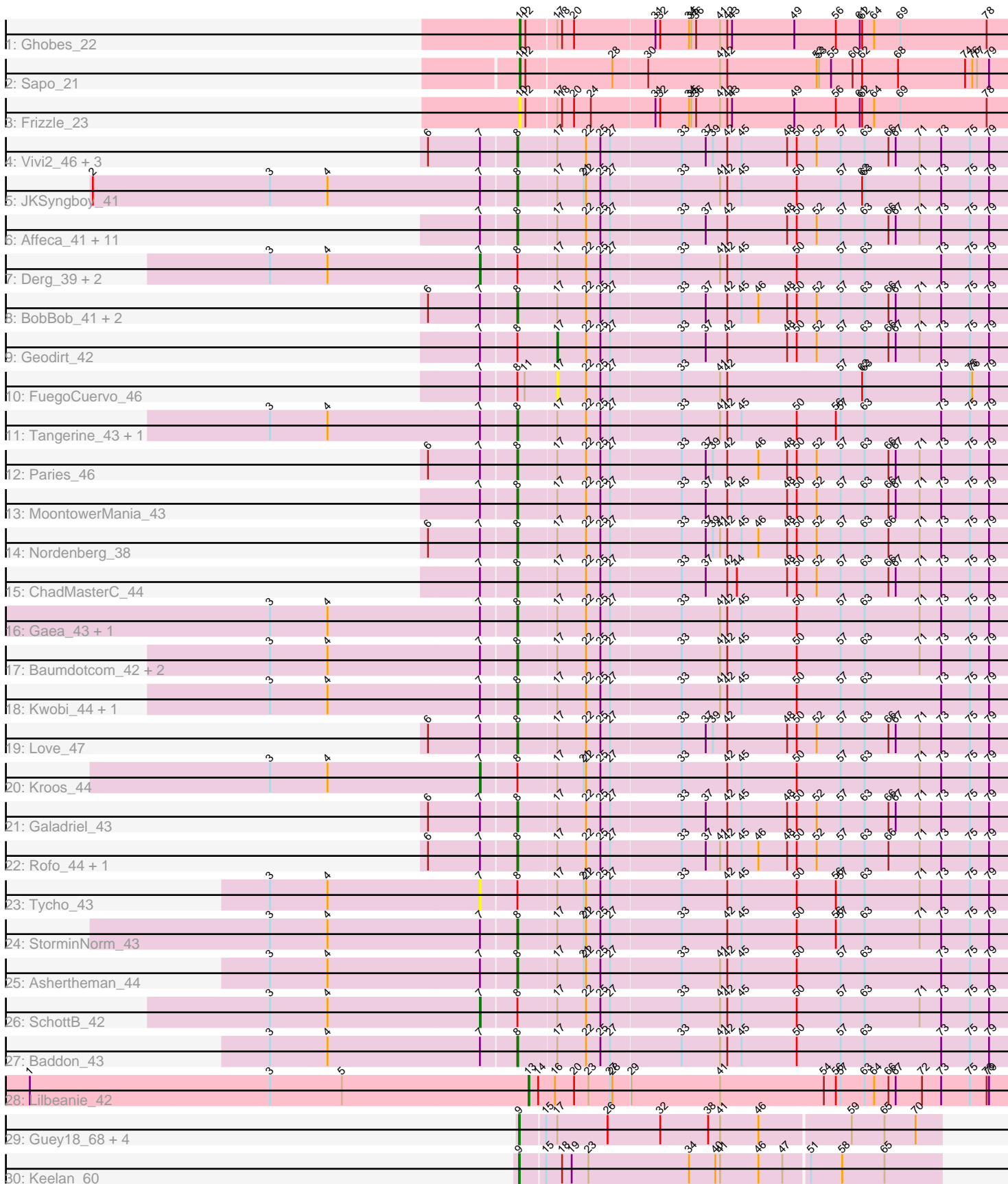


# Pham 214319



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 214319 Report

This analysis was run 02/22/25 on database version 588.

Pham number 214319 has 58 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Ghobes\_22
- Track 2 : Sapo\_21
- Track 3 : Frizzle\_23
- Track 4 : Vivi2\_46, Fitzgerald\_42, McKinley\_45, Sanjuju\_42
- Track 5 : JKSyngboy\_41
- Track 6 : Affeca\_41, Lennon\_43, Jabberwocky\_42, Kamashten\_41, Sitar\_43, Barsten\_44, Fosterous\_41, Thing3\_41, Stultus\_42, Angelicage\_41, Kewpiedoll\_43, Shivanishola\_43
- Track 7 : Derg\_39, Saronaya\_43, Gustavo\_43
- Track 8 : BobBob\_41, Charming\_44, Tangent\_44
- Track 9 : Geodirt\_42
- Track 10 : FuegoCuervo\_46
- Track 11 : Tangerine\_43, YorkOnyx\_44
- Track 12 : Paries\_46
- Track 13 : MoontowerMania\_43
- Track 14 : Nordenberg\_38
- Track 15 : ChadMasterC\_44
- Track 16 : Gaea\_43, Bizzy\_44
- Track 17 : Baumdotcom\_42, Flatwoods\_44, LilHam\_41
- Track 18 : Kwobi\_44, Ribeye\_44
- Track 19 : Love\_47
- Track 20 : Kroos\_44
- Track 21 : Galadriel\_43
- Track 22 : Rofo\_44, Brandonk123\_45
- Track 23 : Tycho\_43
- Track 24 : StorminNorm\_43
- Track 25 : Ashertheman\_44
- Track 26 : SchottB\_42
- Track 27 : Baddon\_43
- Track 28 : Lilbeanie\_42
- Track 29 : Guey18\_68, Fryberger\_62, Volt\_65, Ziko\_65, Ronaldo\_65
- Track 30 : Keelan\_60

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

The start number called the most often in the published annotations is 8, it was called in 36 of the 49 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Affeca\_41, Angelicage\_41, Ashertheman\_44, Baddon\_43, Barsten\_44, Baumdotcom\_42, Bizzy\_44, BobBob\_41, Brandonk123\_45, ChadMasterC\_44, Charming\_44, Fitzgerald\_42, Flatwoods\_44, Fosterous\_41, Gaea\_43, Galadriel\_43, JKSyngboy\_41, Jabberwocky\_42, Kamashten\_41, Kewpiedoll\_43, Kwobi\_44, Lennon\_43, LilHam\_41, Love\_47, McKinley\_45, MoontowerMania\_43, Nordenberg\_38, Paries\_46, Ribeye\_44, Rofo\_44, Sanjuju\_42, Shivanishola\_43, Sitar\_43, StorminNorm\_43, Stultus\_42, Tangent\_44, Tangerine\_43, Thing3\_41, Vivi2\_46, YorkOnyx\_44,

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

- Derg\_39, FuegoCuervo\_46, Geodirt\_42, Gustavo\_43, Kroos\_44, Saronaya\_43, SchottB\_42, Tycho\_43,

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

- Frizzle\_23, Fryberger\_62, Ghobes\_22, Guey18\_68, Keelan\_60, Lilbeanie\_42, Ronaldo\_65, Sapo\_21, Volt\_65, Ziko\_65,

### Summary by start number:

Start 7:

- Found in 48 of 58 ( 82.8% ) of genes in pham
- Manual Annotations of this start: 3 of 49
- Called 12.5% of time when present
- Phage (with cluster) where this start called: Derg\_39 (DE1), Gustavo\_43 (DE1), Kroos\_44 (DE1), Saronaya\_43 (DE1), SchottB\_42 (DE1), Tycho\_43 (DE1),

Start 8:

- Found in 48 of 58 ( 82.8% ) of genes in pham
- Manual Annotations of this start: 36 of 49
- Called 83.3% of time when present
- Phage (with cluster) where this start called: Affeca\_41 (DE1), Angelicage\_41 (DE1), Ashertheman\_44 (DE1), Baddon\_43 (DE1), Barsten\_44 (DE1), Baumdotcom\_42 (DE1), Bizzy\_44 (DE1), BobBob\_41 (DE1), Brandonk123\_45 (DE1), ChadMasterC\_44 (DE1), Charming\_44 (DE1), Fitzgerald\_42 (DE1), Flatwoods\_44 (DE1), Fosterous\_41 (DE1), Gaea\_43 (DE1), Galadriel\_43 (DE1), JKSyngboy\_41 (DE1), Jabberwocky\_42 (DE1), Kamashten\_41 (DE1), Kewpiedoll\_43 (DE1), Kwobi\_44 (DE1), Lennon\_43 (DE1), LilHam\_41 (DE1), Love\_47 (DE1), McKinley\_45 (DE1), MoontowerMania\_43 (DE1), Nordenberg\_38 (DE1), Paries\_46 (DE1), Ribeye\_44 (DE1), Rofo\_44 (DE1), Sanjuju\_42 (DE1), Shivanishola\_43 (DE1), Sitar\_43 (DE1), StorminNorm\_43 (DE1), Stultus\_42 (DE1), Tangent\_44 (DE1), Tangerine\_43 (DE1), Thing3\_41 (DE1), Vivi2\_46 (DE1), YorkOnyx\_44 (DE1),

Start 9:

- Found in 6 of 58 ( 10.3% ) of genes in pham
- Manual Annotations of this start: 6 of 49
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fryberger\_62 (DP), Guey18\_68 (DP), Keelan\_60 (DP), Ronaldo\_65 (DP), Volt\_65 (DP), Ziko\_65 (DP),

Start 10:

- Found in 3 of 58 ( 5.2% ) of genes in pham
- Manual Annotations of this start: 2 of 49
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Frizzle\_23 (DA), Ghobes\_22 (DA), Sapo\_21 (DA),

Start 13:

- Found in 1 of 58 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 1 of 49
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lilbeanie\_42 (DE5),

Start 17:

- Found in 55 of 58 ( 94.8% ) of genes in pham
- Manual Annotations of this start: 1 of 49
- Called 3.6% of time when present
- Phage (with cluster) where this start called: FuegoCuervo\_46 (DE1), Geodirt\_42 (DE1),

**Summary by clusters:**

There are 4 clusters represented in this pham: DE1, DE5, DP, DA,

Info for manual annotations of cluster DA:

- Start number 10 was manually annotated 2 times for cluster DA.

Info for manual annotations of cluster DE1:

- Start number 7 was manually annotated 3 times for cluster DE1.
- Start number 8 was manually annotated 36 times for cluster DE1.
- Start number 17 was manually annotated 1 time for cluster DE1.

Info for manual annotations of cluster DE5:

- Start number 13 was manually annotated 1 time for cluster DE5.

Info for manual annotations of cluster DP:

- Start number 9 was manually annotated 6 times for cluster DP.

**Gene Information:**

Gene: Affeca\_41 Start: 38338, Stop: 39018, Start Num: 8

Candidate Starts for Affeca\_41:

(Start: 7 @38296 has 3 MA's), (Start: 8 @38338 has 36 MA's), (Start: 17 @38383 has 1 MA's), (22, 38419), (25, 38437), (27, 38449), (33, 38536), (37, 38566), (42, 38593), (48, 38668), (50, 38680), (52, 38704), (57, 38734), (63, 38764), (66, 38794), (67, 38803), (71, 38833), (73, 38860), (75, 38896), (79, 38920),

Gene: Angelicage\_41 Start: 38756, Stop: 39436, Start Num: 8

Candidate Starts for Angelicage\_41:

(Start: 7 @38714 has 3 MA's), (Start: 8 @38756 has 36 MA's), (Start: 17 @38801 has 1 MA's), (22, 38837), (25, 38855), (27, 38867), (33, 38954), (37, 38984), (42, 39011), (48, 39086), (50, 39098), (52, 39122), (57, 39152), (63, 39182), (66, 39212), (67, 39221), (71, 39251), (73, 39278), (75, 39314), (79, 39338),

Gene: Ashertheman\_44 Start: 38753, Stop: 39442, Start Num: 8

Candidate Starts for Ashertheman\_44:

(3, 38450), (4, 38522), (Start: 7 @38711 has 3 MA's), (Start: 8 @38753 has 36 MA's), (Start: 17 @38798 has 1 MA's), (21, 38831), (22, 38834), (25, 38852), (27, 38864), (33, 38951), (41, 38999), (42, 39008), (45, 39026), (50, 39095), (57, 39149), (63, 39179), (73, 39275), (75, 39311), (79, 39335),

Gene: Baddon\_43 Start: 39291, Stop: 39980, Start Num: 8

Candidate Starts for Baddon\_43:

(3, 38988), (4, 39060), (Start: 7 @39249 has 3 MA's), (Start: 8 @39291 has 36 MA's), (Start: 17 @39336 has 1 MA's), (22, 39372), (25, 39390), (27, 39402), (33, 39489), (41, 39537), (42, 39546), (45, 39564), (50, 39633), (57, 39687), (63, 39717), (73, 39813), (75, 39849), (79, 39873),

Gene: Barsten\_44 Start: 38908, Stop: 39591, Start Num: 8

Candidate Starts for Barsten\_44:

(Start: 7 @38866 has 3 MA's), (Start: 8 @38908 has 36 MA's), (Start: 17 @38953 has 1 MA's), (22, 38989), (25, 39007), (27, 39019), (33, 39106), (37, 39136), (42, 39163), (48, 39238), (50, 39250), (52, 39274), (57, 39304), (63, 39334), (66, 39364), (67, 39373), (71, 39403), (73, 39430), (75, 39466), (79, 39490),

Gene: Baumdotcom\_42 Start: 38142, Stop: 38831, Start Num: 8

Candidate Starts for Baumdotcom\_42:

(3, 37839), (4, 37911), (Start: 7 @38100 has 3 MA's), (Start: 8 @38142 has 36 MA's), (Start: 17 @38187 has 1 MA's), (22, 38223), (25, 38241), (27, 38253), (33, 38340), (41, 38388), (42, 38397), (45, 38415), (50, 38484), (57, 38538), (63, 38568), (71, 38637), (73, 38664), (75, 38700), (79, 38724),

Gene: Bizzy\_44 Start: 38448, Stop: 39137, Start Num: 8

Candidate Starts for Bizzy\_44:

(3, 38145), (4, 38217), (Start: 7 @38406 has 3 MA's), (Start: 8 @38448 has 36 MA's), (Start: 17 @38493 has 1 MA's), (22, 38529), (25, 38547), (27, 38559), (33, 38646), (41, 38694), (42, 38703), (45, 38721), (50, 38790), (57, 38844), (63, 38874), (71, 38943), (73, 38970), (75, 39006), (79, 39030),

Gene: BobBob\_41 Start: 38027, Stop: 38710, Start Num: 8

Candidate Starts for BobBob\_41:

(6, 37922), (Start: 7 @37985 has 3 MA's), (Start: 8 @38027 has 36 MA's), (Start: 17 @38072 has 1 MA's), (22, 38108), (25, 38126), (27, 38138), (33, 38225), (37, 38255), (42, 38282), (45, 38300), (46, 38321), (48, 38357), (50, 38369), (52, 38393), (57, 38423), (63, 38453), (66, 38483), (67, 38492), (71, 38522), (73, 38549), (75, 38585), (79, 38609),

Gene: Brandonk123\_45 Start: 39162, Stop: 39845, Start Num: 8

Candidate Starts for Brandonk123\_45:

(6, 39057), (Start: 7 @39120 has 3 MA's), (Start: 8 @39162 has 36 MA's), (Start: 17 @39207 has 1 MA's), (22, 39243), (25, 39261), (27, 39273), (33, 39360), (37, 39390), (41, 39408), (42, 39417), (45, 39435), (46, 39456), (48, 39492), (50, 39504), (52, 39528), (57, 39558), (63, 39588), (66, 39618), (71, 39657), (73, 39684), (75, 39720), (79, 39744),

Gene: ChadMasterC\_44 Start: 40307, Stop: 40990, Start Num: 8

Candidate Starts for ChadMasterC\_44:

(Start: 7 @40265 has 3 MA's), (Start: 8 @40307 has 36 MA's), (Start: 17 @40352 has 1 MA's), (22, 40388), (25, 40406), (27, 40418), (33, 40505), (37, 40535), (42, 40562), (44, 40574), (48, 40637), (50, 40649), (52, 40673), (57, 40703), (63, 40733), (66, 40763), (67, 40772), (71, 40802), (73, 40829), (75, 40865), (79, 40889),

Gene: Charming\_44 Start: 38663, Stop: 39346, Start Num: 8

Candidate Starts for Charming\_44:

(6, 38558), (Start: 7 @38621 has 3 MA's), (Start: 8 @38663 has 36 MA's), (Start: 17 @38708 has 1 MA's), (22, 38744), (25, 38762), (27, 38774), (33, 38861), (37, 38891), (42, 38918), (45, 38936), (46, 38957), (48, 38993), (50, 39005), (52, 39029), (57, 39059), (63, 39089), (66, 39119), (67, 39128), (71, 39158), (73, 39185), (75, 39221), (79, 39245),

Gene: Derg\_39 Start: 37998, Stop: 38729, Start Num: 7

Candidate Starts for Derg\_39:

(3, 37737), (4, 37809), (Start: 7 @37998 has 3 MA's), (Start: 8 @38040 has 36 MA's), (Start: 17 @38085 has 1 MA's), (22, 38121), (25, 38139), (27, 38151), (33, 38238), (41, 38286), (42, 38295), (45, 38313), (50, 38382), (57, 38436), (63, 38466), (73, 38562), (75, 38598), (79, 38622),

Gene: Fitzgerald\_42 Start: 39565, Stop: 40248, Start Num: 8

Candidate Starts for Fitzgerald\_42:

(6, 39460), (Start: 7 @39523 has 3 MA's), (Start: 8 @39565 has 36 MA's), (Start: 17 @39610 has 1 MA's), (22, 39646), (25, 39664), (27, 39676), (33, 39763), (37, 39793), (39, 39802), (42, 39820), (45, 39838), (48, 39895), (50, 39907), (52, 39931), (57, 39961), (63, 39991), (66, 40021), (67, 40030), (71, 40060), (73, 40087), (75, 40123), (79, 40147),

Gene: Flatwoods\_44 Start: 38392, Stop: 39081, Start Num: 8

Candidate Starts for Flatwoods\_44:

(3, 38089), (4, 38161), (Start: 7 @38350 has 3 MA's), (Start: 8 @38392 has 36 MA's), (Start: 17 @38437 has 1 MA's), (22, 38473), (25, 38491), (27, 38503), (33, 38590), (41, 38638), (42, 38647), (45, 38665), (50, 38734), (57, 38788), (63, 38818), (71, 38887), (73, 38914), (75, 38950), (79, 38974),

Gene: Fosterous\_41 Start: 38124, Stop: 38807, Start Num: 8

Candidate Starts for Fosterous\_41:

(Start: 7 @38082 has 3 MA's), (Start: 8 @38124 has 36 MA's), (Start: 17 @38169 has 1 MA's), (22, 38205), (25, 38223), (27, 38235), (33, 38322), (37, 38352), (42, 38379), (48, 38454), (50, 38466), (52, 38490), (57, 38520), (63, 38550), (66, 38580), (67, 38589), (71, 38619), (73, 38646), (75, 38682), (79, 38706),

Gene: Frizzle\_23 Start: 18925, Stop: 19572, Start Num: 10

Candidate Starts for Frizzle\_23:

(Start: 10 @18925 has 2 MA's), (12, 18931), (Start: 17 @18967 has 1 MA's), (18, 18973), (20, 18988), (24, 19009), (31, 19087), (32, 19093), (34, 19129), (35, 19132), (36, 19138), (41, 19168), (42, 19177), (43, 19183), (49, 19261), (56, 19312), (61, 19342), (62, 19345), (64, 19360), (69, 19393), (78, 19501),

Gene: Fryberger\_62 Start: 34972, Stop: 35487, Start Num: 9

Candidate Starts for Fryberger\_62:

(Start: 9 @34972 has 6 MA's), (15, 35002), (Start: 17 @35014 has 1 MA's), (26, 35077), (32, 35143), (38, 35203), (41, 35218), (46, 35266), (59, 35377), (65, 35416), (70, 35455),

Gene: FuegoCuervo\_46 Start: 38040, Stop: 38678, Start Num: 17

Candidate Starts for FuegoCuervo\_46:

(Start: 7 @37953 has 3 MA's), (Start: 8 @37995 has 36 MA's), (11, 38004), (Start: 17 @38040 has 1 MA's), (22, 38076), (25, 38094), (27, 38106), (33, 38193), (41, 38241), (42, 38250), (57, 38391), (62,

38418), (63, 38421), (73, 38517), (75, 38553), (76, 38556), (79, 38577),

Gene: Gaea\_43 Start: 38036, Stop: 38725, Start Num: 8

Candidate Starts for Gaea\_43:

(3, 37733), (4, 37805), (Start: 7 @37994 has 3 MA's), (Start: 8 @38036 has 36 MA's), (Start: 17 @38081 has 1 MA's), (22, 38117), (25, 38135), (27, 38147), (33, 38234), (41, 38282), (42, 38291), (45, 38309), (50, 38378), (57, 38432), (63, 38462), (71, 38531), (73, 38558), (75, 38594), (79, 38618),

Gene: Galadriel\_43 Start: 38931, Stop: 39614, Start Num: 8

Candidate Starts for Galadriel\_43:

(6, 38826), (Start: 7 @38889 has 3 MA's), (Start: 8 @38931 has 36 MA's), (Start: 17 @38976 has 1 MA's), (22, 39012), (25, 39030), (27, 39042), (33, 39129), (37, 39159), (42, 39186), (45, 39204), (48, 39261), (50, 39273), (52, 39297), (57, 39327), (63, 39357), (66, 39387), (67, 39396), (71, 39426), (73, 39453), (75, 39489), (79, 39513),

Gene: Geodirt\_42 Start: 39588, Stop: 40226, Start Num: 17

Candidate Starts for Geodirt\_42:

(Start: 7 @39501 has 3 MA's), (Start: 8 @39543 has 36 MA's), (Start: 17 @39588 has 1 MA's), (22, 39624), (25, 39642), (27, 39654), (33, 39741), (37, 39771), (42, 39798), (48, 39873), (50, 39885), (52, 39909), (57, 39939), (63, 39969), (66, 39999), (67, 40008), (71, 40038), (73, 40065), (75, 40101), (79, 40125),

Gene: Ghobes\_22 Start: 18925, Stop: 19572, Start Num: 10

Candidate Starts for Ghobes\_22:

(Start: 10 @18925 has 2 MA's), (12, 18931), (Start: 17 @18967 has 1 MA's), (18, 18973), (20, 18988), (31, 19087), (32, 19093), (34, 19129), (35, 19132), (36, 19138), (41, 19168), (42, 19177), (43, 19183), (49, 19261), (56, 19312), (61, 19342), (62, 19345), (64, 19360), (69, 19393), (78, 19501),

Gene: Guey18\_68 Start: 36492, Stop: 37007, Start Num: 9

Candidate Starts for Guey18\_68:

(Start: 9 @36492 has 6 MA's), (15, 36522), (Start: 17 @36534 has 1 MA's), (26, 36597), (32, 36663), (38, 36723), (41, 36738), (46, 36786), (59, 36897), (65, 36936), (70, 36975),

Gene: Gustavo\_43 Start: 38166, Stop: 38897, Start Num: 7

Candidate Starts for Gustavo\_43:

(3, 37905), (4, 37977), (Start: 7 @38166 has 3 MA's), (Start: 8 @38208 has 36 MA's), (Start: 17 @38253 has 1 MA's), (22, 38289), (25, 38307), (27, 38319), (33, 38406), (41, 38454), (42, 38463), (45, 38481), (50, 38550), (57, 38604), (63, 38634), (73, 38730), (75, 38766), (79, 38790),

Gene: JKSyngboy\_41 Start: 38807, Stop: 39496, Start Num: 8

Candidate Starts for JKSyngboy\_41:

(2, 38282), (3, 38504), (4, 38576), (Start: 7 @38765 has 3 MA's), (Start: 8 @38807 has 36 MA's), (Start: 17 @38852 has 1 MA's), (21, 38885), (22, 38888), (25, 38906), (27, 38918), (33, 39005), (41, 39053), (42, 39062), (45, 39080), (50, 39149), (57, 39203), (62, 39230), (63, 39233), (71, 39302), (73, 39329), (75, 39365), (79, 39389),

Gene: Jabberwocky\_42 Start: 39969, Stop: 40652, Start Num: 8

Candidate Starts for Jabberwocky\_42:

(Start: 7 @39927 has 3 MA's), (Start: 8 @39969 has 36 MA's), (Start: 17 @40014 has 1 MA's), (22, 40050), (25, 40068), (27, 40080), (33, 40167), (37, 40197), (42, 40224), (48, 40299), (50, 40311), (52, 40335), (57, 40365), (63, 40395), (66, 40425), (67, 40434), (71, 40464), (73, 40491), (75, 40527), (79, 40551),

Gene: Kamashten\_41 Start: 37904, Stop: 38587, Start Num: 8

Candidate Starts for Kamashten\_41:

(Start: 7 @37862 has 3 MA's), (Start: 8 @37904 has 36 MA's), (Start: 17 @37949 has 1 MA's), (22, 37985), (25, 38003), (27, 38015), (33, 38102), (37, 38132), (42, 38159), (48, 38234), (50, 38246), (52, 38270), (57, 38300), (63, 38330), (66, 38360), (67, 38369), (71, 38399), (73, 38426), (75, 38462), (79, 38486),

Gene: Keelan\_60 Start: 35211, Stop: 35726, Start Num: 9

Candidate Starts for Keelan\_60:

(Start: 9 @35211 has 6 MA's), (15, 35241), (18, 35259), (19, 35271), (23, 35292), (34, 35418), (40, 35451), (41, 35457), (46, 35505), (47, 35535), (51, 35565), (58, 35604), (65, 35655),

Gene: Kewpiedoll\_43 Start: 38845, Stop: 39528, Start Num: 8

Candidate Starts for Kewpiedoll\_43:

(Start: 7 @38803 has 3 MA's), (Start: 8 @38845 has 36 MA's), (Start: 17 @38890 has 1 MA's), (22, 38926), (25, 38944), (27, 38956), (33, 39043), (37, 39073), (42, 39100), (48, 39175), (50, 39187), (52, 39211), (57, 39241), (63, 39271), (66, 39301), (67, 39310), (71, 39340), (73, 39367), (75, 39403), (79, 39427),

Gene: Kroos\_44 Start: 38906, Stop: 39637, Start Num: 7

Candidate Starts for Kroos\_44:

(3, 38645), (4, 38717), (Start: 7 @38906 has 3 MA's), (Start: 8 @38948 has 36 MA's), (Start: 17 @38993 has 1 MA's), (21, 39026), (22, 39029), (25, 39047), (27, 39059), (33, 39146), (42, 39203), (45, 39221), (50, 39290), (57, 39344), (63, 39374), (71, 39443), (73, 39470), (75, 39506), (79, 39530),

Gene: Kwobi\_44 Start: 38934, Stop: 39623, Start Num: 8

Candidate Starts for Kwobi\_44:

(3, 38631), (4, 38703), (Start: 7 @38892 has 3 MA's), (Start: 8 @38934 has 36 MA's), (Start: 17 @38979 has 1 MA's), (22, 39015), (25, 39033), (27, 39045), (33, 39132), (41, 39180), (42, 39189), (45, 39207), (50, 39276), (57, 39330), (63, 39360), (73, 39456), (75, 39492), (79, 39516),

Gene: Lennon\_43 Start: 39651, Stop: 40331, Start Num: 8

Candidate Starts for Lennon\_43:

(Start: 7 @39609 has 3 MA's), (Start: 8 @39651 has 36 MA's), (Start: 17 @39696 has 1 MA's), (22, 39732), (25, 39750), (27, 39762), (33, 39849), (37, 39879), (42, 39906), (48, 39981), (50, 39993), (52, 40017), (57, 40047), (63, 40077), (66, 40107), (67, 40116), (71, 40146), (73, 40173), (75, 40209), (79, 40233),

Gene: LilHam\_41 Start: 37535, Stop: 38224, Start Num: 8

Candidate Starts for LilHam\_41:

(3, 37232), (4, 37304), (Start: 7 @37493 has 3 MA's), (Start: 8 @37535 has 36 MA's), (Start: 17 @37580 has 1 MA's), (22, 37616), (25, 37634), (27, 37646), (33, 37733), (41, 37781), (42, 37790), (45, 37808), (50, 37877), (57, 37931), (63, 37961), (71, 38030), (73, 38057), (75, 38093), (79, 38117),

Gene: Lilbeanie\_42 Start: 34007, Stop: 34681, Start Num: 13

Candidate Starts for Lilbeanie\_42:

(1, 33386), (3, 33686), (5, 33776), (Start: 13 @34007 has 1 MA's), (14, 34019), (16, 34040), (20, 34064), (23, 34082), (27, 34109), (28, 34112), (29, 34133), (41, 34244), (54, 34373), (56, 34388), (57, 34394), (63, 34424), (64, 34436), (66, 34454), (67, 34463), (72, 34496), (73, 34520), (75, 34556), (78, 34577), (79, 34580),

Gene: Love\_47 Start: 40096, Stop: 40779, Start Num: 8

Candidate Starts for Love\_47:



(6, 39991), (Start: 7 @40054 has 3 MA's), (Start: 8 @40096 has 36 MA's), (Start: 17 @40141 has 1 MA's), (22, 40177), (25, 40195), (27, 40207), (33, 40294), (37, 40324), (39, 40333), (42, 40351), (48, 40426), (50, 40438), (52, 40462), (57, 40492), (63, 40522), (66, 40552), (67, 40561), (71, 40591), (73, 40618), (75, 40654), (79, 40678),

Gene: McKinley\_45 Start: 39469, Stop: 40152, Start Num: 8

Candidate Starts for McKinley\_45:

(6, 39364), (Start: 7 @39427 has 3 MA's), (Start: 8 @39469 has 36 MA's), (Start: 17 @39514 has 1 MA's), (22, 39550), (25, 39568), (27, 39580), (33, 39667), (37, 39697), (39, 39706), (42, 39724), (45, 39742), (48, 39799), (50, 39811), (52, 39835), (57, 39865), (63, 39895), (66, 39925), (67, 39934), (71, 39964), (73, 39991), (75, 40027), (79, 40051),

Gene: MoontowerMania\_43 Start: 39304, Stop: 39987, Start Num: 8

Candidate Starts for MoontowerMania\_43:

(Start: 7 @39262 has 3 MA's), (Start: 8 @39304 has 36 MA's), (Start: 17 @39349 has 1 MA's), (22, 39385), (25, 39403), (27, 39415), (33, 39502), (37, 39532), (42, 39559), (45, 39577), (48, 39634), (50, 39646), (52, 39670), (57, 39700), (63, 39730), (66, 39760), (67, 39769), (71, 39799), (73, 39826), (75, 39862), (79, 39886),

Gene: Nordenberg\_38 Start: 38289, Stop: 38972, Start Num: 8

Candidate Starts for Nordenberg\_38:

(6, 38184), (Start: 7 @38247 has 3 MA's), (Start: 8 @38289 has 36 MA's), (Start: 17 @38334 has 1 MA's), (22, 38370), (25, 38388), (27, 38400), (33, 38487), (37, 38517), (39, 38526), (41, 38535), (42, 38544), (45, 38562), (46, 38583), (48, 38619), (50, 38631), (52, 38655), (57, 38685), (63, 38715), (66, 38745), (71, 38784), (73, 38811), (75, 38847), (79, 38871),

Gene: Paries\_46 Start: 39758, Stop: 40441, Start Num: 8

Candidate Starts for Paries\_46:

(6, 39653), (Start: 7 @39716 has 3 MA's), (Start: 8 @39758 has 36 MA's), (Start: 17 @39803 has 1 MA's), (22, 39839), (25, 39857), (27, 39869), (33, 39956), (37, 39986), (39, 39995), (42, 40013), (46, 40052), (48, 40088), (50, 40100), (52, 40124), (57, 40154), (63, 40184), (66, 40214), (67, 40223), (71, 40253), (73, 40280), (75, 40316), (79, 40340),

Gene: Ribeye\_44 Start: 39366, Stop: 40055, Start Num: 8

Candidate Starts for Ribeye\_44:

(3, 39063), (4, 39135), (Start: 7 @39324 has 3 MA's), (Start: 8 @39366 has 36 MA's), (Start: 17 @39411 has 1 MA's), (22, 39447), (25, 39465), (27, 39477), (33, 39564), (41, 39612), (42, 39621), (45, 39639), (50, 39708), (57, 39762), (63, 39792), (73, 39888), (75, 39924), (79, 39948),

Gene: Rofo\_44 Start: 39084, Stop: 39767, Start Num: 8

Candidate Starts for Rofo\_44:

(6, 38979), (Start: 7 @39042 has 3 MA's), (Start: 8 @39084 has 36 MA's), (Start: 17 @39129 has 1 MA's), (22, 39165), (25, 39183), (27, 39195), (33, 39282), (37, 39312), (41, 39330), (42, 39339), (45, 39357), (46, 39378), (48, 39414), (50, 39426), (52, 39450), (57, 39480), (63, 39510), (66, 39540), (71, 39579), (73, 39606), (75, 39642), (79, 39666),

Gene: Ronaldo\_65 Start: 35871, Stop: 36386, Start Num: 9

Candidate Starts for Ronaldo\_65:

(Start: 9 @35871 has 6 MA's), (15, 35901), (Start: 17 @35913 has 1 MA's), (26, 35976), (32, 36042), (38, 36102), (41, 36117), (46, 36165), (59, 36276), (65, 36315), (70, 36354),

Gene: Sanjuju\_42 Start: 39698, Stop: 40381, Start Num: 8

Candidate Starts for Sanjuju\_42:

(6, 39593), (Start: 7 @39656 has 3 MA's), (Start: 8 @39698 has 36 MA's), (Start: 17 @39743 has 1 MA's), (22, 39779), (25, 39797), (27, 39809), (33, 39896), (37, 39926), (39, 39935), (42, 39953), (45, 39971), (48, 40028), (50, 40040), (52, 40064), (57, 40094), (63, 40124), (66, 40154), (67, 40163), (71, 40193), (73, 40220), (75, 40256), (79, 40280),

Gene: Sapo\_21 Start: 18878, Stop: 19525, Start Num: 10

Candidate Starts for Sapo\_21:

(Start: 10 @18878 has 2 MA's), (12, 18884), (28, 18989), (30, 19031), (41, 19121), (42, 19130), (52, 19241), (53, 19244), (55, 19259), (60, 19286), (62, 19298), (68, 19343), (74, 19427), (76, 19436), (77, 19442), (79, 19457),

Gene: Saronaya\_43 Start: 38166, Stop: 38897, Start Num: 7

Candidate Starts for Saronaya\_43:

(3, 37905), (4, 37977), (Start: 7 @38166 has 3 MA's), (Start: 8 @38208 has 36 MA's), (Start: 17 @38253 has 1 MA's), (22, 38289), (25, 38307), (27, 38319), (33, 38406), (41, 38454), (42, 38463), (45, 38481), (50, 38550), (57, 38604), (63, 38634), (73, 38730), (75, 38766), (79, 38790),

Gene: SchottB\_42 Start: 39166, Stop: 39897, Start Num: 7

Candidate Starts for SchottB\_42:

(3, 38905), (4, 38977), (Start: 7 @39166 has 3 MA's), (Start: 8 @39208 has 36 MA's), (Start: 17 @39253 has 1 MA's), (22, 39289), (25, 39307), (27, 39319), (33, 39406), (41, 39454), (42, 39463), (45, 39481), (50, 39550), (57, 39604), (63, 39634), (71, 39703), (73, 39730), (75, 39766), (79, 39790),

Gene: Shivanishola\_43 Start: 37965, Stop: 38648, Start Num: 8

Candidate Starts for Shivanishola\_43:

(Start: 7 @37923 has 3 MA's), (Start: 8 @37965 has 36 MA's), (Start: 17 @38010 has 1 MA's), (22, 38046), (25, 38064), (27, 38076), (33, 38163), (37, 38193), (42, 38220), (48, 38295), (50, 38307), (52, 38331), (57, 38361), (63, 38391), (66, 38421), (67, 38430), (71, 38460), (73, 38487), (75, 38523), (79, 38547),

Gene: Sitar\_43 Start: 39651, Stop: 40331, Start Num: 8

Candidate Starts for Sitar\_43:

(Start: 7 @39609 has 3 MA's), (Start: 8 @39651 has 36 MA's), (Start: 17 @39696 has 1 MA's), (22, 39732), (25, 39750), (27, 39762), (33, 39849), (37, 39879), (42, 39906), (48, 39981), (50, 39993), (52, 40017), (57, 40047), (63, 40077), (66, 40107), (67, 40116), (71, 40146), (73, 40173), (75, 40209), (79, 40233),

Gene: StorminNorm\_43 Start: 38299, Stop: 38988, Start Num: 8

Candidate Starts for StorminNorm\_43:

(3, 37996), (4, 38068), (Start: 7 @38257 has 3 MA's), (Start: 8 @38299 has 36 MA's), (Start: 17 @38344 has 1 MA's), (21, 38377), (22, 38380), (25, 38398), (27, 38410), (33, 38497), (42, 38554), (45, 38572), (50, 38641), (56, 38689), (57, 38695), (63, 38725), (71, 38794), (73, 38821), (75, 38857), (79, 38881),

Gene: Stultus\_42 Start: 38601, Stop: 39284, Start Num: 8

Candidate Starts for Stultus\_42:

(Start: 7 @38559 has 3 MA's), (Start: 8 @38601 has 36 MA's), (Start: 17 @38646 has 1 MA's), (22, 38682), (25, 38700), (27, 38712), (33, 38799), (37, 38829), (42, 38856), (48, 38931), (50, 38943), (52, 38967), (57, 38997), (63, 39027), (66, 39057), (67, 39066), (71, 39096), (73, 39123), (75, 39159), (79, 39183),

Gene: Tangent\_44 Start: 38675, Stop: 39358, Start Num: 8

Candidate Starts for Tangent\_44:

(6, 38570), (Start: 7 @38633 has 3 MA's), (Start: 8 @38675 has 36 MA's), (Start: 17 @38720 has 1 MA's), (22, 38756), (25, 38774), (27, 38786), (33, 38873), (37, 38903), (42, 38930), (45, 38948), (46, 38969), (48, 39005), (50, 39017), (52, 39041), (57, 39071), (63, 39101), (66, 39131), (67, 39140), (71, 39170), (73, 39197), (75, 39233), (79, 39257),

Gene: Tangerine\_43 Start: 38080, Stop: 38769, Start Num: 8

Candidate Starts for Tangerine\_43:

(3, 37777), (4, 37849), (Start: 7 @38038 has 3 MA's), (Start: 8 @38080 has 36 MA's), (Start: 17 @38125 has 1 MA's), (22, 38161), (25, 38179), (27, 38191), (33, 38278), (41, 38326), (42, 38335), (45, 38353), (50, 38422), (56, 38470), (57, 38476), (63, 38506), (73, 38602), (75, 38638), (79, 38662),

Gene: Thing3\_41 Start: 37904, Stop: 38587, Start Num: 8

Candidate Starts for Thing3\_41:

(Start: 7 @37862 has 3 MA's), (Start: 8 @37904 has 36 MA's), (Start: 17 @37949 has 1 MA's), (22, 37985), (25, 38003), (27, 38015), (33, 38102), (37, 38132), (42, 38159), (48, 38234), (50, 38246), (52, 38270), (57, 38300), (63, 38330), (66, 38360), (67, 38369), (71, 38399), (73, 38426), (75, 38462), (79, 38486),

Gene: Tycho\_43 Start: 38125, Stop: 38856, Start Num: 7

Candidate Starts for Tycho\_43:

(3, 37864), (4, 37936), (Start: 7 @38125 has 3 MA's), (Start: 8 @38167 has 36 MA's), (Start: 17 @38212 has 1 MA's), (21, 38245), (22, 38248), (25, 38266), (27, 38278), (33, 38365), (42, 38422), (45, 38440), (50, 38509), (56, 38557), (57, 38563), (63, 38593), (71, 38662), (73, 38689), (75, 38725), (79, 38749),

Gene: Vivi2\_46 Start: 39701, Stop: 40384, Start Num: 8

Candidate Starts for Vivi2\_46:

(6, 39596), (Start: 7 @39659 has 3 MA's), (Start: 8 @39701 has 36 MA's), (Start: 17 @39746 has 1 MA's), (22, 39782), (25, 39800), (27, 39812), (33, 39899), (37, 39929), (39, 39938), (42, 39956), (45, 39974), (48, 40031), (50, 40043), (52, 40067), (57, 40097), (63, 40127), (66, 40157), (67, 40166), (71, 40196), (73, 40223), (75, 40259), (79, 40283),

Gene: Volt\_65 Start: 36035, Stop: 36550, Start Num: 9

Candidate Starts for Volt\_65:

(Start: 9 @36035 has 6 MA's), (15, 36065), (Start: 17 @36077 has 1 MA's), (26, 36140), (32, 36206), (38, 36266), (41, 36281), (46, 36329), (59, 36440), (65, 36479), (70, 36518),

Gene: YorkOnyx\_44 Start: 38424, Stop: 39113, Start Num: 8

Candidate Starts for YorkOnyx\_44:

(3, 38121), (4, 38193), (Start: 7 @38382 has 3 MA's), (Start: 8 @38424 has 36 MA's), (Start: 17 @38469 has 1 MA's), (22, 38505), (25, 38523), (27, 38535), (33, 38622), (41, 38670), (42, 38679), (45, 38697), (50, 38766), (56, 38814), (57, 38820), (63, 38850), (73, 38946), (75, 38982), (79, 39006),

Gene: Ziko\_65 Start: 35857, Stop: 36372, Start Num: 9

Candidate Starts for Ziko\_65:

(Start: 9 @35857 has 6 MA's), (15, 35887), (Start: 17 @35899 has 1 MA's), (26, 35962), (32, 36028), (38, 36088), (41, 36103), (46, 36151), (59, 36262), (65, 36301), (70, 36340),