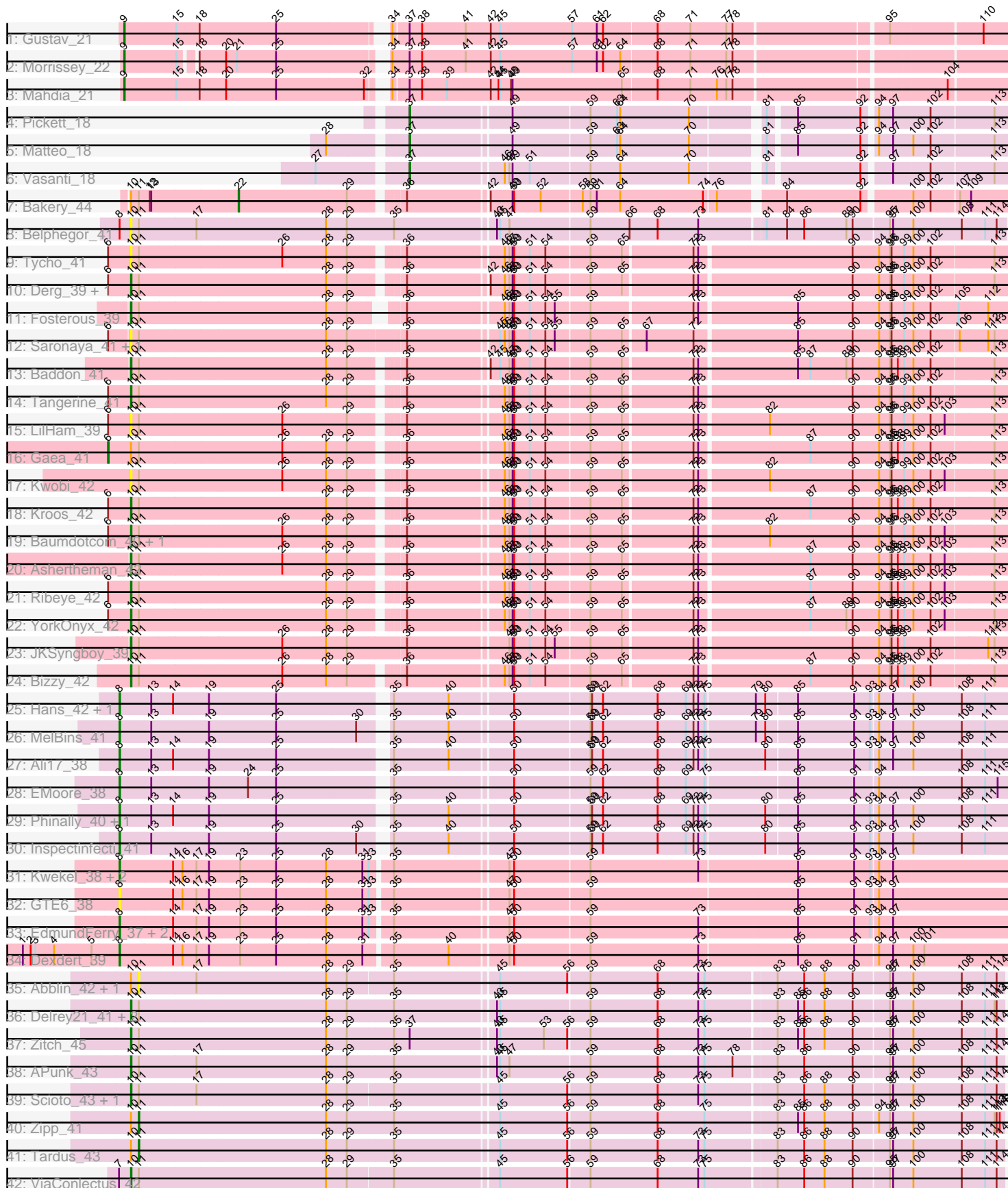


Pham 196582



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 196582 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196582 has 55 members, 12 are drafts.

Phages represented in each track:

- Track 1 : Gustav\_21
- Track 2 : Morrissey\_22
- Track 3 : Mahdia\_21
- Track 4 : Pickett\_18
- Track 5 : Matteo\_18
- Track 6 : Vasanti\_18
- Track 7 : Bakery\_44
- Track 8 : Belphegor\_41
- Track 9 : Tycho\_41
- Track 10 : Derg\_39, Flatwoods\_42
- Track 11 : Fosterous\_39
- Track 12 : Saronaya\_41, Gustavo\_41
- Track 13 : Baddon\_41
- Track 14 : Tangerine\_41
- Track 15 : LilHam\_39
- Track 16 : Gaea\_41
- Track 17 : Kwobi\_42
- Track 18 : Kroos\_42
- Track 19 : Baumdotcom\_40, SchottB\_40
- Track 20 : Ashertheman\_42
- Track 21 : Ribeye\_42
- Track 22 : YorkOnyx\_42
- Track 23 : JKSyngboy\_39
- Track 24 : Bizzy\_42
- Track 25 : Hans\_42, Phauci\_33
- Track 26 : MelBins\_41
- Track 27 : Ali17\_38
- Track 28 : EMoore\_38
- Track 29 : Phinally\_40, Leonard\_40
- Track 30 : Inspectinfecti\_41
- Track 31 : Kwekel\_38, Chickadee\_38, Tiamoceli\_39
- Track 32 : GTE6\_38
- Track 33 : EdmundFerry\_37, RoadKill\_36, Twonlo\_36
- Track 34 : Dxdert\_39
- Track 35 : Abblin\_42, Natkenzie\_42
- Track 36 : Delrey21\_41, Verity\_41, DoctorFroggo\_41
- Track 37 : Zitch\_45

- Track 38 : APunk\_43
- Track 39 : Scioto\_43, Sampson\_42
- Track 40 : Zipp\_41
- Track 41 : Tardus\_43
- Track 42 : ViaConlectus\_42

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

The start number called the most often in the published annotations is 10, it was called in 18 of the 43 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- APunk\_43, Ashertheman\_42, Baddon\_41, Baumdotcom\_40, Belphegor\_41, Bizzy\_42, Delrey21\_41, Derg\_39, DoctorFroggo\_41, Flatwoods\_42, Fosterous\_39, Gustavo\_41, JKSyngboy\_39, Kroos\_42, Kwobi\_42, LilHam\_39, Ribeye\_42, Sampson\_42, Saronaya\_41, SchottB\_40, Scioto\_43, Tangerine\_41, Tycho\_41, Verity\_41, ViaConlectus\_42, YorkOnyx\_42, Zitch\_45,

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

- Abblin\_42, Bakery\_44, Gaea\_41, Natkenzie\_42, Tardus\_43, Zipp\_41,

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

- Ali17\_38, Chickadee\_38, Dxdert\_39, EMOore\_38, EdmundFerry\_37, GTE6\_38, Gustav\_21, Hans\_42, Inspectinfecti\_41, Kwekel\_38, Leonard\_40, Mahdia\_21, Matteo\_18, MelBins\_41, Morrissey\_22, Phauci\_33, Phinally\_40, Pickett\_18, RoadKill\_36, Tiamoceli\_39, Twonlo\_36, Vasanti\_18,

**Summary by start number:**

Start 6:

- Found in 13 of 55 ( 23.6% ) of genes in pham
- Manual Annotations of this start: 1 of 43
- Called 7.7% of time when present
- Phage (with cluster) where this start called: Gaea\_41 (DE1),

Start 8:

- Found in 17 of 55 ( 30.9% ) of genes in pham
- Manual Annotations of this start: 15 of 43
- Called 94.1% of time when present
- Phage (with cluster) where this start called: Ali17\_38 (DE2), Chickadee\_38 (DE3), Dxdert\_39 (DE3), EMOore\_38 (DE2), EdmundFerry\_37 (DE3), GTE6\_38 (DE3), Hans\_42 (DE2), Inspectinfecti\_41 (DE2), Kwekel\_38 (DE3), Leonard\_40 (DE2), MelBins\_41 (DE2), Phauci\_33 (DE2), Phinally\_40 (DE2), RoadKill\_36 (DE3), Tiamoceli\_39 (DE3), Twonlo\_36 (DE3),

Start 9:

- Found in 3 of 55 ( 5.5% ) of genes in pham
- Manual Annotations of this start: 3 of 43
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Gustav\_21 (CD), Mahdia\_21 (CD), Morrissey\_22 (CD),

Start 10:

- Found in 33 of 55 ( 60.0% ) of genes in pham
- Manual Annotations of this start: 18 of 43
- Called 81.8% of time when present
- Phage (with cluster) where this start called: APunk\_43 (DE4), Ashertheman\_42 (DE1), Baddon\_41 (DE1), Baumdotcom\_40 (DE1), Belphegor\_41 (DE), Bizzy\_42 (DE1), Delrey21\_41 (DE4), Derg\_39 (DE1), DoctorFroggo\_41 (DE4), Flatwoods\_42 (DE1), Fosterous\_39 (DE1), Gustavo\_41 (DE1), JKSyngboy\_39 (DE1), Kroos\_42 (DE1), Kwobi\_42 (DE1), LilHam\_39 (DE1), Ribeye\_42 (DE1), Sampson\_42 (DE4), Saronaya\_41 (DE1), SchottB\_40 (DE1), Scioto\_43 (DE4), Tangerine\_41 (DE1), Tycho\_41 (DE1), Verity\_41 (DE4), ViaConlectus\_42 (DE4), YorkOnyx\_42 (DE1), Zitch\_45 (DE4),

Start 11:

- Found in 33 of 55 ( 60.0% ) of genes in pham
- Manual Annotations of this start: 2 of 43
- Called 12.1% of time when present
- Phage (with cluster) where this start called: Abblin\_42 (DE4), Natkenzie\_42 (DE4), Tardus\_43 (DE4), Zipp\_41 (DE4),

Start 22:

- Found in 1 of 55 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 43
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bakery\_44 (DC1),

Start 37:

- Found in 7 of 55 ( 12.7% ) of genes in pham
- Manual Annotations of this start: 3 of 43
- Called 42.9% of time when present
- Phage (with cluster) where this start called: Matteo\_18 (CZ2), Pickett\_18 (CZ2), Vasanti\_18 (CZ2),

### **Summary by clusters:**

There are 8 clusters represented in this pham: DE, CZ2, DE1, DE2, DE3, DE4, CD, DC1,

Info for manual annotations of cluster CD:

- Start number 9 was manually annotated 3 times for cluster CD.

Info for manual annotations of cluster CZ2:

- Start number 37 was manually annotated 3 times for cluster CZ2.

Info for manual annotations of cluster DC1:

- Start number 22 was manually annotated 1 time for cluster DC1.

Info for manual annotations of cluster DE1:

- Start number 6 was manually annotated 1 time for cluster DE1.

- Start number 10 was manually annotated 11 times for cluster DE1.

Info for manual annotations of cluster DE2:

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

Info for manual annotations of cluster DE3:

- Start number 8 was manually annotated 7 times for cluster DE3.

Info for manual annotations of cluster DE4:

- Start number 10 was manually annotated 7 times for cluster DE4.
- Start number 11 was manually annotated 2 times for cluster DE4.

### **Gene Information:**

Gene: APunk\_43 Start: 37152, Stop: 38765, Start Num: 10

Candidate Starts for APunk\_43:

(Start: 10 @37152 has 18 MA's), (Start: 11 @37167 has 2 MA's), (17, 37275), (28, 37518), (29, 37557), (35, 37644), (43, 37827), (45, 37833), (47, 37851), (59, 38001), (68, 38127), (73, 38202), (75, 38214), (78, 38268), (83, 38343), (86, 38394), (90, 38484), (95, 38550), (97, 38556), (100, 38592), (108, 38685), (111, 38730), (114, 38751),

Gene: Abblin\_42 Start: 37710, Stop: 39302, Start Num: 11

Candidate Starts for Abblin\_42:

(Start: 10 @37695 has 18 MA's), (Start: 11 @37710 has 2 MA's), (17, 37818), (28, 38061), (29, 38100), (35, 38181), (45, 38370), (56, 38499), (59, 38538), (68, 38664), (73, 38739), (75, 38751), (83, 38880), (86, 38931), (88, 38970), (90, 39021), (95, 39087), (97, 39093), (100, 39129), (108, 39222), (111, 39267), (114, 39288),

Gene: Ali17\_38 Start: 35417, Stop: 37030, Start Num: 8

Candidate Starts for Ali17\_38:

(Start: 8 @35417 has 15 MA's), (13, 35477), (14, 35519), (19, 35588), (25, 35714), (35, 35909), (40, 36014), (50, 36125), (59, 36266), (60, 36269), (62, 36290), (68, 36392), (69, 36446), (72, 36458), (73, 36467), (75, 36479), (80, 36584), (85, 36641), (91, 36749), (93, 36779), (94, 36791), (97, 36818), (100, 36854), (108, 36947), (111, 36992),

Gene: Ashertheman\_42 Start: 36687, Stop: 38270, Start Num: 10

Candidate Starts for Ashertheman\_42:

(Start: 10 @36687 has 18 MA's), (Start: 11 @36702 has 2 MA's), (26, 36972), (28, 37053), (29, 37092), (36, 37176), (46, 37347), (47, 37356), (49, 37362), (50, 37365), (51, 37395), (54, 37425), (59, 37506), (65, 37566), (72, 37692), (73, 37701), (87, 37905), (90, 37983), (94, 38031), (95, 38052), (96, 38055), (98, 38067), (99, 38079), (100, 38094), (102, 38127), (103, 38154), (113, 38244),

Gene: Baddon\_41 Start: 37222, Stop: 38805, Start Num: 10

Candidate Starts for Baddon\_41:

(Start: 10 @37222 has 18 MA's), (Start: 11 @37237 has 2 MA's), (28, 37588), (29, 37627), (36, 37711), (42, 37855), (45, 37873), (47, 37891), (49, 37897), (50, 37900), (51, 37930), (54, 37960), (59, 38041), (65, 38101), (72, 38227), (73, 38236), (85, 38416), (87, 38440), (89, 38506), (90, 38518), (94, 38566), (95, 38587), (96, 38590), (98, 38602), (99, 38614), (100, 38629), (102, 38662), (113, 38779),

Gene: Bakery\_44 Start: 34687, Stop: 36054, Start Num: 22

Candidate Starts for Bakery\_44:

(Start: 10 @34486 has 18 MA's), (Start: 11 @34501 has 2 MA's), (12, 34522), (13, 34525), (Start: 22 @34687 has 1 MA's), (29, 34891), (36, 34975), (42, 35119), (49, 35161), (50, 35164), (52, 35215), (58, 35290), (59, 35305), (61, 35317), (64, 35362), (74, 35515), (76, 35536), (84, 35647), (92, 35785), (100, 35869), (102, 35902), (107, 35953), (109, 35974),

Gene: Baumdotcom\_40 Start: 36074, Stop: 37657, Start Num: 10

Candidate Starts for Baumdotcom\_40:

(Start: 6 @36035 has 1 MA's), (Start: 10 @36074 has 18 MA's), (Start: 11 @36089 has 2 MA's), (26, 36359), (28, 36440), (29, 36479), (36, 36563), (46, 36734), (47, 36743), (49, 36749), (50, 36752), (51, 36782), (54, 36812), (59, 36893), (65, 36953), (72, 37079), (73, 37088), (82, 37214), (90, 37370), (94, 37418), (95, 37439), (96, 37442), (99, 37466), (100, 37481), (102, 37514), (103, 37541), (113, 37631),

Gene: Belphegor\_41 Start: 37453, Stop: 39072, Start Num: 10

Candidate Starts for Belphegor\_41:

(Start: 8 @37432 has 15 MA's), (Start: 10 @37453 has 18 MA's), (Start: 11 @37468 has 2 MA's), (17, 37576), (28, 37819), (29, 37858), (35, 37948), (43, 38131), (45, 38137), (47, 38155), (59, 38305), (66, 38380), (68, 38431), (73, 38506), (81, 38626), (84, 38665), (86, 38698), (89, 38776), (90, 38788), (95, 38854), (97, 38860), (100, 38896), (108, 38989), (111, 39034), (114, 39055),

Gene: Bizzy\_42 Start: 36382, Stop: 37965, Start Num: 10

Candidate Starts for Bizzy\_42:

(Start: 10 @36382 has 18 MA's), (Start: 11 @36397 has 2 MA's), (26, 36667), (28, 36748), (29, 36787), (36, 36871), (46, 37042), (47, 37051), (49, 37057), (50, 37060), (51, 37090), (54, 37120), (59, 37201), (65, 37261), (72, 37387), (73, 37396), (87, 37600), (90, 37678), (94, 37726), (95, 37747), (96, 37750), (98, 37762), (99, 37774), (100, 37789), (102, 37822), (113, 37939),

Gene: Chickadee\_38 Start: 33890, Stop: 35524, Start Num: 8

Candidate Starts for Chickadee\_38:

(Start: 8 @33890 has 15 MA's), (14, 33992), (16, 34010), (17, 34037), (19, 34061), (23, 34121), (25, 34187), (28, 34280), (31, 34349), (33, 34361), (35, 34397), (47, 34604), (50, 34613), (59, 34754), (73, 34955), (85, 35135), (91, 35243), (93, 35273), (94, 35285), (97, 35312),

Gene: Delrey21\_41 Start: 37882, Stop: 39492, Start Num: 10

Candidate Starts for Delrey21\_41:

(Start: 10 @37882 has 18 MA's), (Start: 11 @37897 has 2 MA's), (28, 38248), (29, 38287), (35, 38371), (43, 38554), (45, 38560), (59, 38728), (68, 38854), (73, 38929), (75, 38941), (83, 39070), (85, 39109), (86, 39121), (88, 39160), (90, 39211), (95, 39277), (97, 39283), (100, 39319), (108, 39412), (111, 39457), (113, 39475), (114, 39478),

Gene: Derg\_39 Start: 35972, Stop: 37555, Start Num: 10

Candidate Starts for Derg\_39:

(Start: 6 @35933 has 1 MA's), (Start: 10 @35972 has 18 MA's), (Start: 11 @35987 has 2 MA's), (28, 36338), (29, 36377), (36, 36461), (42, 36605), (46, 36632), (47, 36641), (49, 36647), (50, 36650), (51, 36680), (54, 36710), (59, 36791), (65, 36851), (72, 36977), (73, 36986), (90, 37268), (94, 37316), (95, 37337), (96, 37340), (99, 37364), (100, 37379), (102, 37412), (113, 37529),

Gene: Dxdert\_39 Start: 34152, Stop: 35783, Start Num: 8

Candidate Starts for Dxdert\_39:

(1, 33966), (2, 33981), (3, 33990), (4, 34026), (5, 34098), (Start: 8 @34152 has 15 MA's), (14, 34254), (16, 34272), (17, 34299), (19, 34323), (23, 34383), (25, 34449), (28, 34542), (31, 34611), (35, 34659), (40, 34764), (47, 34866), (50, 34875), (59, 35016), (73, 35217), (85, 35397), (91, 35505), (94, 35547), (97, 35574), (100, 35610), (101, 35631),

Gene: DoctorFroggo\_41 Start: 37882, Stop: 39492, Start Num: 10

Candidate Starts for DoctorFroggo\_41:

(Start: 10 @37882 has 18 MA's), (Start: 11 @37897 has 2 MA's), (28, 38248), (29, 38287), (35, 38371), (43, 38554), (45, 38560), (59, 38728), (68, 38854), (73, 38929), (75, 38941), (83, 39070), (85, 39109), (86, 39121), (88, 39160), (90, 39211), (95, 39277), (97, 39283), (100, 39319), (108, 39412), (111, 39457), (113, 39475), (114, 39478),

Gene: EMoore\_38 Start: 36591, Stop: 38207, Start Num: 8

Candidate Starts for EMoore\_38:

(Start: 8 @36591 has 15 MA's), (13, 36651), (19, 36762), (24, 36837), (25, 36888), (35, 37083), (50, 37299), (59, 37440), (62, 37464), (68, 37566), (69, 37620), (75, 37653), (85, 37815), (91, 37923), (94, 37965), (108, 38121), (111, 38166), (115, 38187),

Gene: EdmundFerry\_37 Start: 33919, Stop: 35553, Start Num: 8

Candidate Starts for EdmundFerry\_37:

(Start: 8 @33919 has 15 MA's), (14, 34021), (17, 34066), (19, 34090), (23, 34150), (25, 34216), (28, 34309), (31, 34378), (33, 34390), (35, 34426), (47, 34633), (50, 34642), (59, 34783), (73, 34984), (85, 35164), (91, 35272), (93, 35302), (94, 35314), (97, 35341),

Gene: Flatwoods\_42 Start: 36324, Stop: 37907, Start Num: 10

Candidate Starts for Flatwoods\_42:

(Start: 6 @36285 has 1 MA's), (Start: 10 @36324 has 18 MA's), (Start: 11 @36339 has 2 MA's), (28, 36690), (29, 36729), (36, 36813), (42, 36957), (46, 36984), (47, 36993), (49, 36999), (50, 37002), (51, 37032), (54, 37062), (59, 37143), (65, 37203), (72, 37329), (73, 37338), (90, 37620), (94, 37668), (95, 37689), (96, 37692), (99, 37716), (100, 37731), (102, 37764), (113, 37881),

Gene: Fosterous\_39 Start: 36067, Stop: 37644, Start Num: 10

Candidate Starts for Fosterous\_39:

(Start: 10 @36067 has 18 MA's), (Start: 11 @36082 has 2 MA's), (28, 36433), (29, 36472), (36, 36547), (46, 36718), (47, 36727), (49, 36733), (50, 36736), (51, 36766), (54, 36796), (55, 36814), (59, 36877), (72, 37063), (73, 37072), (85, 37252), (90, 37354), (94, 37405), (95, 37426), (96, 37429), (99, 37453), (100, 37468), (102, 37501), (105, 37552), (112, 37606),

Gene: GTE6\_38 Start: 34411, Stop: 36045, Start Num: 8

Candidate Starts for GTE6\_38:

(Start: 8 @34411 has 15 MA's), (14, 34513), (16, 34531), (17, 34558), (19, 34582), (23, 34642), (25, 34708), (28, 34801), (31, 34870), (33, 34882), (35, 34918), (47, 35125), (50, 35134), (59, 35275), (85, 35656), (91, 35764), (93, 35794), (94, 35806), (97, 35833),

Gene: Gaea\_41 Start: 35931, Stop: 37553, Start Num: 6

Candidate Starts for Gaea\_41:

(Start: 6 @35931 has 1 MA's), (Start: 10 @35970 has 18 MA's), (Start: 11 @35985 has 2 MA's), (26, 36255), (28, 36336), (29, 36375), (36, 36459), (46, 36630), (47, 36639), (49, 36645), (50, 36648), (51, 36678), (54, 36708), (59, 36789), (65, 36849), (72, 36975), (73, 36984), (87, 37188), (90, 37266), (94, 37314), (95, 37335), (96, 37338), (98, 37350), (99, 37362), (100, 37377), (102, 37410), (113, 37527),

Gene: Gustav\_21 Start: 17436, Stop: 19031, Start Num: 9

Candidate Starts for Gustav\_21:

(Start: 9 @17436 has 3 MA's), (15, 17535), (18, 17580), (25, 17724), (34, 17907), (Start: 37 @17934 has 3 MA's), (38, 17958), (41, 18039), (42, 18087), (45, 18105), (57, 18243), (61, 18291), (62, 18303), (68, 18402), (71, 18465), (77, 18531), (78, 18543), (95, 18819), (110, 18981),

Gene: Gustavo\_41 Start: 36119, Stop: 37723, Start Num: 10

Candidate Starts for Gustavo\_41:

(Start: 6 @36083 has 1 MA's), (Start: 10 @36119 has 18 MA's), (Start: 11 @36134 has 2 MA's), (28, 36485), (29, 36524), (36, 36626), (45, 36788), (46, 36797), (47, 36806), (49, 36812), (50, 36815), (51, 36845), (54, 36875), (55, 36893), (59, 36956), (65, 37016), (67, 37055), (72, 37142), (85, 37331), (90, 37433), (94, 37484), (95, 37505), (96, 37508), (99, 37532), (100, 37547), (102, 37580), (106, 37631), (112, 37685), (113, 37697),

Gene: Hans\_42 Start: 36057, Stop: 37670, Start Num: 8

Candidate Starts for Hans\_42:

(Start: 8 @36057 has 15 MA's), (13, 36117), (14, 36159), (19, 36228), (25, 36354), (35, 36549), (40, 36654), (50, 36765), (59, 36906), (60, 36909), (62, 36930), (68, 37032), (69, 37086), (72, 37098), (73, 37107), (75, 37119), (79, 37209), (80, 37224), (85, 37281), (91, 37389), (93, 37419), (94, 37431), (97, 37458), (100, 37494), (108, 37587), (111, 37632),

Gene: Inspectinfecti\_41 Start: 36503, Stop: 38116, Start Num: 8

Candidate Starts for Inspectinfecti\_41:

(Start: 8 @36503 has 15 MA's), (13, 36563), (19, 36674), (25, 36800), (30, 36953), (35, 36995), (40, 37100), (50, 37211), (59, 37352), (60, 37355), (62, 37376), (68, 37478), (69, 37532), (72, 37544), (73, 37553), (75, 37565), (80, 37670), (85, 37727), (91, 37835), (93, 37865), (94, 37877), (97, 37904), (100, 37940), (108, 38033), (111, 38078),

Gene: JKSyngboy\_39 Start: 36715, Stop: 38322, Start Num: 10

Candidate Starts for JKSyngboy\_39:

(Start: 10 @36715 has 18 MA's), (Start: 11 @36730 has 2 MA's), (26, 37000), (28, 37081), (29, 37120), (36, 37228), (47, 37408), (49, 37414), (50, 37417), (51, 37447), (54, 37477), (55, 37495), (59, 37558), (65, 37618), (72, 37744), (73, 37753), (90, 38035), (94, 38083), (95, 38104), (96, 38107), (98, 38119), (99, 38131), (102, 38179), (112, 38284), (113, 38296),

Gene: Kroos\_42 Start: 36880, Stop: 38463, Start Num: 10

Candidate Starts for Kroos\_42:

(Start: 6 @36841 has 1 MA's), (Start: 10 @36880 has 18 MA's), (Start: 11 @36895 has 2 MA's), (28, 37246), (29, 37285), (36, 37369), (46, 37540), (47, 37549), (49, 37555), (50, 37558), (51, 37588), (54, 37618), (59, 37699), (65, 37759), (72, 37885), (73, 37894), (87, 38098), (90, 38176), (94, 38224), (95, 38245), (96, 38248), (98, 38260), (99, 38272), (100, 38287), (102, 38320), (113, 38437),

Gene: Kwekel\_38 Start: 33851, Stop: 35485, Start Num: 8

Candidate Starts for Kwekel\_38:

(Start: 8 @33851 has 15 MA's), (14, 33953), (16, 33971), (17, 33998), (19, 34022), (23, 34082), (25, 34148), (28, 34241), (31, 34310), (33, 34322), (35, 34358), (47, 34565), (50, 34574), (59, 34715), (73, 34916), (85, 35096), (91, 35204), (93, 35234), (94, 35246), (97, 35273),

Gene: Kwobi\_42 Start: 36866, Stop: 38449, Start Num: 10

Candidate Starts for Kwobi\_42:

(Start: 10 @36866 has 18 MA's), (Start: 11 @36881 has 2 MA's), (26, 37151), (28, 37232), (29, 37271), (36, 37355), (46, 37526), (47, 37535), (49, 37541), (50, 37544), (51, 37574), (54, 37604), (59, 37685), (65, 37745), (72, 37871), (73, 37880), (82, 38006), (90, 38162), (94, 38210), (95, 38231), (96, 38234), (99, 38258), (100, 38273), (102, 38306), (103, 38333), (113, 38423),

Gene: Leonard\_40 Start: 36143, Stop: 37756, Start Num: 8

Candidate Starts for Leonard\_40:

(Start: 8 @36143 has 15 MA's), (13, 36203), (14, 36245), (19, 36314), (25, 36440), (35, 36635), (40, 36740), (50, 36851), (59, 36992), (60, 36995), (62, 37016), (68, 37118), (69, 37172), (72, 37184), (73, 37193), (75, 37205), (80, 37310), (85, 37367), (91, 37475), (93, 37505), (94, 37517), (97, 37544),



(100, 37580), (108, 37673), (111, 37718),

Gene: LilHam\_39 Start: 35467, Stop: 37050, Start Num: 10

Candidate Starts for LilHam\_39:

(Start: 6 @35428 has 1 MA's), (Start: 10 @35467 has 18 MA's), (Start: 11 @35482 has 2 MA's), (26, 35752), (29, 35872), (36, 35956), (46, 36127), (47, 36136), (49, 36142), (50, 36145), (51, 36175), (54, 36205), (59, 36286), (65, 36346), (72, 36472), (73, 36481), (82, 36607), (90, 36763), (94, 36811), (95, 36832), (96, 36835), (99, 36859), (100, 36874), (102, 36907), (103, 36934), (113, 37024),

Gene: Mahdia\_21 Start: 17103, Stop: 18704, Start Num: 9

Candidate Starts for Mahdia\_21:

(Start: 9 @17103 has 3 MA's), (15, 17202), (18, 17247), (20, 17298), (25, 17391), (32, 17559), (34, 17577), (Start: 37 @17604 has 3 MA's), (38, 17628), (39, 17676), (42, 17757), (44, 17772), (45, 17775), (48, 17796), (49, 17799), (65, 18009), (68, 18072), (71, 18135), (76, 18183), (77, 18201), (78, 18213), (104, 18591),

Gene: Matteo\_18 Start: 16486, Stop: 17544, Start Num: 37

Candidate Starts for Matteo\_18:

(28, 16354), (Start: 37 @16486 has 3 MA's), (49, 16669), (59, 16813), (63, 16864), (64, 16870), (70, 17002), (81, 17119), (85, 17164), (92, 17281), (94, 17299), (97, 17326), (100, 17362), (102, 17395), (113, 17512),

Gene: MelBins\_41 Start: 36289, Stop: 37902, Start Num: 8

Candidate Starts for MelBins\_41:

(Start: 8 @36289 has 15 MA's), (13, 36349), (19, 36460), (25, 36586), (30, 36739), (35, 36781), (40, 36886), (50, 36997), (59, 37138), (60, 37141), (62, 37162), (68, 37264), (69, 37318), (72, 37330), (73, 37339), (75, 37351), (79, 37441), (80, 37456), (85, 37513), (91, 37621), (93, 37651), (94, 37663), (97, 37690), (100, 37726), (108, 37819), (111, 37864),

Gene: Morrissey\_22 Start: 18327, Stop: 19910, Start Num: 9

Candidate Starts for Morrissey\_22:

(Start: 9 @18327 has 3 MA's), (15, 18426), (18, 18450), (20, 18501), (21, 18522), (25, 18594), (34, 18780), (Start: 37 @18813 has 3 MA's), (38, 18837), (41, 18918), (42, 18966), (45, 18984), (57, 19122), (61, 19170), (62, 19182), (64, 19215), (68, 19281), (71, 19344), (77, 19410), (78, 19422),

Gene: Natkenzie\_42 Start: 37710, Stop: 39302, Start Num: 11

Candidate Starts for Natkenzie\_42:

(Start: 10 @37695 has 18 MA's), (Start: 11 @37710 has 2 MA's), (17, 37818), (28, 38061), (29, 38100), (35, 38181), (45, 38370), (56, 38499), (59, 38538), (68, 38664), (73, 38739), (75, 38751), (83, 38880), (86, 38931), (88, 38970), (90, 39021), (95, 39087), (97, 39093), (100, 39129), (108, 39222), (111, 39267), (114, 39288),

Gene: Phauci\_33 Start: 32992, Stop: 34605, Start Num: 8

Candidate Starts for Phauci\_33:

(Start: 8 @32992 has 15 MA's), (13, 33052), (14, 33094), (19, 33163), (25, 33289), (35, 33484), (40, 33589), (50, 33700), (59, 33841), (60, 33844), (62, 33865), (68, 33967), (69, 34021), (72, 34033), (73, 34042), (75, 34054), (79, 34144), (80, 34159), (85, 34216), (91, 34324), (93, 34354), (94, 34366), (97, 34393), (100, 34429), (108, 34522), (111, 34567),

Gene: Phinally\_40 Start: 36140, Stop: 37753, Start Num: 8

Candidate Starts for Phinally\_40:

(Start: 8 @36140 has 15 MA's), (13, 36200), (14, 36242), (19, 36311), (25, 36437), (35, 36632), (40, 36737), (50, 36848), (59, 36989), (60, 36992), (62, 37013), (68, 37115), (69, 37169), (72, 37181), (73,

37190), (75, 37202), (80, 37307), (85, 37364), (91, 37472), (93, 37502), (94, 37514), (97, 37541), (100, 37577), (108, 37670), (111, 37715),

Gene: Pickett\_18 Start: 16479, Stop: 17537, Start Num: 37

Candidate Starts for Pickett\_18:

(Start: 37 @16479 has 3 MA's), (49, 16662), (59, 16806), (63, 16857), (64, 16863), (70, 16995), (81, 17112), (85, 17157), (92, 17274), (94, 17292), (97, 17319), (102, 17388), (113, 17505),

Gene: Ribeye\_42 Start: 37298, Stop: 38881, Start Num: 10

Candidate Starts for Ribeye\_42:

(Start: 6 @37259 has 1 MA's), (Start: 10 @37298 has 18 MA's), (Start: 11 @37313 has 2 MA's), (28, 37664), (29, 37703), (36, 37787), (46, 37958), (47, 37967), (49, 37973), (50, 37976), (51, 38006), (54, 38036), (59, 38117), (65, 38177), (72, 38303), (73, 38312), (87, 38516), (90, 38594), (94, 38642), (95, 38663), (96, 38666), (98, 38678), (99, 38690), (100, 38705), (102, 38738), (103, 38765), (113, 38855),

Gene: RoadKill\_36 Start: 33414, Stop: 35048, Start Num: 8

Candidate Starts for RoadKill\_36:

(Start: 8 @33414 has 15 MA's), (14, 33516), (17, 33561), (19, 33585), (23, 33645), (25, 33711), (28, 33804), (31, 33873), (33, 33885), (35, 33921), (47, 34128), (50, 34137), (59, 34278), (73, 34479), (85, 34659), (91, 34767), (93, 34797), (94, 34809), (97, 34836),

Gene: Sampson\_42 Start: 37640, Stop: 39247, Start Num: 10

Candidate Starts for Sampson\_42:

(Start: 10 @37640 has 18 MA's), (Start: 11 @37655 has 2 MA's), (17, 37763), (28, 38006), (29, 38045), (35, 38126), (45, 38315), (56, 38444), (59, 38483), (68, 38609), (73, 38684), (75, 38696), (83, 38825), (86, 38876), (88, 38915), (90, 38966), (95, 39032), (97, 39038), (100, 39074), (108, 39167), (111, 39212), (114, 39233),

Gene: Saronaya\_41 Start: 36119, Stop: 37723, Start Num: 10

Candidate Starts for Saronaya\_41:

(Start: 6 @36083 has 1 MA's), (Start: 10 @36119 has 18 MA's), (Start: 11 @36134 has 2 MA's), (28, 36485), (29, 36524), (36, 36626), (45, 36788), (46, 36797), (47, 36806), (49, 36812), (50, 36815), (51, 36845), (54, 36875), (55, 36893), (59, 36956), (65, 37016), (67, 37055), (72, 37142), (85, 37331), (90, 37433), (94, 37484), (95, 37505), (96, 37508), (99, 37532), (100, 37547), (102, 37580), (106, 37631), (112, 37685), (113, 37697),

Gene: SchottB\_40 Start: 37140, Stop: 38723, Start Num: 10

Candidate Starts for SchottB\_40:

(Start: 6 @37101 has 1 MA's), (Start: 10 @37140 has 18 MA's), (Start: 11 @37155 has 2 MA's), (26, 37425), (28, 37506), (29, 37545), (36, 37629), (46, 37800), (47, 37809), (49, 37815), (50, 37818), (51, 37848), (54, 37878), (59, 37959), (65, 38019), (72, 38145), (73, 38154), (82, 38280), (90, 38436), (94, 38484), (95, 38505), (96, 38508), (99, 38532), (100, 38547), (102, 38580), (103, 38607), (113, 38697),

Gene: Scioto\_43 Start: 37696, Stop: 39303, Start Num: 10

Candidate Starts for Scioto\_43:

(Start: 10 @37696 has 18 MA's), (Start: 11 @37711 has 2 MA's), (17, 37819), (28, 38062), (29, 38101), (35, 38182), (45, 38371), (56, 38500), (59, 38539), (68, 38665), (73, 38740), (75, 38752), (83, 38881), (86, 38932), (88, 38971), (90, 39022), (95, 39088), (97, 39094), (100, 39130), (108, 39223), (111, 39268), (114, 39289),

Gene: Tangerine\_41 Start: 36012, Stop: 37595, Start Num: 10

Candidate Starts for Tangerine\_41:

(Start: 6 @35973 has 1 MA's), (Start: 10 @36012 has 18 MA's), (Start: 11 @36027 has 2 MA's), (28, 36378), (29, 36417), (36, 36501), (46, 36672), (47, 36681), (49, 36687), (50, 36690), (51, 36720), (54, 36750), (59, 36831), (65, 36891), (72, 37017), (73, 37026), (90, 37308), (94, 37356), (95, 37377), (96, 37380), (99, 37404), (100, 37419), (102, 37452), (113, 37569),

Gene: Tardus\_43 Start: 37065, Stop: 38660, Start Num: 11

Candidate Starts for Tardus\_43:

(Start: 10 @37050 has 18 MA's), (Start: 11 @37065 has 2 MA's), (28, 37416), (29, 37455), (35, 37539), (45, 37728), (56, 37857), (59, 37896), (68, 38022), (73, 38097), (75, 38109), (83, 38238), (86, 38289), (88, 38328), (90, 38379), (95, 38445), (97, 38451), (100, 38487), (108, 38580), (111, 38625), (114, 38646),

Gene: Tiamoceli\_39 Start: 34747, Stop: 36381, Start Num: 8

Candidate Starts for Tiamoceli\_39:

(Start: 8 @34747 has 15 MA's), (14, 34849), (16, 34867), (17, 34894), (19, 34918), (23, 34978), (25, 35044), (28, 35137), (31, 35206), (33, 35218), (35, 35254), (47, 35461), (50, 35470), (59, 35611), (73, 35812), (85, 35992), (91, 36100), (93, 36130), (94, 36142), (97, 36169),

Gene: Twonlo\_36 Start: 33365, Stop: 34999, Start Num: 8

Candidate Starts for Twonlo\_36:

(Start: 8 @33365 has 15 MA's), (14, 33467), (17, 33512), (19, 33536), (23, 33596), (25, 33662), (28, 33755), (31, 33824), (33, 33836), (35, 33872), (47, 34079), (50, 34088), (59, 34229), (73, 34430), (85, 34610), (91, 34718), (93, 34748), (94, 34760), (97, 34787),

Gene: Tycho\_41 Start: 36099, Stop: 37682, Start Num: 10

Candidate Starts for Tycho\_41:

(Start: 6 @36060 has 1 MA's), (Start: 10 @36099 has 18 MA's), (Start: 11 @36114 has 2 MA's), (26, 36384), (28, 36465), (29, 36504), (36, 36588), (46, 36759), (47, 36768), (49, 36774), (50, 36777), (51, 36807), (54, 36837), (59, 36918), (65, 36978), (72, 37104), (73, 37113), (90, 37395), (94, 37443), (95, 37464), (96, 37467), (99, 37491), (100, 37506), (102, 37539), (113, 37656),

Gene: Vasanti\_18 Start: 16494, Stop: 17552, Start Num: 37

Candidate Starts for Vasanti\_18:

(27, 16344), (Start: 37 @16494 has 3 MA's), (46, 16662), (47, 16671), (49, 16677), (51, 16710), (59, 16821), (64, 16878), (70, 17010), (81, 17127), (92, 17289), (97, 17334), (102, 17403), (113, 17520),

Gene: Verity\_41 Start: 37882, Stop: 39492, Start Num: 10

Candidate Starts for Verity\_41:

(Start: 10 @37882 has 18 MA's), (Start: 11 @37897 has 2 MA's), (28, 38248), (29, 38287), (35, 38371), (43, 38554), (45, 38560), (59, 38728), (68, 38854), (73, 38929), (75, 38941), (83, 39070), (85, 39109), (86, 39121), (88, 39160), (90, 39211), (95, 39277), (97, 39283), (100, 39319), (108, 39412), (111, 39457), (113, 39475), (114, 39478),

Gene: ViaConlectus\_42 Start: 36330, Stop: 37937, Start Num: 10

Candidate Starts for ViaConlectus\_42:

(7, 36312), (Start: 10 @36330 has 18 MA's), (Start: 11 @36345 has 2 MA's), (28, 36696), (29, 36735), (35, 36816), (45, 37005), (56, 37134), (59, 37173), (68, 37299), (73, 37374), (75, 37386), (83, 37515), (86, 37566), (88, 37605), (90, 37656), (95, 37722), (97, 37728), (100, 37764), (108, 37857), (111, 37902), (114, 37923),

Gene: YorkOnyx\_42 Start: 36358, Stop: 37941, Start Num: 10

Candidate Starts for YorkOnyx\_42:

(Start: 6 @36319 has 1 MA's), (Start: 10 @36358 has 18 MA's), (Start: 11 @36373 has 2 MA's), (28, 36724), (29, 36763), (36, 36847), (46, 37018), (47, 37027), (49, 37033), (50, 37036), (51, 37066), (54, 37096), (59, 37177), (65, 37237), (72, 37363), (73, 37372), (87, 37576), (89, 37642), (90, 37654), (94, 37702), (95, 37723), (96, 37726), (98, 37738), (99, 37750), (100, 37765), (102, 37798), (103, 37825), (113, 37915),

Gene: Zipp\_41 Start: 37800, Stop: 39395, Start Num: 11

Candidate Starts for Zipp\_41:

(Start: 10 @37785 has 18 MA's), (Start: 11 @37800 has 2 MA's), (28, 38151), (29, 38190), (35, 38274), (45, 38463), (56, 38592), (59, 38631), (68, 38757), (75, 38844), (83, 38973), (85, 39012), (86, 39024), (88, 39063), (90, 39114), (94, 39159), (95, 39180), (97, 39186), (100, 39222), (108, 39315), (111, 39360), (113, 39378), (114, 39381), (116, 39387),

Gene: Zitch\_45 Start: 36483, Stop: 38093, Start Num: 10

Candidate Starts for Zitch\_45:

(Start: 10 @36483 has 18 MA's), (Start: 11 @36498 has 2 MA's), (28, 36849), (29, 36888), (35, 36972), (Start: 37 @37002 has 3 MA's), (43, 37155), (45, 37161), (53, 37245), (56, 37290), (59, 37329), (68, 37455), (73, 37530), (75, 37542), (83, 37671), (85, 37710), (86, 37722), (88, 37761), (90, 37812), (95, 37878), (97, 37884), (100, 37920), (108, 38013), (111, 38058), (114, 38079),