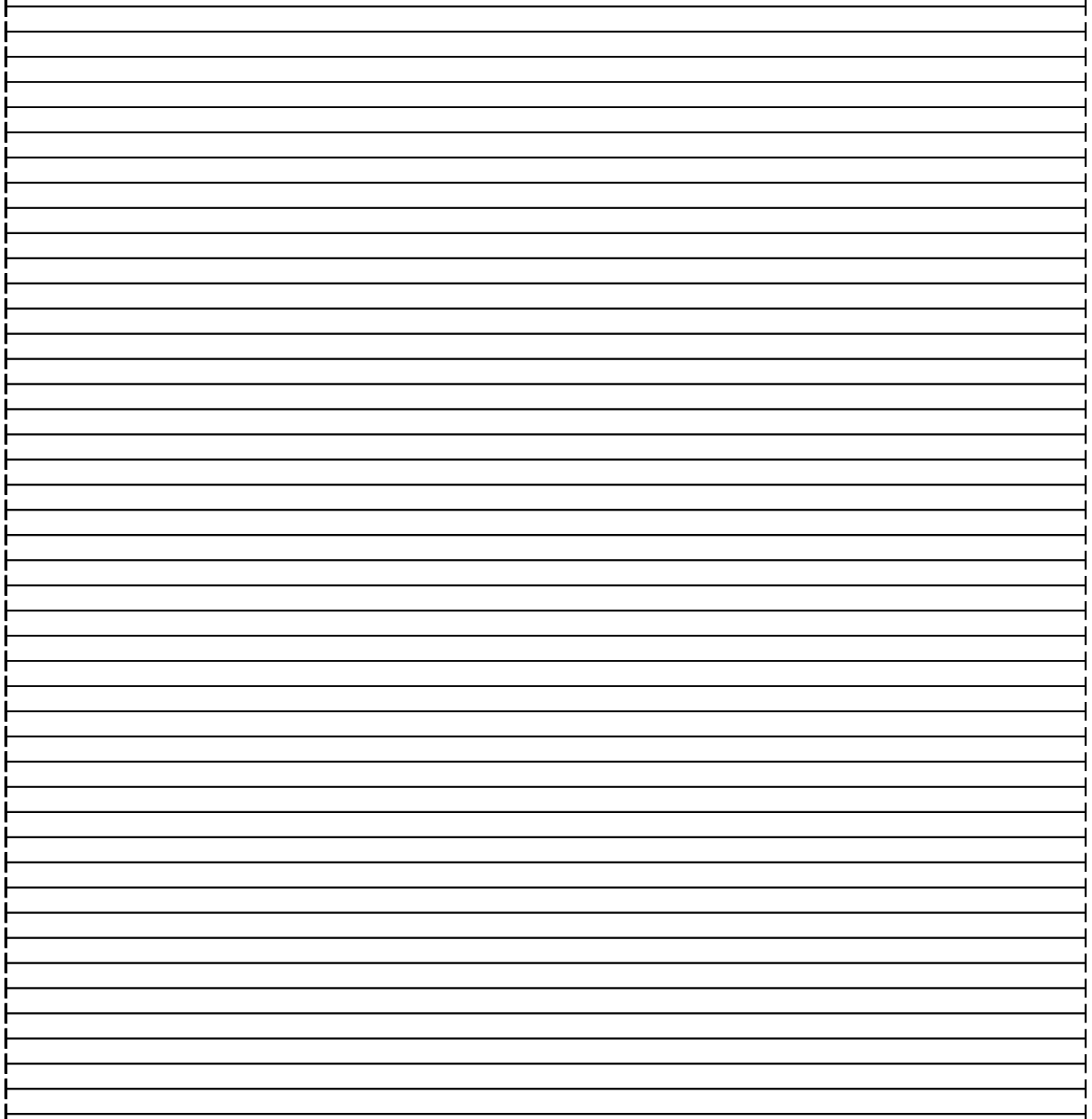
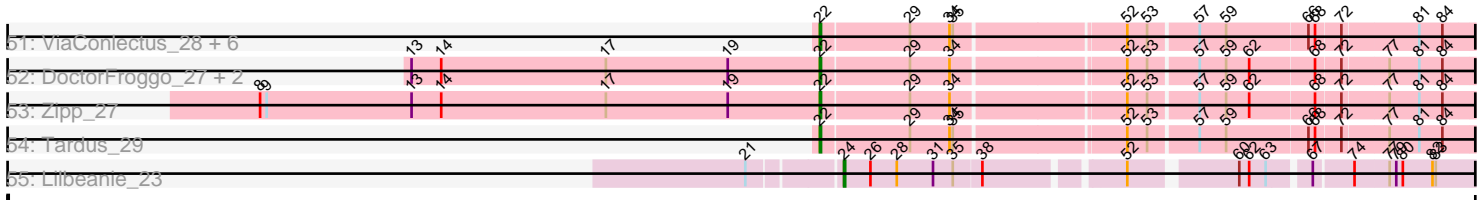


Pham 221162



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 221162 Report

This analysis was run 03/28/25 on database version 593.

Pham number 221162 has 117 members, 17 are drafts.

Phages represented in each track:

- Track 1 : Togo\_24, Portcullis\_24, Gezellig\_25, PullumCavea\_24, Nubi\_24, Shinji\_24, Wizard\_24, Salvador\_24, Phlop\_24, Evamon\_24, SmokingBunny\_24
- Track 2 : Mutzi\_26
- Track 3 : Savbucketdawg\_24, Danyall\_26, Jambalaya\_24, Halo3\_25, ClamChowder\_26, KimmyK\_26, PinkCoffee\_26, Fugax\_26, CoveyB\_27, Twister6\_26, Barb\_26, VanDeWege\_27
- Track 4 : TillyBobJoe\_24, Fireball\_25
- Track 5 : Egi03\_26
- Track 6 : YungMoney\_26
- Track 7 : RogerDodger\_27, Arri\_27
- Track 8 : Bakery\_25
- Track 9 : CherryCola\_28, Valary\_27
- Track 10 : Clown\_28
- Track 11 : Belphegor\_26
- Track 12 : Lennon\_28, Bibwit\_27, Sedona\_28
- Track 13 : Baumdotcom\_27, SchottB\_26, LilHam\_25, StorminNorm\_27, Kwobi\_28
- Track 14 : Geodirt\_25
- Track 15 : RiverRaider\_28
- Track 16 : Nordenberg\_22, BobBob\_25, McKinley\_30
- Track 17 : Tycho\_27, Saronaya\_27, Ashertheman\_28, Tangerine\_27, Gustavo\_27
- Track 18 : Kewpiedoll\_27
- Track 19 : Fosterous\_26
- Track 20 : ChadMasterC\_28, Barsten\_28
- Track 21 : Sanjuju\_26, Shivanishola\_29, Affeca\_26, Jabberwocky\_26
- Track 22 : Fitzgerald\_26
- Track 23 : Love\_31
- Track 24 : Ribeye\_28, Kroos\_28
- Track 25 : FuegoCuervo\_30
- Track 26 : Gaea\_27
- Track 27 : Derg\_23, Flatwoods\_28, Baddon\_27, Bizzy\_28
- Track 28 : Kamashten\_27, Thing3\_27
- Track 29 : YorkOnyx\_28
- Track 30 : Rofo\_28, Galadriel\_28
- Track 31 : Charming\_28, Tangent\_28
- Track 32 : JKSyngboy\_25
- Track 33 : Angelicage\_26
- Track 34 : Vivi2\_30

- Track 35 : Stultus\_26
- Track 36 : Keitabear\_28
- Track 37 : Brandonk123\_29
- Track 38 : Ailee\_26
- Track 39 : MoontowerMania\_27
- Track 40 : Sitar\_28
- Track 41 : Paries\_30
- Track 42 : Leonard\_26, Ali17\_24, Phinally\_26
- Track 43 : Hans\_28, Phauci\_19, Inspectinfecti\_27
- Track 44 : MelBins\_27
- Track 45 : EMoore\_24
- Track 46 : Chickadee\_25, Tiamoceli\_26, EdmundFerry\_24
- Track 47 : Twonlo\_23
- Track 48 : Kwekel\_25, Dexdert\_26
- Track 49 : RoadKill\_23
- Track 50 : GTE6\_25
- Track 51 : ViaConlectus\_28, Scioto\_28, Natkenzie\_28, Zitch\_29, APunk\_29, Sampson\_28, Abblin\_28
- Track 52 : DoctorFroggo\_27, Delrey21\_27, Verity\_27
- Track 53 : Zipp\_27
- Track 54 : Tardus\_29
- Track 55 : Lilbeanie\_23

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

The start number called the most often in the published annotations is 24, it was called in 49 of the 100 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Ailee\_26, Arri\_27, Baddon\_27, Bakery\_25, Barb\_26, Barsten\_28, Baumdotcom\_27, Bizzy\_28, BobBob\_25, Brandonk123\_29, ChadMasterC\_28, CherryCola\_28, ClamChowder\_26, Clown\_28, CoveyB\_27, Danyall\_26, Derg\_23, Egi03\_26, Evamon\_24, Fireball\_25, Flatwoods\_28, Fugax\_26, Gaea\_27, Geodirt\_25, Gezellig\_25, Halo3\_25, Jambalaya\_24, Keitabear\_28, KimmyK\_26, Kwobi\_28, LilHam\_25, Lilbeanie\_23, McKinley\_30, Mutzi\_26, Nordenberg\_22, Nubi\_24, Phlop\_24, PinkCoffee\_26, Portcullis\_24, PullumCavea\_24, RiverRaider\_28, RogerDodger\_27, Salvador\_24, Savbucketdawg\_24, SchottB\_26, Shinji\_24, Sitar\_28, SmokingBunny\_24, StorminNorm\_27, TillyBobJoe\_24, Togo\_24, Twister6\_26, Valary\_27, VanDeWege\_27, Vivi2\_30, Wizard\_24, YungMoney\_26,

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

- Affeca\_26, Angelicage\_26, Ashertheman\_28, Bibwit\_27, Charming\_28, Fitzgerald\_26, Fosterous\_26, FuegoCuervo\_30, Galadriel\_28, Gustavo\_27, JKSyngboy\_25, Jabberwocky\_26, Kamashten\_27, Kewpiedoll\_27, Kroos\_28, Lennon\_28, Love\_31, MoontowerMania\_27, Paries\_30, Ribeye\_28, Rofo\_28, Sanjuju\_26, Saronaya\_27, Sedona\_28, Shivanishola\_29, Stultus\_26, Tangent\_28, Tangerine\_27, Thing3\_27, Tycho\_27, YorkOnyx\_28,

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

- APunk\_29, Abblin\_28, Ali17\_24, Belphegor\_26, Chickadee\_25, Delrey21\_27, Dextert\_26, DoctorFroggo\_27, EMoore\_24, EdmundFerry\_24, GTE6\_25, Hans\_28, Inspectinfecti\_27, Kwekel\_25, Leonard\_26, MelBins\_27, Natkenzie\_28, Phauci\_19, Phinally\_26, RoadKill\_23, Sampson\_28, Scioto\_28, Tardus\_29, Tiamoceli\_26, Twonlo\_23, Verity\_27, ViaConlectus\_28, Zipp\_27, Zitch\_29,

### Summary by start number:

#### Start 22:

- Found in 20 of 117 ( 17.1% ) of genes in pham
- Manual Annotations of this start: 16 of 100
- Called 100.0% of time when present
- Phage (with cluster) where this start called: APunk\_29 (DE4), Abblin\_28 (DE4), Chickadee\_25 (DE3), Delrey21\_27 (DE4), Dextert\_26 (DE3), DoctorFroggo\_27 (DE4), EdmundFerry\_24 (DE3), GTE6\_25 (DE3), Kwekel\_25 (DE3), Natkenzie\_28 (DE4), RoadKill\_23 (DE3), Sampson\_28 (DE4), Scioto\_28 (DE4), Tardus\_29 (DE4), Tiamoceli\_26 (DE3), Twonlo\_23 (DE3), Verity\_27 (DE4), ViaConlectus\_28 (DE4), Zipp\_27 (DE4), Zitch\_29 (DE4),

#### Start 23:

- Found in 9 of 117 ( 7.7% ) of genes in pham
- Manual Annotations of this start: 8 of 100
- Called 88.9% of time when present
- Phage (with cluster) where this start called: Ali17\_24 (DE2), Belphegor\_26 (DE), Hans\_28 (DE2), Inspectinfecti\_27 (DE2), Leonard\_26 (DE2), MelBins\_27 (DE2), Phauci\_19 (DE2), Phinally\_26 (DE2),

#### Start 24:

- Found in 88 of 117 ( 75.2% ) of genes in pham
- Manual Annotations of this start: 49 of 100
- Called 64.8% of time when present
- Phage (with cluster) where this start called: Ailee\_26 (DE1), Arri\_27 (DC1), Baddon\_27 (DE1), Bakery\_25 (DC1), Barb\_26 (DC1), Barsten\_28 (DE1), Baumdotcom\_27 (DE1), Bizzy\_28 (DE1), BobBob\_25 (DE1), Brandonk123\_29 (DE1), ChadMasterC\_28 (DE1), CherryCola\_28 (DC1), ClamChowder\_26 (DC1), Clown\_28 (DC2), CoveyB\_27 (DC1), Danyall\_26 (DC1), Derg\_23 (DE1), Egi03\_26 (DC1), Evamon\_24 (DC1), Fireball\_25 (DC1), Flatwoods\_28 (DE1), Fugax\_26 (DC1), Gaea\_27 (DE1), Geodirt\_25 (DE1), Gezellig\_25 (DC1), Halo3\_25 (DC1), Jambalaya\_24 (DC1), Keitabear\_28 (DE1), KimmyK\_26 (DC1), Kwobi\_28 (DE1), LilHam\_25 (DE1), Lilbeanie\_23 (DE5), McKinley\_30 (DE1), Mutzi\_26 (DC1), Nordenberg\_22 (DE1), Nubi\_24 (DC1), Phlop\_24 (DC1), PinkCoffee\_26 (DC1), Portcullis\_24 (DC1), PullumCavea\_24 (DC1), RiverRaider\_28 (DE1), RogerDodger\_27 (DC1), Salvador\_24 (DC1), Savbucketdawg\_24 (DC1), SchottB\_26 (DE1), Shinji\_24 (DC1), Sitar\_28 (DE1), SmokingBunny\_24 (DC1), StorminNorm\_27 (DE1), TillyBobJoe\_24 (DC1), Togo\_24 (DC1), Twister6\_26 (DC1), Valary\_27 (DC1), VanDeWege\_27 (DC1), Vivi2\_30 (DE1), Wizard\_24 (DC1), YungMoney\_26 (DC1),

#### Start 25:

- Found in 53 of 117 ( 45.3% ) of genes in pham
- Manual Annotations of this start: 26 of 100
- Called 58.5% of time when present
- Phage (with cluster) where this start called: Affeca\_26 (DE1), Angelicage\_26 (DE1), Ashertheman\_28 (DE1), Bibwit\_27 (DE1), Charming\_28 (DE1), Fitzgerald\_26 (DE1),

Fosterous\_26 (DE1), FuegoCuervo\_30 (DE1), Galadriel\_28 (DE1), Gustavo\_27 (DE1), JKSyngboy\_25 (DE1), Jabberwocky\_26 (DE1), Kamashten\_27 (DE1), Kewpiedoll\_27 (DE1), Kroos\_28 (DE1), Lennon\_28 (DE1), Love\_31 (DE1), MoontowerMania\_27 (DE1), Paries\_30 (DE1), Ribeye\_28 (DE1), Rofo\_28 (DE1), Sanjuju\_26 (DE1), Saronaya\_27 (DE1), Sedona\_28 (DE1), Shivanishola\_29 (DE1), Stultus\_26 (DE1), Tangent\_28 (DE1), Tangerine\_27 (DE1), Thing3\_27 (DE1), Tycho\_27 (DE1), YorkOnyx\_28 (DE1),

Start 26:

- Found in 30 of 117 ( 25.6% ) of genes in pham
- Manual Annotations of this start: 1 of 100
- Called 3.3% of time when present
- Phage (with cluster) where this start called: EMoore\_24 (DE2),

### **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 24 was manually annotated 28 times for cluster DC1.

Info for manual annotations of cluster DC2:

- Start number 24 was manually annotated 1 time for cluster DC2.

Info for manual annotations of cluster DE:

- Start number 23 was manually annotated 1 time for cluster DE.

Info for manual annotations of cluster DE1:

- Start number 24 was manually annotated 19 times for cluster DE1.
- Start number 25 was manually annotated 26 times for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 23 was manually annotated 7 times for cluster DE2.
- Start number 26 was manually annotated 1 time for cluster DE2.

Info for manual annotations of cluster DE3:

- Start number 22 was manually annotated 7 times for cluster DE3.

Info for manual annotations of cluster DE4:

- Start number 22 was manually annotated 9 times for cluster DE4.

Info for manual annotations of cluster DE5:

- Start number 24 was manually annotated 1 time for cluster DE5.

### **Gene Information:**

Gene: APunk\_29 Start: 21390, Stop: 21947, Start Num: 22

Candidate Starts for APunk\_29:

(Start: 22 @21390 has 16 MA's), (29, 21468), (34, 21504), (35, 21507), (52, 21651), (53, 21669), (57, 21711), (59, 21735), (66, 21807), (68, 21813), (72, 21834), (81, 21900), (84, 21921),

Gene: Abblin\_28 Start: 22002, Stop: 22559, Start Num: 22

Candidate Starts for Abblin\_28:

(Start: 22 @22002 has 16 MA's), (29, 22080), (34, 22116), (35, 22119), (52, 22263), (53, 22281), (57, 22323), (59, 22347), (66, 22419), (68, 22425), (72, 22446), (81, 22512), (84, 22533),

Gene: Affeca\_26 Start: 21919, Stop: 22467, Start Num: 25

Candidate Starts for Affeca\_26:

(2, 21196), (3, 21238), (4, 21256), (15, 21565), (16, 21613), (18, 21715), (21, 21826), (Start: 24 @21916 has 49 MA's), (Start: 25 @21919 has 26 MA's), (Start: 26 @21940 has 1 MA's), (31, 21997), (36, 22018), (45, 22069), (46, 22096), (49, 22138), (52, 22156), (56, 22213), (59, 22240), (63, 22276), (68, 22318), (69, 22324), (71, 22333), (73, 22342), (83, 22423), (84, 22429),

Gene: Ailee\_26 Start: 22628, Stop: 23176, Start Num: 24

Candidate Starts for Ailee\_26:

(16, 22325), (18, 22427), (21, 22538), (Start: 24 @22628 has 49 MA's), (Start: 25 @22631 has 26 MA's), (31, 22709), (36, 22730), (41, 22766), (45, 22781), (48, 22835), (49, 22850), (52, 22868), (56, 22925), (59, 22952), (63, 22988), (68, 23030), (69, 23036), (71, 23045), (73, 23054), (83, 23135), (84, 23141),

Gene: Ali17\_24 Start: 19765, Stop: 20319, Start Num: 23

Candidate Starts for Ali17\_24:

(Start: 23 @19765 has 8 MA's), (Start: 26 @19795 has 1 MA's), (27, 19807), (33, 19864), (35, 19870), (37, 19888), (49, 19996), (52, 20014), (68, 20182), (71, 20197), (72, 20203), (78, 20248), (81, 20272),

Gene: Angelicage\_26 Start: 22339, Stop: 22884, Start Num: 25

Candidate Starts for Angelicage\_26:

(18, 22135), (21, 22246), (Start: 24 @22336 has 49 MA's), (Start: 25 @22339 has 26 MA's), (Start: 26 @22360 has 1 MA's), (31, 22417), (33, 22429), (36, 22438), (45, 22489), (49, 22558), (52, 22576), (56, 22633), (59, 22660), (63, 22696), (68, 22738), (69, 22744), (71, 22753), (73, 22762), (83, 22843), (84, 22849),

Gene: Arri\_27 Start: 17393, Stop: 17929, Start Num: 24

Candidate Starts for Arri\_27:

(12, 16931), (15, 17048), (18, 17198), (21, 17309), (Start: 24 @17393 has 49 MA's), (33, 17486), (35, 17492), (37, 17516), (38, 17519), (39, 17525), (50, 17630), (51, 17636), (52, 17642), (58, 17696), (62, 17738), (75, 17849), (76, 17855), (84, 17903),

Gene: Ashertheman\_28 Start: 21231, Stop: 21773, Start Num: 25

Candidate Starts for Ashertheman\_28:

(15, 20883), (16, 20931), (18, 21033), (21, 21144), (Start: 24 @21228 has 49 MA's), (Start: 25 @21231 has 26 MA's), (31, 21309), (33, 21321), (35, 21327), (36, 21330), (41, 21366), (49, 21447), (52, 21465), (68, 21627), (71, 21642), (84, 21738),

Gene: Baddon\_27 Start: 22040, Stop: 22585, Start Num: 24

Candidate Starts for Baddon\_27:

(3, 21368), (4, 21386), (16, 21743), (18, 21845), (21, 21956), (Start: 24 @22040 has 49 MA's), (Start: 25 @22043 has 26 MA's), (31, 22121), (33, 22133), (35, 22139), (36, 22142), (41, 22178), (49, 22259), (52, 22277), (64, 22415), (68, 22439), (71, 22454), (84, 22550),

Gene: Bakery\_25 Start: 16581, Stop: 17117, Start Num: 24

Candidate Starts for Bakery\_25:

(21, 16497), (Start: 24 @16581 has 49 MA's), (33, 16674), (35, 16680), (37, 16704), (38, 16707), (39, 16713), (50, 16818), (51, 16824), (52, 16830), (62, 16926), (75, 17037), (76, 17043), (84, 17091),

Gene: Barb\_26 Start: 17426, Stop: 17962, Start Num: 24

Candidate Starts for Barb\_26:

(12, 16964), (15, 17081), (18, 17231), (21, 17342), (Start: 24 @17426 has 49 MA's), (30, 17489), (33, 17519), (35, 17525), (37, 17549), (38, 17552), (39, 17558), (42, 17576), (50, 17663), (51, 17669), (52, 17675), (62, 17771), (75, 17882), (76, 17888), (84, 17936),

Gene: Barsten\_28 Start: 21760, Stop: 22308, Start Num: 24

Candidate Starts for Barsten\_28:

(2, 21040), (3, 21082), (4, 21100), (15, 21409), (16, 21457), (18, 21559), (21, 21670), (Start: 24 @21760 has 49 MA's), (Start: 25 @21763 has 26 MA's), (31, 21841), (36, 21862), (45, 21913), (46, 21940), (49, 21982), (52, 22000), (56, 22057), (59, 22084), (63, 22120), (68, 22162), (69, 22168), (71, 22177), (73, 22186), (83, 22267), (84, 22273),

Gene: Baumdotcom\_27 Start: 20843, Stop: 21388, Start Num: 24

Candidate Starts for Baumdotcom\_27:

(15, 20498), (16, 20546), (18, 20648), (21, 20759), (Start: 24 @20843 has 49 MA's), (Start: 25 @20846 has 26 MA's), (31, 20924), (33, 20936), (35, 20942), (36, 20945), (41, 20981), (49, 21062), (52, 21080), (68, 21242), (71, 21257), (84, 21353),

Gene: Belphegor\_26 Start: 21314, Stop: 21868, Start Num: 23

Candidate Starts for Belphegor\_26:

(Start: 23 @21314 has 8 MA's), (Start: 26 @21344 has 1 MA's), (27, 21356), (29, 21380), (33, 21413), (35, 21419), (37, 21437), (49, 21545), (52, 21563), (57, 21629), (68, 21731), (71, 21746), (72, 21752), (78, 21797), (81, 21821),

Gene: Bibwit\_27 Start: 21950, Stop: 22495, Start Num: 25

Candidate Starts for Bibwit\_27:

(2, 21227), (3, 21269), (4, 21287), (15, 21596), (16, 21644), (18, 21746), (21, 21857), (Start: 24 @21947 has 49 MA's), (Start: 25 @21950 has 26 MA's), (Start: 26 @21971 has 1 MA's), (33, 22040), (36, 22049), (45, 22100), (49, 22169), (52, 22187), (56, 22244), (59, 22271), (63, 22307), (68, 22349), (69, 22355), (71, 22364), (73, 22373), (83, 22454), (84, 22460),

Gene: Bizzy\_28 Start: 21187, Stop: 21732, Start Num: 24

Candidate Starts for Bizzy\_28:

(3, 20515), (4, 20533), (16, 20890), (18, 20992), (21, 21103), (Start: 24 @21187 has 49 MA's), (Start: 25 @21190 has 26 MA's), (31, 21268), (33, 21280), (35, 21286), (36, 21289), (41, 21325), (49, 21406), (52, 21424), (64, 21562), (68, 21586), (71, 21601), (84, 21697),

Gene: BobBob\_25 Start: 21225, Stop: 21773, Start Num: 24

Candidate Starts for BobBob\_25:

(2, 20505), (3, 20547), (4, 20565), (15, 20874), (16, 20922), (18, 21024), (21, 21135), (Start: 24 @21225 has 49 MA's), (Start: 25 @21228 has 26 MA's), (31, 21306), (36, 21327), (45, 21378), (46, 21405), (49, 21447), (52, 21465), (59, 21549), (63, 21585), (68, 21627), (69, 21633), (71, 21642), (73, 21651), (83, 21732), (84, 21738),

Gene: Brandonk123\_29 Start: 22294, Stop: 22842, Start Num: 24

Candidate Starts for Brandonk123\_29:

(2, 21574), (3, 21616), (4, 21634), (15, 21943), (16, 21991), (18, 22093), (21, 22204), (Start: 24 @22294 has 49 MA's), (Start: 25 @22297 has 26 MA's), (31, 22375), (36, 22396), (45, 22447), (49, 22516), (52, 22534), (56, 22591), (59, 22618), (63, 22654), (68, 22696), (69, 22702), (71, 22711), (73,



22720), (83, 22801), (84, 22807),

Gene: ChadMasterC\_28 Start: 22952, Stop: 23500, Start Num: 24

Candidate Starts for ChadMasterC\_28:

(2, 22232), (3, 22274), (4, 22292), (15, 22601), (16, 22649), (18, 22751), (21, 22862), (Start: 24 @22952 has 49 MA's), (Start: 25 @22955 has 26 MA's), (31, 23033), (36, 23054), (45, 23105), (46, 23132), (49, 23174), (52, 23192), (56, 23249), (59, 23276), (63, 23312), (68, 23354), (69, 23360), (71, 23369), (73, 23378), (83, 23459), (84, 23465),

Gene: Charming\_28 Start: 21806, Stop: 22351, Start Num: 25

Candidate Starts for Charming\_28:

(15, 21452), (16, 21500), (18, 21602), (21, 21713), (Start: 24 @21803 has 49 MA's), (Start: 25 @21806 has 26 MA's), (31, 21884), (36, 21905), (45, 21956), (46, 21983), (49, 22025), (52, 22043), (59, 22127), (63, 22163), (68, 22205), (69, 22211), (71, 22220), (73, 22229), (83, 22310), (84, 22316),

Gene: CherryCola\_28 Start: 17634, Stop: 18179, Start Num: 24

Candidate Starts for CherryCola\_28:

(18, 17439), (21, 17550), (Start: 24 @17634 has 49 MA's), (31, 17715), (33, 17727), (37, 17757), (38, 17760), (42, 17784), (49, 17865), (51, 17877), (52, 17883), (58, 17937), (62, 17979), (75, 18099), (76, 18105), (79, 18111), (84, 18153),

Gene: Chickadee\_25 Start: 18756, Stop: 19319, Start Num: 22

Candidate Starts for Chickadee\_25:

(20, 18675), (Start: 22 @18756 has 16 MA's), (Start: 26 @18798 has 1 MA's), (35, 18873), (36, 18876), (44, 18924), (47, 18972), (49, 18999), (52, 19017), (55, 19071), (65, 19164), (68, 19179), (71, 19194), (83, 19284), (84, 19290),

Gene: ClamChowder\_26 Start: 17426, Stop: 17962, Start Num: 24

Candidate Starts for ClamChowder\_26:

(12, 16964), (15, 17081), (18, 17231), (21, 17342), (Start: 24 @17426 has 49 MA's), (30, 17489), (33, 17519), (35, 17525), (37, 17549), (38, 17552), (39, 17558), (42, 17576), (50, 17663), (51, 17669), (52, 17675), (62, 17771), (75, 17882), (76, 17888), (84, 17936),

Gene: Clown\_28 Start: 19350, Stop: 19904, Start Num: 24

Candidate Starts for Clown\_28:

(21, 19272), (Start: 24 @19350 has 49 MA's), (35, 19449), (41, 19494), (42, 19500), (51, 19602), (52, 19608), (55, 19653), (62, 19704), (69, 19770), (70, 19779), (75, 19824), (79, 19836), (83, 19872), (84, 19878),

Gene: CoveyB\_27 Start: 17226, Stop: 17762, Start Num: 24

Candidate Starts for CoveyB\_27:

(12, 16764), (15, 16881), (18, 17031), (21, 17142), (Start: 24 @17226 has 49 MA's), (30, 17289), (33, 17319), (35, 17325), (37, 17349), (38, 17352), (39, 17358), (42, 17376), (50, 17463), (51, 17469), (52, 17475), (62, 17571), (75, 17682), (76, 17688), (84, 17736),

Gene: Danyall\_26 Start: 17226, Stop: 17762, Start Num: 24

Candidate Starts for Danyall\_26:

(12, 16764), (15, 16881), (18, 17031), (21, 17142), (Start: 24 @17226 has 49 MA's), (30, 17289), (33, 17319), (35, 17325), (37, 17349), (38, 17352), (39, 17358), (42, 17376), (50, 17463), (51, 17469), (52, 17475), (62, 17571), (75, 17682), (76, 17688), (84, 17736),

Gene: Delrey21\_27 Start: 22132, Stop: 22689, Start Num: 22

Candidate Starts for Delrey21\_27:

(13, 21760), (14, 21787), (17, 21937), (19, 22048), (Start: 22 @22132 has 16 MA's), (29, 22210), (34, 22246), (52, 22393), (53, 22411), (57, 22453), (59, 22477), (62, 22498), (68, 22555), (72, 22576), (77, 22615), (81, 22642), (84, 22663),

Gene: Derg\_23 Start: 20783, Stop: 21328, Start Num: 24

Candidate Starts for Derg\_23:

(3, 20111), (4, 20129), (16, 20486), (18, 20588), (21, 20699), (Start: 24 @20783 has 49 MA's), (Start: 25 @20786 has 26 MA's), (31, 20864), (33, 20876), (35, 20882), (36, 20885), (41, 20921), (49, 21002), (52, 21020), (64, 21158), (68, 21182), (71, 21197), (84, 21293),

Gene: Dextert\_26 Start: 19196, Stop: 19759, Start Num: 22

Candidate Starts for Dextert\_26:

(20, 19115), (Start: 22 @19196 has 16 MA's), (30, 19277), (35, 19313), (36, 19316), (41, 19352), (44, 19364), (49, 19439), (50, 19445), (52, 19457), (53, 19475), (68, 19619), (71, 19634), (83, 19724),

Gene: DoctorFroggo\_27 Start: 22132, Stop: 22689, Start Num: 22

Candidate Starts for DoctorFroggo\_27:

(13, 21760), (14, 21787), (17, 21937), (19, 22048), (Start: 22 @22132 has 16 MA's), (29, 22210), (34, 22246), (52, 22393), (53, 22411), (57, 22453), (59, 22477), (62, 22498), (68, 22555), (72, 22576), (77, 22615), (81, 22642), (84, 22663),

Gene: EMoore\_24 Start: 20639, Stop: 21163, Start Num: 26

Candidate Starts for EMoore\_24:

(Start: 23 @20609 has 8 MA's), (Start: 25 @20618 has 26 MA's), (Start: 26 @20639 has 1 MA's), (27, 20651), (32, 20699), (33, 20708), (35, 20714), (47, 20813), (49, 20840), (52, 20858), (54, 20903), (68, 21026), (71, 21041), (72, 21047), (78, 21092), (81, 21116), (84, 21137),

Gene: EdmundFerry\_24 Start: 18785, Stop: 19348, Start Num: 22

Candidate Starts for EdmundFerry\_24:

(20, 18704), (Start: 22 @18785 has 16 MA's), (Start: 26 @18827 has 1 MA's), (35, 18902), (36, 18905), (44, 18953), (47, 19001), (49, 19028), (52, 19046), (55, 19100), (65, 19193), (68, 19208), (71, 19223), (83, 19313), (84, 19319),

Gene: Egi03\_26 Start: 16841, Stop: 17389, Start Num: 24

Candidate Starts for Egi03\_26:

(15, 16496), (18, 16646), (21, 16757), (Start: 24 @16841 has 49 MA's), (31, 16922), (33, 16934), (37, 16964), (38, 16967), (42, 16991), (50, 17078), (51, 17084), (52, 17090), (58, 17144), (62, 17186), (75, 17306), (76, 17312), (79, 17318), (83, 17354), (84, 17360),

Gene: Evamon\_24 Start: 16712, Stop: 17248, Start Num: 24

Candidate Starts for Evamon\_24:

(12, 16250), (15, 16367), (18, 16517), (21, 16628), (Start: 24 @16712 has 49 MA's), (30, 16775), (33, 16805), (37, 16835), (38, 16838), (39, 16844), (42, 16862), (50, 16949), (51, 16955), (52, 16961), (62, 17057), (75, 17168), (76, 17174), (84, 17222),

Gene: Fireball\_25 Start: 16844, Stop: 17380, Start Num: 24

Candidate Starts for Fireball\_25:

(18, 16649), (21, 16760), (Start: 24 @16844 has 49 MA's), (30, 16907), (33, 16937), (37, 16967), (38, 16970), (39, 16976), (42, 16994), (50, 17081), (51, 17087), (52, 17093), (62, 17189), (75, 17300), (76, 17306), (84, 17354),

Gene: Fitzgerald\_26 Start: 22386, Stop: 22934, Start Num: 25

Candidate Starts for Fitzgerald\_26:

(2, 21663), (3, 21705), (4, 21723), (15, 22032), (16, 22080), (18, 22182), (21, 22293), (Start: 24 @22383 has 49 MA's), (Start: 25 @22386 has 26 MA's), (31, 22464), (33, 22476), (36, 22485), (41, 22521), (45, 22536), (46, 22563), (49, 22605), (52, 22623), (56, 22680), (59, 22707), (63, 22743), (68, 22785), (69, 22791), (71, 22800), (73, 22809), (83, 22890), (84, 22896),

Gene: Flatwoods\_28 Start: 21144, Stop: 21689, Start Num: 24

Candidate Starts for Flatwoods\_28:

(3, 20472), (4, 20490), (16, 20847), (18, 20949), (21, 21060), (Start: 24 @21144 has 49 MA's), (Start: 25 @21147 has 26 MA's), (31, 21225), (33, 21237), (35, 21243), (36, 21246), (41, 21282), (49, 21363), (52, 21381), (64, 21519), (68, 21543), (71, 21558), (84, 21654),

Gene: Fosterous\_26 Start: 22219, Stop: 22767, Start Num: 25

Candidate Starts for Fosterous\_26:

(16, 21913), (18, 22015), (21, 22126), (Start: 24 @22216 has 49 MA's), (Start: 25 @22219 has 26 MA's), (33, 22309), (36, 22318), (45, 22369), (46, 22396), (49, 22438), (52, 22456), (56, 22513), (59, 22540), (63, 22576), (68, 22618), (69, 22624), (71, 22633), (73, 22642), (83, 22723), (84, 22729),

Gene: FuegoCuervo\_30 Start: 20764, Stop: 21309, Start Num: 25

Candidate Starts for FuegoCuervo\_30:

(3, 20083), (4, 20101), (15, 20410), (16, 20458), (18, 20560), (21, 20671), (Start: 24 @20761 has 49 MA's), (Start: 25 @20764 has 26 MA's), (31, 20842), (35, 20860), (36, 20863), (45, 20914), (46, 20941), (49, 20983), (52, 21001), (56, 21058), (59, 21085), (63, 21121), (68, 21163), (69, 21169), (71, 21178), (73, 21187), (83, 21268), (84, 21274),

Gene: Fugax\_26 Start: 17426, Stop: 17962, Start Num: 24

Candidate Starts for Fugax\_26:

(12, 16964), (15, 17081), (18, 17231), (21, 17342), (Start: 24 @17426 has 49 MA's), (30, 17489), (33, 17519), (35, 17525), (37, 17549), (38, 17552), (39, 17558), (42, 17576), (50, 17663), (51, 17669), (52, 17675), (62, 17771), (75, 17882), (76, 17888), (84, 17936),

Gene: GTE6\_25 Start: 19274, Stop: 19837, Start Num: 22

Candidate Starts for GTE6\_25:

(20, 19193), (Start: 22 @19274 has 16 MA's), (Start: 26 @19316 has 1 MA's), (35, 19391), (36, 19394), (44, 19442), (47, 19490), (49, 19517), (52, 19535), (55, 19589), (61, 19637), (65, 19682), (68, 19697), (71, 19712), (83, 19802), (84, 19808),

Gene: Gaea\_27 Start: 20795, Stop: 21340, Start Num: 24

Candidate Starts for Gaea\_27:

(2, 20081), (3, 20123), (4, 20141), (16, 20498), (18, 20600), (21, 20711), (Start: 24 @20795 has 49 MA's), (Start: 25 @20798 has 26 MA's), (31, 20876), (33, 20888), (35, 20894), (36, 20897), (41, 20933), (49, 21014), (52, 21032), (64, 21170), (68, 21194), (71, 21209), (84, 21305),

Gene: Galadriel\_28 Start: 22711, Stop: 23256, Start Num: 25

Candidate Starts for Galadriel\_28:

(2, 21988), (3, 22030), (4, 22048), (15, 22357), (16, 22405), (18, 22507), (21, 22618), (Start: 24 @22708 has 49 MA's), (Start: 25 @22711 has 26 MA's), (31, 22789), (36, 22810), (45, 22861), (46, 22888), (49, 22930), (52, 22948), (59, 23032), (63, 23068), (68, 23110), (69, 23116), (71, 23125), (73, 23134), (83, 23215), (84, 23221),

Gene: Geodirt\_25 Start: 21691, Stop: 22239, Start Num: 24

Candidate Starts for Geodirt\_25:

(2, 20971), (3, 21013), (4, 21031), (15, 21340), (16, 21388), (18, 21490), (21, 21601), (Start: 24 @21691 has 49 MA's), (Start: 25 @21694 has 26 MA's), (Start: 26 @21715 has 1 MA's), (31, 21772),

(36, 21793), (45, 21844), (46, 21871), (49, 21913), (52, 21931), (56, 21988), (59, 22015), (63, 22051), (68, 22093), (69, 22099), (71, 22108), (73, 22117), (83, 22198), (84, 22204),

Gene: Gezellig\_25 Start: 16844, Stop: 17380, Start Num: 24

Candidate Starts for Gezellig\_25:

(12, 16382), (15, 16499), (18, 16649), (21, 16760), (Start: 24 @16844 has 49 MA's), (30, 16907), (33, 16937), (37, 16967), (38, 16970), (39, 16976), (42, 16994), (50, 17081), (51, 17087), (52, 17093), (62, 17189), (75, 17300), (76, 17306), (84, 17354),

Gene: Gustavo\_27 Start: 20938, Stop: 21480, Start Num: 25

Candidate Starts for Gustavo\_27:

(15, 20590), (16, 20638), (18, 20740), (21, 20851), (Start: 24 @20935 has 49 MA's), (Start: 25 @20938 has 26 MA's), (31, 21016), (33, 21028), (35, 21034), (36, 21037), (41, 21073), (49, 21154), (52, 21172), (68, 21334), (71, 21349), (84, 21445),

Gene: Halo3\_25 Start: 17137, Stop: 17673, Start Num: 24

Candidate Starts for Halo3\_25:

(12, 16675), (15, 16792), (18, 16942), (21, 17053), (Start: 24 @17137 has 49 MA's), (30, 17200), (33, 17230), (35, 17236), (37, 17260), (38, 17263), (39, 17269), (42, 17287), (50, 17374), (51, 17380), (52, 17386), (62, 17482), (75, 17593), (76, 17599), (84, 17647),

Gene: Hans\_28 Start: 20427, Stop: 20981, Start Num: 23

Candidate Starts for Hans\_28:

(Start: 23 @20427 has 8 MA's), (Start: 26 @20457 has 1 MA's), (27, 20469), (33, 20526), (35, 20532), (37, 20550), (49, 20658), (52, 20676), (68, 20844), (71, 20859), (72, 20865), (78, 20910), (81, 20934),

Gene: Inspectinfecti\_27 Start: 20851, Stop: 21405, Start Num: 23

Candidate Starts for Inspectinfecti\_27:

(Start: 23 @20851 has 8 MA's), (Start: 26 @20881 has 1 MA's), (27, 20893), (33, 20950), (35, 20956), (37, 20974), (49, 21082), (52, 21100), (68, 21268), (71, 21283), (72, 21289), (78, 21334), (81, 21358),

Gene: JKSyngboy\_25 Start: 21507, Stop: 22049, Start Num: 25

Candidate Starts for JKSyngboy\_25:

(1, 20754), (2, 20790), (3, 20832), (4, 20850), (16, 21207), (18, 21309), (21, 21420), (Start: 24 @21504 has 49 MA's), (Start: 25 @21507 has 26 MA's), (31, 21585), (33, 21597), (35, 21603), (36, 21606), (41, 21642), (49, 21723), (52, 21741), (64, 21879), (68, 21903), (71, 21918), (84, 22014),

Gene: Jabberwocky\_26 Start: 22853, Stop: 23398, Start Num: 25

Candidate Starts for Jabberwocky\_26:

(2, 22130), (3, 22172), (4, 22190), (15, 22499), (16, 22547), (18, 22649), (21, 22760), (Start: 24 @22850 has 49 MA's), (Start: 25 @22853 has 26 MA's), (Start: 26 @22874 has 1 MA's), (31, 22931), (36, 22952), (45, 23003), (46, 23030), (49, 23072), (52, 23090), (56, 23147), (59, 23174), (63, 23210), (68, 23252), (69, 23258), (71, 23267), (73, 23276), (83, 23357), (84, 23363),

Gene: Jambalaya\_24 Start: 16491, Stop: 17027, Start Num: 24

Candidate Starts for Jambalaya\_24:

(12, 16029), (15, 16146), (18, 16296), (21, 16407), (Start: 24 @16491 has 49 MA's), (30, 16554), (33, 16584), (35, 16590), (37, 16614), (38, 16617), (39, 16623), (42, 16641), (50, 16728), (51, 16734), (52, 16740), (62, 16836), (75, 16947), (76, 16953), (84, 17001),

Gene: Kamashten\_27 Start: 22299, Stop: 22844, Start Num: 25

Candidate Starts for Kamashten\_27:

(2, 21576), (3, 21618), (4, 21636), (15, 21945), (16, 21993), (18, 22095), (21, 22206), (Start: 24 @22296 has 49 MA's), (Start: 25 @22299 has 26 MA's), (Start: 26 @22320 has 1 MA's), (31, 22377), (33, 22389), (36, 22398), (45, 22449), (46, 22476), (49, 22518), (52, 22536), (56, 22593), (59, 22620), (63, 22656), (68, 22698), (69, 22704), (71, 22713), (83, 22803), (84, 22809),

Gene: Keitabear\_28 Start: 23652, Stop: 24200, Start Num: 24

Candidate Starts for Keitabear\_28:

(15, 23301), (16, 23349), (18, 23451), (21, 23562), (Start: 24 @23652 has 49 MA's), (Start: 25 @23655 has 26 MA's), (31, 23733), (36, 23754), (40, 23784), (45, 23805), (46, 23832), (49, 23874), (52, 23892), (56, 23949), (59, 23976), (63, 24012), (68, 24054), (69, 24060), (71, 24069), (73, 24078), (83, 24159), (84, 24165),

Gene: Kewpiedoll\_27 Start: 21496, Stop: 22041, Start Num: 25

Candidate Starts for Kewpiedoll\_27:

(2, 20773), (3, 20815), (4, 20833), (15, 21142), (16, 21190), (18, 21292), (21, 21403), (Start: 24 @21493 has 49 MA's), (Start: 25 @21496 has 26 MA's), (31, 21574), (35, 21592), (36, 21595), (45, 21646), (46, 21673), (49, 21715), (52, 21733), (56, 21790), (59, 21817), (63, 21853), (68, 21895), (69, 21901), (71, 21910), (73, 21919), (83, 22000), (84, 22006),

Gene: KimmyK\_26 Start: 17426, Stop: 17962, Start Num: 24

Candidate Starts for KimmyK\_26:

(12, 16964), (15, 17081), (18, 17231), (21, 17342), (Start: 24 @17426 has 49 MA's), (30, 17489), (33, 17519), (35, 17525), (37, 17549), (38, 17552), (39, 17558), (42, 17576), (50, 17663), (51, 17669), (52, 17675), (62, 17771), (75, 17882), (76, 17888), (84, 17936),

Gene: Kroos\_28 Start: 21691, Stop: 22233, Start Num: 25

Candidate Starts for Kroos\_28:

(3, 21016), (4, 21034), (16, 21391), (18, 21493), (21, 21604), (Start: 24 @21688 has 49 MA's), (Start: 25 @21691 has 26 MA's), (31, 21769), (33, 21781), (35, 21787), (36, 21790), (41, 21826), (49, 21907), (52, 21925), (64, 22063), (68, 22087), (71, 22102), (84, 22198),

Gene: Kwekel\_25 Start: 18715, Stop: 19278, Start Num: 22

Candidate Starts for Kwekel\_25:

(20, 18634), (Start: 22 @18715 has 16 MA's), (30, 18796), (35, 18832), (36, 18835), (41, 18871), (44, 18883), (49, 18958), (50, 18964), (52, 18976), (53, 18994), (68, 19138), (71, 19153), (83, 19243),

Gene: Kwobi\_28 Start: 21674, Stop: 22219, Start Num: 24

Candidate Starts for Kwobi\_28:

(15, 21329), (16, 21377), (18, 21479), (21, 21590), (Start: 24 @21674 has 49 MA's), (Start: 25 @21677 has 26 MA's), (31, 21755), (33, 21767), (35, 21773), (36, 21776), (41, 21812), (49, 21893), (52, 21911), (68, 22073), (71, 22088), (84, 22184),

Gene: Lennon\_28 Start: 23454, Stop: 24002, Start Num: 25

Candidate Starts for Lennon\_28:

(2, 22731), (3, 22773), (4, 22791), (15, 23100), (16, 23148), (18, 23250), (21, 23361), (Start: 24 @23451 has 49 MA's), (Start: 25 @23454 has 26 MA's), (Start: 26 @23475 has 1 MA's), (33, 23544), (36, 23553), (45, 23604), (49, 23673), (52, 23691), (56, 23748), (59, 23775), (63, 23811), (68, 23853), (69, 23859), (71, 23868), (73, 23877), (83, 23958), (84, 23964),

Gene: Leonard\_26 Start: 20425, Stop: 20979, Start Num: 23

Candidate Starts for Leonard\_26:

(Start: 23 @20425 has 8 MA's), (Start: 26 @20455 has 1 MA's), (27, 20467), (33, 20524), (35, 20530), (37, 20548), (49, 20656), (52, 20674), (68, 20842), (71, 20857), (72, 20863), (78, 20908), (81, 20932),

Gene: LilHam\_25 Start: 20268, Stop: 20813, Start Num: 24

Candidate Starts for LilHam\_25:

(15, 19923), (16, 19971), (18, 20073), (21, 20184), (Start: 24 @20268 has 49 MA's), (Start: 25 @20271 has 26 MA's), (31, 20349), (33, 20361), (35, 20367), (36, 20370), (41, 20406), (49, 20487), (52, 20505), (68, 20667), (71, 20682), (84, 20778),

Gene: Lilbeanie\_23 Start: 15700, Stop: 16221, Start Num: 24

Candidate Starts for Lilbeanie\_23:

(21, 15625), (Start: 24 @15700 has 49 MA's), (Start: 26 @15724 has 1 MA's), (28, 15748), (31, 15781), (35, 15799), (38, 15823), (52, 15934), (60, 16021), (62, 16030), (63, 16045), (67, 16078), (74, 16111), (77, 16141), (79, 16147), (80, 16153), (82, 16180), (83, 16183),

Gene: Love\_31 Start: 23221, Stop: 23766, Start Num: 25

Candidate Starts for Love\_31:

(3, 22540), (4, 22558), (15, 22867), (16, 22915), (18, 23017), (21, 23128), (Start: 24 @23218 has 49 MA's), (Start: 25 @23221 has 26 MA's), (31, 23299), (36, 23320), (45, 23371), (46, 23398), (49, 23440), (52, 23458), (59, 23542), (63, 23578), (68, 23620), (69, 23626), (71, 23635), (73, 23644), (83, 23725), (84, 23731),

Gene: McKinley\_30 Start: 23250, Stop: 23798, Start Num: 24

Candidate Starts for McKinley\_30:

(2, 22530), (3, 22572), (4, 22590), (15, 22899), (16, 22947), (18, 23049), (21, 23160), (Start: 24 @23250 has 49 MA's), (Start: 25 @23253 has 26 MA's), (31, 23331), (36, 23352), (45, 23403), (46, 23430), (49, 23472), (52, 23490), (59, 23574), (63, 23610), (68, 23652), (69, 23658), (71, 23667), (73, 23676), (83, 23757), (84, 23763),

Gene: MelBins\_27 Start: 20633, Stop: 21187, Start Num: 23

Candidate Starts for MelBins\_27:

(Start: 23 @20633 has 8 MA's), (Start: 26 @20663 has 1 MA's), (27, 20675), (33, 20732), (37, 20756), (49, 20864), (52, 20882), (68, 21050), (71, 21065), (72, 21071), (78, 21116), (81, 21140),

Gene: MoontowerMania\_27 Start: 22061, Stop: 22609, Start Num: 25

Candidate Starts for MoontowerMania\_27:

(2, 21338), (3, 21380), (4, 21398), (15, 21707), (16, 21755), (18, 21857), (21, 21968), (Start: 24 @22058 has 49 MA's), (Start: 25 @22061 has 26 MA's), (Start: 26 @22082 has 1 MA's), (31, 22139), (33, 22151), (36, 22160), (41, 22196), (45, 22211), (46, 22238), (49, 22280), (52, 22298), (56, 22355), (59, 22382), (63, 22418), (68, 22460), (69, 22466), (71, 22475), (73, 22484), (83, 22565), (84, 22571),

Gene: Mutzi\_26 Start: 17080, Stop: 17625, Start Num: 24

Candidate Starts for Mutzi\_26:

(5, 16468), (6, 16528), (7, 16531), (10, 16573), (11, 16579), (12, 16618), (15, 16735), (18, 16885), (21, 16996), (Start: 24 @17080 has 49 MA's), (31, 17161), (33, 17173), (37, 17203), (38, 17206), (42, 17230), (50, 17317), (51, 17323), (52, 17329), (57, 17380), (62, 17425), (75, 17545), (76, 17551), (79, 17557), (84, 17599),

Gene: Natkenzie\_28 Start: 22002, Stop: 22559, Start Num: 22

Candidate Starts for Natkenzie\_28:

(Start: 22 @22002 has 16 MA's), (29, 22080), (34, 22116), (35, 22119), (52, 22263), (53, 22281), (57, 22323), (59, 22347), (66, 22419), (68, 22425), (72, 22446), (81, 22512), (84, 22533),

Gene: Nordenberg\_22 Start: 21420, Stop: 21968, Start Num: 24

Candidate Starts for Nordenberg\_22:

(2, 20700), (3, 20742), (4, 20760), (15, 21069), (16, 21117), (18, 21219), (21, 21330), (Start: 24 @21420 has 49 MA's), (Start: 25 @21423 has 26 MA's), (31, 21501), (36, 21522), (45, 21573), (46, 21600), (49, 21642), (52, 21660), (59, 21744), (63, 21780), (68, 21822), (69, 21828), (71, 21837), (73, 21846), (83, 21927), (84, 21933),

Gene: Nubi\_24 Start: 16732, Stop: 17268, Start Num: 24

Candidate Starts for Nubi\_24:

(12, 16270), (15, 16387), (18, 16537), (21, 16648), (Start: 24 @16732 has 49 MA's), (30, 16795), (33, 16825), (37, 16855), (38, 16858), (39, 16864), (42, 16882), (50, 16969), (51, 16975), (52, 16981), (62, 17077), (75, 17188), (76, 17194), (84, 17242),

Gene: Paries\_30 Start: 22880, Stop: 23425, Start Num: 25

Candidate Starts for Paries\_30:

(2, 22157), (3, 22199), (4, 22217), (15, 22526), (16, 22574), (18, 22676), (21, 22787), (Start: 24 @22877 has 49 MA's), (Start: 25 @22880 has 26 MA's), (31, 22958), (33, 22970), (35, 22976), (36, 22979), (45, 23030), (46, 23057), (49, 23099), (52, 23117), (56, 23174), (59, 23201), (63, 23237), (68, 23279), (69, 23285), (71, 23294), (73, 23303), (83, 23384), (84, 23390),

Gene: Phauci\_19 Start: 17014, Stop: 17568, Start Num: 23

Candidate Starts for Phauci\_19:

(Start: 23 @17014 has 8 MA's), (Start: 26 @17044 has 1 MA's), (27, 17056), (33, 17113), (35, 17119), (37, 17137), (49, 17245), (52, 17263), (68, 17431), (71, 17446), (72, 17452), (78, 17497), (81, 17521),

Gene: Phinally\_26 Start: 20422, Stop: 20976, Start Num: 23

Candidate Starts for Phinally\_26:

(Start: 23 @20422 has 8 MA's), (Start: 26 @20452 has 1 MA's), (27, 20464), (33, 20521), (35, 20527), (37, 20545), (49, 20653), (52, 20671), (68, 20839), (71, 20854), (72, 20860), (78, 20905), (81, 20929),

Gene: Phlop\_24 Start: 16796, Stop: 17332, Start Num: 24

Candidate Starts for Phlop\_24:

(12, 16334), (15, 16451), (18, 16601), (21, 16712), (Start: 24 @16796 has 49 MA's), (30, 16859), (33, 16889), (37, 16919), (38, 16922), (39, 16928), (42, 16946), (50, 17033), (51, 17039), (52, 17045), (62, 17141), (75, 17252), (76, 17258), (84, 17306),

Gene: PinkCoffee\_26 Start: 17435, Stop: 17971, Start Num: 24

Candidate Starts for PinkCoffee\_26:

(12, 16973), (15, 17090), (18, 17240), (21, 17351), (Start: 24 @17435 has 49 MA's), (30, 17498), (33, 17528), (35, 17534), (37, 17558), (38, 17561), (39, 17567), (42, 17585), (50, 17672), (51, 17678), (52, 17684), (62, 17780), (75, 17891), (76, 17897), (84, 17945),

Gene: Portcullis\_24 Start: 16739, Stop: 17275, Start Num: 24

Candidate Starts for Portcullis\_24:

(12, 16277), (15, 16394), (18, 16544), (21, 16655), (Start: 24 @16739 has 49 MA's), (30, 16802), (33, 16832), (37, 16862), (38, 16865), (39, 16871), (42, 16889), (50, 16976), (51, 16982), (52, 16988), (62, 17084), (75, 17195), (76, 17201), (84, 17249),

Gene: PullumCavea\_24 Start: 16796, Stop: 17332, Start Num: 24

Candidate Starts for PullumCavea\_24:

(12, 16334), (15, 16451), (18, 16601), (21, 16712), (Start: 24 @16796 has 49 MA's), (30, 16859), (33, 16889), (37, 16919), (38, 16922), (39, 16928), (42, 16946), (50, 17033), (51, 17039), (52, 17045), (62, 17141), (75, 17252), (76, 17258), (84, 17306),

Gene: Ribeye\_28 Start: 22104, Stop: 22646, Start Num: 25

Candidate Starts for Ribeye\_28:

(3, 21429), (4, 21447), (16, 21804), (18, 21906), (21, 22017), (Start: 24 @22101 has 49 MA's), (Start: 25 @22104 has 26 MA's), (31, 22182), (33, 22194), (35, 22200), (36, 22203), (41, 22239), (49, 22320), (52, 22338), (64, 22476), (68, 22500), (71, 22515), (84, 22611),

Gene: RiverRaider\_28 Start: 20482, Stop: 21030, Start Num: 24

Candidate Starts for RiverRaider\_28:

(21, 20392), (Start: 24 @20482 has 49 MA's), (Start: 26 @20506 has 1 MA's), (36, 20584), (41, 20620), (43, 20629), (49, 20701), (50, 20707), (52, 20719), (68, 20881), (71, 20896), (83, 20986), (84, 20992),

Gene: RoadKill\_23 Start: 18262, Stop: 18825, Start Num: 22

Candidate Starts for RoadKill\_23:

(20, 18181), (Start: 22 @18262 has 16 MA's), (35, 18379), (36, 18382), (44, 18430), (47, 18478), (49, 18505), (52, 18523), (55, 18577), (65, 18670), (68, 18685), (71, 18700), (83, 18790), (84, 18796),

Gene: Rofo\_28 Start: 22284, Stop: 22829, Start Num: 25

Candidate Starts for Rofo\_28:

(2, 21561), (3, 21603), (4, 21621), (15, 21930), (16, 21978), (18, 22080), (21, 22191), (Start: 24 @22281 has 49 MA's), (Start: 25 @22284 has 26 MA's), (31, 22362), (36, 22383), (45, 22434), (46, 22461), (49, 22503), (52, 22521), (59, 22605), (63, 22641), (68, 22683), (69, 22689), (71, 22698), (73, 22707), (83, 22788), (84, 22794),

Gene: RogerDodger\_27 Start: 17589, Stop: 18125, Start Num: 24

Candidate Starts for RogerDodger\_27:

(12, 17127), (15, 17244), (18, 17394), (21, 17505), (Start: 24 @17589 has 49 MA's), (33, 17682), (35, 17688), (37, 17712), (38, 17715), (39, 17721), (50, 17826), (51, 17832), (52, 17838), (58, 17892), (62, 17934), (75, 18045), (76, 18051), (84, 18099),

Gene: Salvador\_24 Start: 16710, Stop: 17246, Start Num: 24

Candidate Starts for Salvador\_24:

(12, 16248), (15, 16365), (18, 16515), (21, 16626), (Start: 24 @16710 has 49 MA's), (30, 16773), (33, 16803), (37, 16833), (38, 16836), (39, 16842), (42, 16860), (50, 16947), (51, 16953), (52, 16959), (62, 17055), (75, 17166), (76, 17172), (84, 17220),

Gene: Sampson\_28 Start: 21947, Stop: 22504, Start Num: 22

Candidate Starts for Sampson\_28:

(Start: 22 @21947 has 16 MA's), (29, 22025), (34, 22061), (35, 22064), (52, 22208), (53, 22226), (57, 22268), (59, 22292), (66, 22364), (68, 22370), (72, 22391), (81, 22457), (84, 22478),

Gene: Sanjuju\_26 Start: 22465, Stop: 23010, Start Num: 25

Candidate Starts for Sanjuju\_26:

(2, 21742), (3, 21784), (4, 21802), (15, 22111), (16, 22159), (18, 22261), (21, 22372), (Start: 24 @22462 has 49 MA's), (Start: 25 @22465 has 26 MA's), (Start: 26 @22486 has 1 MA's), (31, 22543), (36, 22564), (45, 22615), (46, 22642), (49, 22684), (52, 22702), (56, 22759), (59, 22786), (63, 22822), (68, 22864), (69, 22870), (71, 22879), (73, 22888), (83, 22969), (84, 22975),

Gene: Saronaya\_27 Start: 20938, Stop: 21480, Start Num: 25

Candidate Starts for Saronaya\_27:

(15, 20590), (16, 20638), (18, 20740), (21, 20851), (Start: 24 @20935 has 49 MA's), (Start: 25 @20938 has 26 MA's), (31, 21016), (33, 21028), (35, 21034), (36, 21037), (41, 21073), (49, 21154), (52, 21172), (68, 21334), (71, 21349), (84, 21445),

Gene: Savbucketdawg\_24 Start: 16491, Stop: 17027, Start Num: 24



Candidate Starts for Savbucketdawg\_24:

(12, 16029), (15, 16146), (18, 16296), (21, 16407), (Start: 24 @16491 has 49 MA's), (30, 16554), (33, 16584), (35, 16590), (37, 16614), (38, 16617), (39, 16623), (42, 16641), (50, 16728), (51, 16734), (52, 16740), (62, 16836), (75, 16947), (76, 16953), (84, 17001),

Gene: SchottB\_26 Start: 21947, Stop: 22492, Start Num: 24

Candidate Starts for SchottB\_26:

(15, 21602), (16, 21650), (18, 21752), (21, 21863), (Start: 24 @21947 has 49 MA's), (Start: 25 @21950 has 26 MA's), (31, 22028), (33, 22040), (35, 22046), (36, 22049), (41, 22085), (49, 22166), (52, 22184), (68, 22346), (71, 22361), (84, 22457),

Gene: Scioto\_28 Start: 22002, Stop: 22559, Start Num: 22

Candidate Starts for Scioto\_28:

(Start: 22 @22002 has 16 MA's), (29, 22080), (34, 22116), (35, 22119), (52, 22263), (53, 22281), (57, 22323), (59, 22347), (66, 22419), (68, 22425), (72, 22446), (81, 22512), (84, 22533),

Gene: Sedona\_28 Start: 23390, Stop: 23935, Start Num: 25

Candidate Starts for Sedona\_28:

(2, 22667), (3, 22709), (4, 22727), (15, 23036), (16, 23084), (18, 23186), (21, 23297), (Start: 24 @23387 has 49 MA's), (Start: 25 @23390 has 26 MA's), (Start: 26 @23411 has 1 MA's), (33, 23480), (36, 23489), (45, 23540), (49, 23609), (52, 23627), (56, 23684), (59, 23711), (63, 23747), (68, 23789), (69, 23795), (71, 23804), (73, 23813), (83, 23894), (84, 23900),

Gene: Shinji\_24 Start: 16680, Stop: 17216, Start Num: 24

Candidate Starts for Shinji\_24:

(12, 16218), (15, 16335), (18, 16485), (21, 16596), (Start: 24 @16680 has 49 MA's), (30, 16743), (33, 16773), (37, 16803), (38, 16806), (39, 16812), (42, 16830), (50, 16917), (51, 16923), (52, 16929), (62, 17025), (75, 17136), (76, 17142), (84, 17190),

Gene: Shivanishola\_29 Start: 22364, Stop: 22909, Start Num: 25

Candidate Starts for Shivanishola\_29:

(2, 21641), (3, 21683), (4, 21701), (15, 22010), (16, 22058), (18, 22160), (21, 22271), (Start: 24 @22361 has 49 MA's), (Start: 25 @22364 has 26 MA's), (Start: 26 @22385 has 1 MA's), (31, 22442), (36, 22463), (45, 22514), (46, 22541), (49, 22583), (52, 22601), (56, 22658), (59, 22685), (63, 22721), (68, 22763), (69, 22769), (71, 22778), (73, 22787), (83, 22868), (84, 22874),

Gene: Sitar\_28 Start: 23451, Stop: 24002, Start Num: 24

Candidate Starts for Sitar\_28:

(2, 22731), (3, 22773), (4, 22791), (15, 23100), (16, 23148), (18, 23250), (21, 23361), (Start: 24 @23451 has 49 MA's), (Start: 25 @23454 has 26 MA's), (Start: 26 @23475 has 1 MA's), (33, 23544), (36, 23553), (45, 23604), (49, 23673), (52, 23691), (56, 23748), (59, 23775), (63, 23811), (68, 23853), (69, 23859), (71, 23868), (73, 23877), (83, 23958), (84, 23964),

Gene: SmokingBunny\_24 Start: 16710, Stop: 17246, Start Num: 24

Candidate Starts for SmokingBunny\_24:

(12, 16248), (15, 16365), (18, 16515), (21, 16626), (Start: 24 @16710 has 49 MA's), (30, 16773), (33, 16803), (37, 16833), (38, 16836), (39, 16842), (42, 16860), (50, 16947), (51, 16953), (52, 16959), (62, 17055), (75, 17166), (76, 17172), (84, 17220),

Gene: StorminNorm\_27 Start: 20814, Stop: 21359, Start Num: 24

Candidate Starts for StorminNorm\_27:

(15, 20469), (16, 20517), (18, 20619), (21, 20730), (Start: 24 @20814 has 49 MA's), (Start: 25 @20817 has 26 MA's), (31, 20895), (33, 20907), (35, 20913), (36, 20916), (41, 20952), (49, 21033), (52, 21051),

(68, 21213), (71, 21228), (84, 21324),

Gene: Stultus\_26 Start: 21369, Stop: 21917, Start Num: 25

Candidate Starts for Stultus\_26:

(3, 20688), (4, 20706), (15, 21015), (16, 21063), (18, 21165), (21, 21276), (Start: 24 @21366 has 49 MA's), (Start: 25 @21369 has 26 MA's), (Start: 26 @21390 has 1 MA's), (33, 21459), (36, 21468), (45, 21519), (46, 21546), (49, 21588), (52, 21606), (56, 21663), (59, 21690), (63, 21726), (68, 21768), (69, 21774), (71, 21783), (73, 21792), (83, 21873), (84, 21879),

Gene: Tangent\_28 Start: 21806, Stop: 22351, Start Num: 25

Candidate Starts for Tangent\_28:

(15, 21452), (16, 21500), (18, 21602), (21, 21713), (Start: 24 @21803 has 49 MA's), (Start: 25 @21806 has 26 MA's), (31, 21884), (36, 21905), (45, 21956), (46, 21983), (49, 22025), (52, 22043), (59, 22127), (63, 22163), (68, 22205), (69, 22211), (71, 22220), (73, 22229), (83, 22310), (84, 22316),

Gene: Tangerine\_27 Start: 20823, Stop: 21365, Start Num: 25

Candidate Starts for Tangerine\_27:

(15, 20475), (16, 20523), (18, 20625), (21, 20736), (Start: 24 @20820 has 49 MA's), (Start: 25 @20823 has 26 MA's), (31, 20901), (33, 20913), (35, 20919), (36, 20922), (41, 20958), (49, 21039), (52, 21057), (68, 21219), (71, 21234), (84, 21330),

Gene: Tardus\_29 Start: 21283, Stop: 21840, Start Num: 22

Candidate Starts for Tardus\_29:

(Start: 22 @21283 has 16 MA's), (29, 21361), (34, 21397), (35, 21400), (52, 21544), (53, 21562), (57, 21604), (59, 21628), (66, 21700), (68, 21706), (72, 21727), (77, 21766), (81, 21793), (84, 21814),

Gene: Thing3\_27 Start: 22299, Stop: 22844, Start Num: 25

Candidate Starts for Thing3\_27:

(2, 21576), (3, 21618), (4, 21636), (15, 21945), (16, 21993), (18, 22095), (21, 22206), (Start: 24 @22296 has 49 MA's), (Start: 25 @22299 has 26 MA's), (Start: 26 @22320 has 1 MA's), (31, 22377), (33, 22389), (36, 22398), (45, 22449), (46, 22476), (49, 22518), (52, 22536), (56, 22593), (59, 22620), (63, 22656), (68, 22698), (69, 22704), (71, 22713), (83, 22803), (84, 22809),

Gene: Tiamoceli\_26 Start: 19613, Stop: 20176, Start Num: 22

Candidate Starts for Tiamoceli\_26:

(20, 19532), (Start: 22 @19613 has 16 MA's), (Start: 26 @19655 has 1 MA's), (35, 19730), (36, 19733), (44, 19781), (47, 19829), (49, 19856), (52, 19874), (55, 19928), (65, 20021), (68, 20036), (71, 20051), (83, 20141), (84, 20147),

Gene: TillyBobJoe\_24 Start: 16494, Stop: 17030, Start Num: 24

Candidate Starts for TillyBobJoe\_24:

(18, 16299), (21, 16410), (Start: 24 @16494 has 49 MA's), (30, 16557), (33, 16587), (37, 16617), (38, 16620), (39, 16626), (42, 16644), (50, 16731), (51, 16737), (52, 16743), (62, 16839), (75, 16950), (76, 16956), (84, 17004),

Gene: Togo\_24 Start: 16710, Stop: 17246, Start Num: 24

Candidate Starts for Togo\_24:

(12, 16248), (15, 16365), (18, 16515), (21, 16626), (Start: 24 @16710 has 49 MA's), (30, 16773), (33, 16803), (37, 16833), (38, 16836), (39, 16842), (42, 16860), (50, 16947), (51, 16953), (52, 16959), (62, 17055), (75, 17166), (76, 17172), (84, 17220),

Gene: Twister6\_26 Start: 17137, Stop: 17673, Start Num: 24

Candidate Starts for Twister6\_26:

(12, 16675), (15, 16792), (18, 16942), (21, 17053), (Start: 24 @17137 has 49 MA's), (30, 17200), (33, 17230), (35, 17236), (37, 17260), (38, 17263), (39, 17269), (42, 17287), (50, 17374), (51, 17380), (52, 17386), (62, 17482), (75, 17593), (76, 17599), (84, 17647),

Gene: Twonlo\_23 Start: 18231, Stop: 18794, Start Num: 22

Candidate Starts for Twonlo\_23:

(20, 18150), (Start: 22 @18231 has 16 MA's), (Start: 26 @18273 has 1 MA's), (35, 18348), (36, 18351), (41, 18387), (44, 18399), (47, 18447), (49, 18474), (52, 18492), (55, 18546), (65, 18639), (68, 18654), (71, 18669), (83, 18759), (84, 18765),

Gene: Tycho\_27 Start: 20912, Stop: 21454, Start Num: 25

Candidate Starts for Tycho\_27:

(15, 20564), (16, 20612), (18, 20714), (21, 20825), (Start: 24 @20909 has 49 MA's), (Start: 25 @20912 has 26 MA's), (31, 20990), (33, 21002), (35, 21008), (36, 21011), (41, 21047), (49, 21128), (52, 21146), (68, 21308), (71, 21323), (84, 21419),

Gene: Valary\_27 Start: 17634, Stop: 18179, Start Num: 24

Candidate Starts for Valary\_27:

(18, 17439), (21, 17550), (Start: 24 @17634 has 49 MA's), (31, 17715), (33, 17727), (37, 17757), (38, 17760), (42, 17784), (49, 17865), (51, 17877), (52, 17883), (58, 17937), (62, 17979), (75, 18099), (76, 18105), (79, 18111), (84, 18153),

Gene: VanDeWege\_27 Start: 17518, Stop: 18054, Start Num: 24

Candidate Starts for VanDeWege\_27:

(12, 17056), (15, 17173), (18, 17323), (21, 17434), (Start: 24 @17518 has 49 MA's), (30, 17581), (33, 17611), (35, 17617), (37, 17641), (38, 17644), (39, 17650), (42, 17668), (50, 17755), (51, 17761), (52, 17767), (62, 17863), (75, 17974), (76, 17980), (84, 18028),

Gene: Verity\_27 Start: 22132, Stop: 22689, Start Num: 22

Candidate Starts for Verity\_27:

(13, 21760), (14, 21787), (17, 21937), (19, 22048), (Start: 22 @22132 has 16 MA's), (29, 22210), (34, 22246), (52, 22393), (53, 22411), (57, 22453), (59, 22477), (62, 22498), (68, 22555), (72, 22576), (77, 22615), (81, 22642), (84, 22663),

Gene: ViaConlectus\_28 Start: 20624, Stop: 21181, Start Num: 22

Candidate Starts for ViaConlectus\_28:

(Start: 22 @20624 has 16 MA's), (29, 20702), (34, 20738), (35, 20741), (52, 20885), (53, 20903), (57, 20945), (59, 20969), (66, 21041), (68, 21047), (72, 21068), (81, 21134), (84, 21155),

Gene: Vivi2\_30 Start: 22976, Stop: 23524, Start Num: 24

Candidate Starts for Vivi2\_30:

(15, 22625), (16, 22673), (18, 22775), (21, 22886), (Start: 24 @22976 has 49 MA's), (Start: 25 @22979 has 26 MA's), (31, 23057), (36, 23078), (45, 23129), (46, 23156), (49, 23198), (52, 23216), (59, 23300), (63, 23336), (68, 23378), (69, 23384), (71, 23393), (73, 23402), (83, 23483), (84, 23489),

Gene: Wizard\_24 Start: 16844, Stop: 17380, Start Num: 24

Candidate Starts for Wizard\_24:

(12, 16382), (15, 16499), (18, 16649), (21, 16760), (Start: 24 @16844 has 49 MA's), (30, 16907), (33, 16937), (37, 16967), (38, 16970), (39, 16976), (42, 16994), (50, 17081), (51, 17087), (52, 17093), (62, 17189), (75, 17300), (76, 17306), (84, 17354),

Gene: YorkOnyx\_28 Start: 21180, Stop: 21722, Start Num: 25

Candidate Starts for YorkOnyx\_28:

(2, 20463), (3, 20505), (4, 20523), (16, 20880), (18, 20982), (21, 21093), (Start: 24 @21177 has 49 MA's), (Start: 25 @21180 has 26 MA's), (31, 21258), (33, 21270), (35, 21276), (36, 21279), (41, 21315), (49, 21396), (52, 21414), (64, 21552), (68, 21576), (71, 21591), (84, 21687),

Gene: YungMoney\_26 Start: 18132, Stop: 18668, Start Num: 24

Candidate Starts for YungMoney\_26:

(18, 17937), (21, 18048), (Start: 24 @18132 has 49 MA's), (33, 18225), (35, 18231), (37, 18255), (38, 18258), (39, 18264), (50, 18369), (51, 18375), (52, 18381), (57, 18432), (58, 18435), (62, 18477), (75, 18588), (76, 18594), (84, 18642),

Gene: Zipp\_27 Start: 22029, Stop: 22586, Start Num: 22

Candidate Starts for Zipp\_27:

(8, 21519), (9, 21525), (13, 21657), (14, 21684), (17, 21834), (19, 21945), (Start: 22 @22029 has 16 MA's), (29, 22107), (34, 22143), (52, 22290), (53, 22308), (57, 22350), (59, 22374), (62, 22395), (68, 22452), (72, 22473), (77, 22512), (81, 22539), (84, 22560),

Gene: Zitch\_29 Start: 19905, Stop: 20462, Start Num: 22

Candidate Starts for Zitch\_29:

(Start: 22 @19905 has 16 MA's), (29, 19983), (34, 20019), (35, 20022), (52, 20166), (53, 20184), (57, 20226), (59, 20250), (66, 20322), (68, 20328), (72, 20349), (81, 20415), (84, 20436),