's), (Start: 22 @13654 has 1 MA's), (32, 13735),

Gene: Lilbeanie_17 Start: 10420, Stop: 10563, Start Num: 18

Candidate Starts for Lilbeanie_17:

(Start: 18 @10420 has 1 MA's), (19, 10444), (31, 10528),

Gene: Love_21 Start: 14976, Stop: 15089, Start Num: 21

Candidate Starts for Love_21:

(1, 14583), (2, 14586), (3, 14592), (6, 14751), (8, 14766), (9, 14835), (13, 14880), (15, 14907), (16, 14916), (Start: 21 @14976 has 23 MA's), (Start: 22 @14985 has 1 MA's), (32, 15066),

Gene: McKinley_20 Start: 14965, Stop: 15111, Start Num: 17
Candidate Starts for McKinley_20:
(Start: 17 @14965 has 40 MA's), (Start: 21 @14998 has 23 MA's), (Start: 22 @15007 has 1 MA's),
(24, 15028), (32, 15088),

Gene: MelBins_21 Start: 15286, Stop: 15432, Start Num: 17
Candidate Starts for MelBins_21:
(8, 15109), (11, 15208), (12, 15214), (Start: 17 @15286 has 40 MA's), (25, 15358), (28, 15376), (30,
15385),

Gene: MoontowerMania_18 Start: 13949, Stop: 14095, Start Num: 17
Candidate Starts for MoontowerMania_18:
(Start: 17 @13949 has 40 MA's), (Start: 21 @13982 has 23 MA's), (Start: 22 @13991 has 1 MA's),
(32, 14072),

Gene: Natkenzie_20 Start: 15277, Stop: 15426, Start Num: 17
Candidate Starts for Natkenzie_20:
(Start: 17 @15277 has 40 MA's), (Start: 21 @15313 has 23 MA's), (23, 15328), (27, 15361),

Gene: Nordenberg_14 Start: 13296, Stop: 13409, Start Num: 21
Candidate Starts for Nordenberg_14:
(1, 12903), (2, 12906), (3, 12912), (6, 13071), (8, 13086), (9, 13155), (13, 13200), (15, 13227), (16,
13236), (Start: 21 @13296 has 23 MA's), (Start: 22 @13305 has 1 MA's), (32, 13386),

Gene: Paries_20 Start: 14664, Stop: 14777, Start Num: 21
Candidate Starts for Paries_20:
(1, 14271), (2, 14274), (3, 14280), (6, 14439), (8, 14454), (9, 14523), (13, 14568), (15, 14595), (16,
14604), (Start: 21 @14664 has 23 MA's), (Start: 22 @14673 has 1 MA's), (32, 14754),

Gene: Phauci_13 Start: 11649, Stop: 11795, Start Num: 17
Candidate Starts for Phauci_13:
(8, 11472), (11, 11571), (12, 11577), (Start: 17 @11649 has 40 MA's), (25, 11721), (28, 11739), (30,
11748),

Gene: Phinally_20 Start: 15079, Stop: 15225, Start Num: 17
Candidate Starts for Phinally_20:
(8, 14902), (12, 15007), (Start: 17 @15079 has 40 MA's), (25, 15151), (28, 15169), (30, 15178),

Gene: Ribeye_20 Start: 15544, Stop: 15657, Start Num: 21
Candidate Starts for Ribeye_20:
(Start: 21 @15544 has 23 MA's), (Start: 22 @15553 has 1 MA's), (32, 15634),

Gene: RiverRaider_21 Start: 13948, Stop: 14061, Start Num: 21
Candidate Starts for RiverRaider_21:
(Start: 17 @13915 has 40 MA's), (Start: 21 @13948 has 23 MA's), (Start: 22 @13957 has 1 MA's),
(24, 13978), (25, 13987), (32, 14038),

Gene: RoadKill_17 Start: 12997, Stop: 13143, Start Num: 17
Candidate Starts for RoadKill_17:
(Start: 17 @12997 has 40 MA's), (25, 13069), (26, 13072),

Gene: Rofo_19 Start: 14916, Stop: 15029, Start Num: 21
Candidate Starts for Rofo_19:

(6, 14691), (8, 14706), (9, 14775), (13, 14820), (15, 14847), (16, 14856), (Start: 21 @14916 has 23 MA's), (Start: 22 @14925 has 1 MA's), (24, 14946), (32, 15006),

Gene: Sampson_20 Start: 15222, Stop: 15371, Start Num: 17

Candidate Starts for Sampson_20:

(Start: 17 @15222 has 40 MA's), (Start: 21 @15258 has 23 MA's), (23, 15273), (27, 15306),

Gene: Sanjuju_17 Start: 14428, Stop: 14541, Start Num: 21

Candidate Starts for Sanjuju_17:

(Start: 17 @14395 has 40 MA's), (Start: 21 @14428 has 23 MA's), (Start: 22 @14437 has 1 MA's), (32, 14518),

Gene: Saronaya_19 Start: 14305, Stop: 14451, Start Num: 17

Candidate Starts for Saronaya_19:

(Start: 17 @14305 has 40 MA's), (Start: 21 @14338 has 23 MA's), (Start: 22 @14347 has 1 MA's), (32, 14428),

Gene: SchottB_18 Start: 15294, Stop: 15440, Start Num: 17

Candidate Starts for SchottB_18:

(Start: 17 @15294 has 40 MA's), (Start: 21 @15327 has 23 MA's), (Start: 22 @15336 has 1 MA's), (32, 15417),

Gene: Scioto_20 Start: 15277, Stop: 15426, Start Num: 17

Candidate Starts for Scioto_20:

(Start: 17 @15277 has 40 MA's), (Start: 21 @15313 has 23 MA's), (23, 15328), (27, 15361),

Gene: Sedona_21 Start: 16744, Stop: 16857, Start Num: 21

Candidate Starts for Sedona_21:

(4, 16405), (5, 16438), (7, 16519), (8, 16534), (9, 16603), (13, 16648), (15, 16675), (16, 16684), (Start: 21 @16744 has 23 MA's), (Start: 22 @16753 has 1 MA's), (32, 16834),

Gene: Shivanishola_19 Start: 14688, Stop: 14834, Start Num: 17

Candidate Starts for Shivanishola_19:

(Start: 17 @14688 has 40 MA's), (Start: 21 @14721 has 23 MA's), (Start: 22 @14730 has 1 MA's), (32, 14811),

Gene: Sitar_21 Start: 16113, Stop: 16226, Start Num: 21

Candidate Starts for Sitar_21:

(1, 15720), (2, 15723), (3, 15729), (6, 15888), (8, 15903), (9, 15972), (13, 16017), (15, 16044), (16, 16053), (Start: 21 @16113 has 23 MA's), (Start: 22 @16122 has 1 MA's), (32, 16203),

Gene: StorminNorm_19 Start: 14185, Stop: 14331, Start Num: 17

Candidate Starts for StorminNorm_19:

(Start: 17 @14185 has 40 MA's), (Start: 21 @14218 has 23 MA's), (Start: 22 @14227 has 1 MA's), (32, 14308),

Gene: Stultus_19 Start: 14723, Stop: 14836, Start Num: 21

Candidate Starts for Stultus_19:

(Start: 17 @14690 has 40 MA's), (Start: 21 @14723 has 23 MA's), (Start: 22 @14732 has 1 MA's), (32, 14813),

Gene: Tangent_17 Start: 13917, Stop: 14030, Start Num: 21

Candidate Starts for Tangent_17:

(1, 13524), (2, 13527), (3, 13533), (6, 13692), (8, 13707), (9, 13776), (13, 13821), (15, 13848), (16, 13857), (Start: 21 @13917 has 23 MA's), (Start: 22 @13926 has 1 MA's), (32, 14007),

Gene: Tangerine_19 Start: 14191, Stop: 14337, Start Num: 17

Candidate Starts for Tangerine_19:

(Start: 17 @14191 has 40 MA's), (Start: 21 @14224 has 23 MA's), (Start: 22 @14233 has 1 MA's), (32, 14314),

Gene: Tardus_21 Start: 14557, Stop: 14706, Start Num: 17

Candidate Starts for Tardus_21:

(Start: 17 @14557 has 40 MA's), (23, 14608),

Gene: Thing3_20 Start: 15427, Stop: 15573, Start Num: 17

Candidate Starts for Thing3_20:

(Start: 17 @15427 has 40 MA's), (Start: 21 @15460 has 23 MA's), (Start: 22 @15469 has 1 MA's), (32, 15550),

Gene: Tiamoceli_20 Start: 14350, Stop: 14496, Start Num: 17

Candidate Starts for Tiamoceli_20:

(Start: 17 @14350 has 40 MA's), (25, 14422), (26, 14425),

Gene: Twonlo_17 Start: 12967, Stop: 13113, Start Num: 17

Candidate Starts for Twonlo_17:

(Start: 17 @12967 has 40 MA's), (25, 13039), (26, 13042),

Gene: Tycho_19 Start: 14308, Stop: 14454, Start Num: 17

Candidate Starts for Tycho_19:

(Start: 17 @14308 has 40 MA's), (Start: 21 @14341 has 23 MA's), (Start: 22 @14350 has 1 MA's), (32, 14431),

Gene: Verity_20 Start: 14740, Stop: 14889, Start Num: 17

Candidate Starts for Verity_20:

(Start: 17 @14740 has 40 MA's), (Start: 21 @14776 has 23 MA's), (27, 14824),

Gene: ViaConlectus_21 Start: 15292, Stop: 15441, Start Num: 17

Candidate Starts for ViaConlectus_21:

(Start: 17 @15292 has 40 MA's), (Start: 21 @15328 has 23 MA's), (23, 15343), (27, 15376),

Gene: Vivi2_19 Start: 15088, Stop: 15201, Start Num: 21

Candidate Starts for Vivi2_19:

(1, 14695), (2, 14698), (3, 14704), (6, 14863), (8, 14878), (9, 14947), (13, 14992), (15, 15019), (16, 15028), (Start: 21 @15088 has 23 MA's), (Start: 22 @15097 has 1 MA's), (32, 15178),

Gene: YorkOnyx_20 Start: 14619, Stop: 14723, Start Num: 22

Candidate Starts for YorkOnyx_20:

(1, 14217), (3, 14226), (6, 14385), (8, 14400), (9, 14469), (13, 14514), (15, 14541), (16, 14550), (Start: 21 @14610 has 23 MA's), (Start: 22 @14619 has 1 MA's), (32, 14700),

Gene: Zipp_20 Start: 15389, Stop: 15538, Start Num: 17

Candidate Starts for Zipp_20:

(Start: 17 @15389 has 40 MA's), (Start: 21 @15425 has 23 MA's), (27, 15473),

Gene: Zitch_22 Start: 14519, Stop: 14668, Start Num: 17

Candidate Starts for Zitch_22:

(Start: 17 @14519 has 40 MA's), (Start: 21 @14555 has 23 MA's), (23, 14570), (27, 14603), (29, 14618),