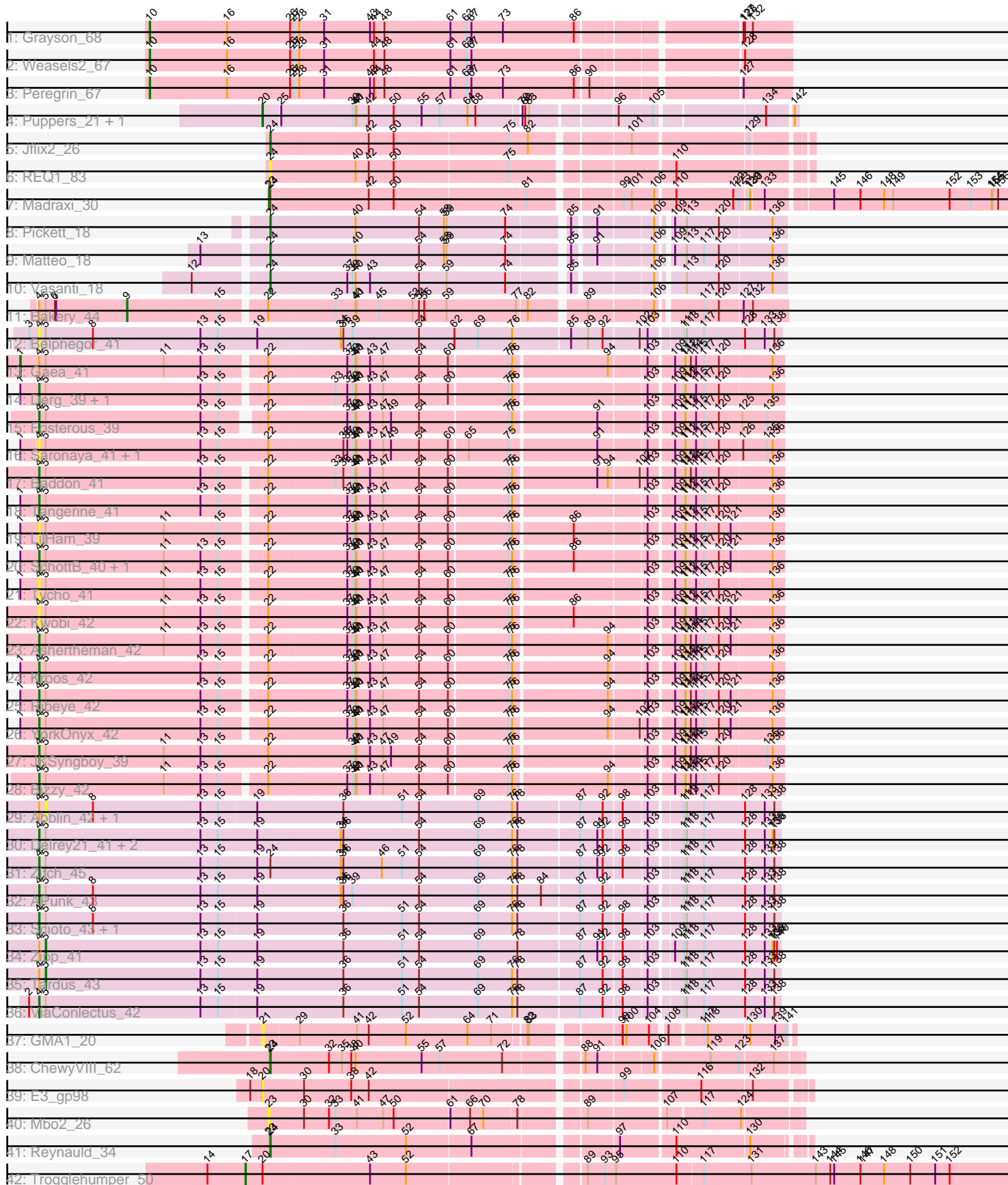


Pham 194083



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 194083 Report

This analysis was run 11/02/24 on database version 579.

Pham number 194083 has 50 members, 15 are drafts.

Phages represented in each track:

- Track 1 : Grayson\_68
- Track 2 : Weasels2\_67
- Track 3 : Peregrin\_67
- Track 4 : Puppies\_21, Widow\_21
- Track 5 : Jflix2\_26
- Track 6 : REQ1\_83
- Track 7 : Madraxi\_30
- Track 8 : Pickett\_18
- Track 9 : Matteo\_18
- Track 10 : Vasanti\_18
- Track 11 : Bakery\_44
- Track 12 : Belphegor\_41
- Track 13 : Gaea\_41
- Track 14 : Derg\_39, Flatwoods\_42
- Track 15 : Fosterous\_39
- Track 16 : Saronaya\_41, Gustavo\_41
- Track 17 : Baddon\_41
- Track 18 : Tangerine\_41
- Track 19 : LilHam\_39
- Track 20 : SchottB\_40, Baumdotcom\_40
- Track 21 : Tycho\_41
- Track 22 : Kwobi\_42
- Track 23 : Ashertheman\_42
- Track 24 : Kroos\_42
- Track 25 : Ribeye\_42
- Track 26 : YorkOnyx\_42
- Track 27 : JKSyngboy\_39
- Track 28 : Bizzy\_42
- Track 29 : Abblin\_42, Natkenzie\_42
- Track 30 : Delrey21\_41, Verity\_41, DoctorFroggo\_41
- Track 31 : Zitch\_45
- Track 32 : APunk\_43
- Track 33 : Scioto\_43, Sampson\_42
- Track 34 : Zipp\_41
- Track 35 : Tardus\_43
- Track 36 : ViaConlectus\_42
- Track 37 : GMA1\_20

- Track 38 : ChewyVIII\_62
- Track 39 : E3\_gp98
- Track 40 : Mbo2\_26
- Track 41 : Reynauld\_34
- Track 42 : Trogglehumper\_50

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

The start number called the most often in the published annotations is 4, it was called in 18 of the 35 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:

- ChewyVIII\_62, E3\_gp98, GMA1\_20, Grayson\_68, Jflix2\_26, Madraxi\_30, Matteo\_18, Mbo2\_26, Peregrin\_67, Pickett\_18, Puppies\_21, REQ1\_83, Reynauld\_34, Trogglehumper\_50, Vasanti\_18, Weasels2\_67, Widow\_21,

**Summary by start number:**

Start 1:

- Found in 13 of 50 ( 26.0% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 7.7% of time when present
- Phage (with cluster) where this start called: Gaea\_41 (DE1),

Start 4:

- Found in 33 of 50 ( 66.0% ) of genes in pham
- Manual Annotations of this start: 18 of 35
- 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 5:

- Found in 33 of 50 ( 66.0% ) of genes in pham
- Manual Annotations of this start: 2 of 35

- 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 9:

- Found in 1 of 50 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bakery\_44 (DC1),

#### Start 10:

- Found in 3 of 50 ( 6.0% ) of genes in pham
- Manual Annotations of this start: 3 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Grayson\_68 (CB), Peregrin\_67 (CB), Weasels2\_67 (CB),

#### Start 17:

- Found in 1 of 50 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Trogglehumper\_50 (singleton),

#### Start 20:

- Found in 4 of 50 ( 8.0% ) of genes in pham
- Manual Annotations of this start: 2 of 35
- Called 75.0% of time when present
- Phage (with cluster) where this start called: E3\_gp98 (singleton), Puppies\_21 (CD), Widow\_21 (CD),

#### Start 21:

- Found in 1 of 50 ( 2.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GMA1\_20 (singleton),

#### Start 23:

- Found in 4 of 50 ( 8.0% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Madraxi\_30 (CF), Mbo2\_26 (singleton),

#### Start 24:

- Found in 9 of 50 ( 18.0% ) of genes in pham
- Manual Annotations of this start: 6 of 35
- Called 77.8% of time when present
- Phage (with cluster) where this start called: ChewyVIII\_62 (singleton), Jflic2\_26 (CF), Matteo\_18 (CZ2), Pickett\_18 (CZ2), REQ1\_83 (CF), Reynauld\_34 (singleton), Vasanti\_18 (CZ2),

### **Summary by clusters:**

There are 9 clusters represented in this pham: singleton, CZ2, DE1, DE, DE4, CF, CD, CB, DC1,

Info for manual annotations of cluster CB:

- Start number 10 was manually annotated 3 times for cluster CB.

Info for manual annotations of cluster CD:

- Start number 20 was manually annotated 2 times for cluster CD.

Info for manual annotations of cluster CF:

- Start number 23 was manually annotated 1 time for cluster CF.
- Start number 24 was manually annotated 1 time for cluster CF.

Info for manual annotations of cluster CZ2:

- Start number 24 was manually annotated 3 times for cluster CZ2.

Info for manual annotations of cluster DC1:

- Start number 9 was manually annotated 1 time for cluster DC1.

Info for manual annotations of cluster DE1:

- Start number 1 was manually annotated 1 time for cluster DE1.
- Start number 4 was manually annotated 11 times for cluster DE1.

Info for manual annotations of cluster DE4:

- Start number 4 was manually annotated 7 times for cluster DE4.
- Start number 5 was manually annotated 2 times for cluster DE4.

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

Gene: APunk\_43 Start: 37152, Stop: 38765, Start Num: 4

Candidate Starts for APunk\_43:

(Start: 4 @37152 has 18 MA's), (Start: 5 @37167 has 2 MA's), (8, 37275), (13, 37518), (15, 37557), (19, 37644), (34, 37827), (36, 37833), (39, 37851), (54, 38001), (69, 38127), (76, 38202), (78, 38214), (84, 38268), (87, 38343), (92, 38394), (103, 38484), (111, 38550), (113, 38556), (117, 38592), (128, 38685), (133, 38730), (138, 38751),

Gene: Abblin\_42 Start: 37710, Stop: 39302, Start Num: 5

Candidate Starts for Abblin\_42:

(Start: 4 @37695 has 18 MA's), (Start: 5 @37710 has 2 MA's), (8, 37818), (13, 38061), (15, 38100), (19, 38181), (36, 38370), (51, 38499), (54, 38538), (69, 38664), (76, 38739), (78, 38751), (87, 38880), (92, 38931), (98, 38970), (103, 39021), (111, 39087), (113, 39093), (117, 39129), (128, 39222), (133, 39267), (138, 39288),

Gene: Ashertheman\_42 Start: 36687, Stop: 38270, Start Num: 4

Candidate Starts for Ashertheman\_42:

(Start: 4 @36687 has 18 MA's), (Start: 5 @36702 has 2 MA's), (11, 36972), (13, 37053), (15, 37092), (22, 37176), (37, 37347), (39, 37356), (40, 37362), (41, 37365), (43, 37395), (47, 37425), (54, 37506), (60, 37566), (75, 37692), (76, 37701), (94, 37905), (103, 37983), (109, 38031), (111, 38052), (112, 38055), (114, 38067), (115, 38079), (117, 38094), (120, 38127), (121, 38154), (136, 38244),

Gene: Baddon\_41 Start: 37222, Stop: 38805, Start Num: 4

Candidate Starts for Baddon\_41:

(Start: 4 @37222 has 18 MA's), (Start: 5 @37237 has 2 MA's), (13, 37588), (15, 37627), (22, 37711), (33, 37855), (36, 37873), (39, 37891), (40, 37897), (41, 37900), (43, 37930), (47, 37960), (54, 38041), (60, 38101), (75, 38227), (76, 38236), (91, 38416), (94, 38440), (102, 38506), (103, 38518), (109, 38566), (111, 38587), (112, 38590), (114, 38602), (115, 38614), (117, 38629), (120, 38662), (136, 38779),

Gene: Bakery\_44 Start: 34687, Stop: 36054, Start Num: 9

Candidate Starts for Bakery\_44:

(Start: 4 @34486 has 18 MA's), (Start: 5 @34501 has 2 MA's), (6, 34522), (7, 34525), (Start: 9 @34687 has 1 MA's), (15, 34891), (22, 34975), (33, 35119), (40, 35161), (41, 35164), (45, 35215), (53, 35290), (54, 35305), (56, 35317), (59, 35362), (77, 35515), (82, 35536), (89, 35647), (106, 35785), (117, 35869), (120, 35902), (127, 35953), (132, 35974),

Gene: Baumdotcom\_40 Start: 36074, Stop: 37657, Start Num: 4

Candidate Starts for Baumdotcom\_40:

(Start: 1 @36035 has 1 MA's), (Start: 4 @36074 has 18 MA's), (Start: 5 @36089 has 2 MA's), (11, 36359), (13, 36440), (15, 36479), (22, 36563), (37, 36734), (39, 36743), (40, 36749), (41, 36752), (43, 36782), (47, 36812), (54, 36893), (60, 36953), (75, 37079), (76, 37088), (86, 37214), (103, 37370), (109, 37418), (111, 37439), (112, 37442), (115, 37466), (117, 37481), (120, 37514), (121, 37541), (136, 37631),

Gene: Belphegor\_41 Start: 37453, Stop: 39072, Start Num: 4

Candidate Starts for Belphegor\_41:

(3, 37432), (Start: 4 @37453 has 18 MA's), (Start: 5 @37468 has 2 MA's), (8, 37576), (13, 37819), (15, 37858), (19, 37948), (34, 38131), (36, 38137), (39, 38155), (54, 38305), (62, 38380), (69, 38431), (76, 38506), (85, 38626), (89, 38665), (92, 38698), (102, 38776), (103, 38788), (111, 38854), (113, 38860), (117, 38896), (128, 38989), (133, 39034), (138, 39055),

Gene: Bizzy\_42 Start: 36382, Stop: 37965, Start Num: 4

Candidate Starts for Bizzy\_42:

(Start: 4 @36382 has 18 MA's), (Start: 5 @36397 has 2 MA's), (11, 36667), (13, 36748), (15, 36787), (22, 36871), (37, 37042), (39, 37051), (40, 37057), (41, 37060), (43, 37090), (47, 37120), (54, 37201), (60, 37261), (75, 37387), (76, 37396), (94, 37600), (103, 37678), (109, 37726), (111, 37747), (112, 37750), (114, 37762), (115, 37774), (117, 37789), (120, 37822), (136, 37939),

Gene: ChewyVIII\_62 Start: 43758, Stop: 44864, Start Num: 24

Candidate Starts for ChewyVIII\_62:

(Start: 23 @43755 has 1 MA's), (Start: 24 @43758 has 6 MA's), (32, 43887), (35, 43917), (38, 43935), (40, 43944), (55, 44094), (57, 44133), (72, 44271), (88, 44424), (91, 44448), (106, 44559), (119, 44670), (123, 44733), (137, 44805),

Gene: Delrey21\_41 Start: 37882, Stop: 39492, Start Num: 4

Candidate Starts for Delrey21\_41:

(Start: 4 @37882 has 18 MA's), (Start: 5 @37897 has 2 MA's), (13, 38248), (15, 38287), (19, 38371), (34, 38554), (36, 38560), (54, 38728), (69, 38854), (76, 38929), (78, 38941), (87, 39070), (91, 39109), (92, 39121), (98, 39160), (103, 39211), (111, 39277), (113, 39283), (117, 39319), (128, 39412), (133, 39457), (136, 39475), (138, 39478),

Gene: Derg\_39 Start: 35972, Stop: 37555, Start Num: 4

Candidate Starts for Derg\_39:

(Start: 1 @35933 has 1 MA's), (Start: 4 @35972 has 18 MA's), (Start: 5 @35987 has 2 MA's), (13, 36338), (15, 36377), (22, 36461), (33, 36605), (37, 36632), (39, 36641), (40, 36647), (41, 36650), (43, 36680), (47, 36710), (54, 36791), (60, 36851), (75, 36977), (76, 36986), (103, 37268), (109, 37316), (111, 37337), (112, 37340), (115, 37364), (117, 37379), (120, 37412), (136, 37529),

Gene: DoctorFroggo\_41 Start: 37882, Stop: 39492, Start Num: 4

Candidate Starts for DoctorFroggo\_41:

(Start: 4 @37882 has 18 MA's), (Start: 5 @37897 has 2 MA's), (13, 38248), (15, 38287), (19, 38371), (34, 38554), (36, 38560), (54, 38728), (69, 38854), (76, 38929), (78, 38941), (87, 39070), (91, 39109), (92, 39121), (98, 39160), (103, 39211), (111, 39277), (113, 39283), (117, 39319), (128, 39412), (133, 39457), (136, 39475), (138, 39478),

Gene: E3\_gp98 Start: 56068, Stop: 57180, Start Num: 20

Candidate Starts for E3\_gp98:

(18, 56041), (Start: 20 @56068 has 2 MA's), (30, 56158), (38, 56263), (42, 56302), (99, 56809), (116, 56965), (132, 57070),

Gene: Flatwoods\_42 Start: 36324, Stop: 37907, Start Num: 4

Candidate Starts for Flatwoods\_42:

(Start: 1 @36285 has 1 MA's), (Start: 4 @36324 has 18 MA's), (Start: 5 @36339 has 2 MA's), (13, 36690), (15, 36729), (22, 36813), (33, 36957), (37, 36984), (39, 36993), (40, 36999), (41, 37002), (43, 37032), (47, 37062), (54, 37143), (60, 37203), (75, 37329), (76, 37338), (103, 37620), (109, 37668), (111, 37689), (112, 37692), (115, 37716), (117, 37731), (120, 37764), (136, 37881),

Gene: Fosterous\_39 Start: 36067, Stop: 37644, Start Num: 4

Candidate Starts for Fosterous\_39:

(Start: 4 @36067 has 18 MA's), (Start: 5 @36082 has 2 MA's), (13, 36433), (15, 36472), (22, 36547), (37, 36718), (39, 36727), (40, 36733), (41, 36736), (43, 36766), (47, 36796), (49, 36814), (54, 36877), (75, 37063), (76, 37072), (91, 37252), (103, 37354), (109, 37405), (111, 37426), (112, 37429), (115, 37453), (117, 37468), (120, 37501), (125, 37552), (135, 37606),

Gene: GMA1\_20 Start: 17561, Stop: 18616, Start Num: 21

Candidate Starts for GMA1\_20:

(21, 17561), (29, 17633), (41, 17759), (42, 17786), (52, 17870), (64, 18005), (71, 18059), (82, 18122), (83, 18125), (98, 18287), (100, 18296), (104, 18344), (108, 18371), (117, 18434), (118, 18443), (130, 18533), (139, 18584), (141, 18605),

Gene: Gaea\_41 Start: 35931, Stop: 37553, Start Num: 1

Candidate Starts for Gaea\_41:

(Start: 1 @35931 has 1 MA's), (Start: 4 @35970 has 18 MA's), (Start: 5 @35985 has 2 MA's), (11, 36255), (13, 36336), (15, 36375), (22, 36459), (37, 36630), (39, 36639), (40, 36645), (41, 36648), (43, 36678), (47, 36708), (54, 36789), (60, 36849), (75, 36975), (76, 36984), (94, 37188), (103, 37266), (109, 37314), (111, 37335), (112, 37338), (114, 37350), (115, 37362), (117, 37377), (120, 37410), (136, 37527),

Gene: Grayson\_68 Start: 28644, Stop: 30044, Start Num: 10

Candidate Starts for Grayson\_68:

(Start: 10 @28644 has 3 MA's), (16, 28821), (26, 28965), (27, 28974), (28, 28986), (31, 29043), (43, 29148), (44, 29157), (48, 29181), (61, 29331), (63, 29367), (67, 29379), (73, 29451), (86, 29613), (127, 29934), (128, 29937), (132, 29955),

Gene: Gustavo\_41 Start: 36119, Stop: 37723, Start Num: 4

Candidate Starts for Gustavo\_41:

(Start: 1 @36083 has 1 MA's), (Start: 4 @36119 has 18 MA's), (Start: 5 @36134 has 2 MA's), (13, 36485), (15, 36524), (22, 36626), (36, 36788), (37, 36797), (39, 36806), (40, 36812), (41, 36815), (43, 36845), (47, 36875), (49, 36893), (54, 36956), (60, 37016), (65, 37055), (75, 37142), (91, 37331), (103, 37433), (109, 37484), (111, 37505), (112, 37508), (115, 37532), (117, 37547), (120, 37580), (126, 37631), (135, 37685), (136, 37697),

Gene: JKSyngboy\_39 Start: 36715, Stop: 38322, Start Num: 4

Candidate Starts for JKSyngboy\_39:

(Start: 4 @36715 has 18 MA's), (Start: 5 @36730 has 2 MA's), (11, 37000), (13, 37081), (15, 37120), (22, 37228), (39, 37408), (40, 37414), (41, 37417), (43, 37447), (47, 37477), (49, 37495), (54, 37558), (60, 37618), (75, 37744), (76, 37753), (103, 38035), (109, 38083), (111, 38104), (112, 38107), (114, 38119), (115, 38131), (120, 38179), (135, 38284), (136, 38296),

Gene: JfliX2\_26 Start: 25867, Stop: 26955, Start Num: 24

Candidate Starts for JfliX2\_26:

(Start: 24 @25867 has 6 MA's), (42, 26083), (50, 26140), (75, 26383), (82, 26422), (101, 26608), (129, 26845),

Gene: Kroos\_42 Start: 36880, Stop: 38463, Start Num: 4

Candidate Starts for Kroos\_42:

(Start: 1 @36841 has 1 MA's), (Start: 4 @36880 has 18 MA's), (Start: 5 @36895 has 2 MA's), (13, 37246), (15, 37285), (22, 37369), (37, 37540), (39, 37549), (40, 37555), (41, 37558), (43, 37588), (47, 37618), (54, 37699), (60, 37759), (75, 37885), (76, 37894), (94, 38098), (103, 38176), (109, 38224), (111, 38245), (112, 38248), (114, 38260), (115, 38272), (117, 38287), (120, 38320), (136, 38437),

Gene: Kwobi\_42 Start: 36866, Stop: 38449, Start Num: 4

Candidate Starts for Kwobi\_42:

(Start: 4 @36866 has 18 MA's), (Start: 5 @36881 has 2 MA's), (11, 37151), (13, 37232), (15, 37271), (22, 37355), (37, 37526), (39, 37535), (40, 37541), (41, 37544), (43, 37574), (47, 37604), (54, 37685), (60, 37745), (75, 37871), (76, 37880), (86, 38006), (103, 38162), (109, 38210), (111, 38231), (112, 38234), (115, 38258), (117, 38273), (120, 38306), (121, 38333), (136, 38423),

Gene: LilHam\_39 Start: 35467, Stop: 37050, Start Num: 4

Candidate Starts for LilHam\_39:

(Start: 1 @35428 has 1 MA's), (Start: 4 @35467 has 18 MA's), (Start: 5 @35482 has 2 MA's), (11, 35752), (15, 35872), (22, 35956), (37, 36127), (39, 36136), (40, 36142), (41, 36145), (43, 36175), (47, 36205), (54, 36286), (60, 36346), (75, 36472), (76, 36481), (86, 36607), (103, 36763), (109, 36811), (111, 36832), (112, 36835), (115, 36859), (117, 36874), (120, 36907), (121, 36934), (136, 37024),

Gene: Madraxi\_30 Start: 28062, Stop: 29615, Start Num: 23

Candidate Starts for Madraxi\_30:

(Start: 23 @28062 has 1 MA's), (Start: 24 @28065 has 6 MA's), (42, 28281), (50, 28338), (81, 28620), (99, 28791), (101, 28809), (106, 28857), (110, 28893), (122, 29019), (123, 29031), (129, 29049), (130, 29052), (133, 29076), (145, 29208), (146, 29268), (148, 29322), (149, 29343), (152, 29472), (153, 29520), (154, 29568), (155, 29571), (156, 29583),

Gene: Matteo\_18 Start: 16486, Stop: 17544, Start Num: 24

Candidate Starts for Matteo\_18:

(13, 16354), (Start: 24 @16486 has 6 MA's), (40, 16669), (54, 16813), (58, 16864), (59, 16870), (74, 17002), (85, 17119), (91, 17164), (106, 17281), (109, 17299), (113, 17326), (117, 17362), (120, 17395), (136, 17512),

Gene: Mbo2\_26 Start: 27781, Stop: 28878, Start Num: 23



Candidate Starts for Mbo2\_26:

(Start: 23 @27781 has 1 MA's), (30, 27856), (32, 27913), (33, 27928), (41, 27973), (47, 28033), (50, 28057), (61, 28174), (66, 28219), (70, 28249), (78, 28315), (89, 28444), (107, 28597), (117, 28666), (124, 28750),

Gene: Natkenzie\_42 Start: 37710, Stop: 39302, Start Num: 5

Candidate Starts for Natkenzie\_42:

(Start: 4 @37695 has 18 MA's), (Start: 5 @37710 has 2 MA's), (8, 37818), (13, 38061), (15, 38100), (19, 38181), (36, 38370), (51, 38499), (54, 38538), (69, 38664), (76, 38739), (78, 38751), (87, 38880), (92, 38931), (98, 38970), (103, 39021), (111, 39087), (113, 39093), (117, 39129), (128, 39222), (133, 39267), (138, 39288),

Gene: Peregrin\_67 Start: 28158, Stop: 29555, Start Num: 10

Candidate Starts for Peregrin\_67:

(Start: 10 @28158 has 3 MA's), (16, 28335), (26, 28479), (27, 28488), (28, 28500), (31, 28557), (43, 28662), (44, 28671), (48, 28695), (61, 28845), (63, 28881), (67, 28893), (73, 28965), (86, 29127), (90, 29154), (127, 29448),

Gene: Pickett\_18 Start: 16479, Stop: 17537, Start Num: 24

Candidate Starts for Pickett\_18:

(Start: 24 @16479 has 6 MA's), (40, 16662), (54, 16806), (58, 16857), (59, 16863), (74, 16995), (85, 17112), (91, 17157), (106, 17274), (109, 17292), (113, 17319), (120, 17388), (136, 17505),

Gene: Puppies\_21 Start: 17502, Stop: 18587, Start Num: 20

Candidate Starts for Puppies\_21:

(Start: 20 @17502 has 2 MA's), (25, 17538), (39, 17691), (40, 17697), (41, 17700), (42, 17727), (50, 17784), (55, 17847), (57, 17883), (64, 17943), (68, 17961), (79, 18048), (80, 18054), (83, 18063), (96, 18234), (105, 18309), (134, 18525), (142, 18579),

Gene: REQ1\_83 Start: 49534, Stop: 50622, Start Num: 24

Candidate Starts for REQ1\_83:

(Start: 24 @49534 has 6 MA's), (40, 49720), (42, 49750), (50, 49807), (75, 50050), (110, 50356),

Gene: Reynauld\_34 Start: 35895, Stop: 36983, Start Num: 24

Candidate Starts for Reynauld\_34:

(Start: 23 @35892 has 1 MA's), (Start: 24 @35895 has 6 MA's), (33, 36039), (52, 36195), (67, 36333), (97, 36615), (110, 36723), (130, 36879),

Gene: Ribeye\_42 Start: 37298, Stop: 38881, Start Num: 4

Candidate Starts for Ribeye\_42:

(Start: 1 @37259 has 1 MA's), (Start: 4 @37298 has 18 MA's), (Start: 5 @37313 has 2 MA's), (13, 37664), (15, 37703), (22, 37787), (37, 37958), (39, 37967), (40, 37973), (41, 37976), (43, 38006), (47, 38036), (54, 38117), (60, 38177), (75, 38303), (76, 38312), (94, 38516), (103, 38594), (109, 38642), (111, 38663), (112, 38666), (114, 38678), (115, 38690), (117, 38705), (120, 38738), (121, 38765), (136, 38855),

Gene: Sampson\_42 Start: 37640, Stop: 39247, Start Num: 4

Candidate Starts for Sampson\_42:

(Start: 4 @37640 has 18 MA's), (Start: 5 @37655 has 2 MA's), (8, 37763), (13, 38006), (15, 38045), (19, 38126), (36, 38315), (51, 38444), (54, 38483), (69, 38609), (76, 38684), (78, 38696), (87, 38825), (92, 38876), (98, 38915), (103, 38966), (111, 39032), (113, 39038), (117, 39074), (128, 39167), (133, 39212), (138, 39233),

Gene: Saronaya\_41 Start: 36119, Stop: 37723, Start Num: 4

Candidate Starts for Saronaya\_41:

(Start: 1 @36083 has 1 MA's), (Start: 4 @36119 has 18 MA's), (Start: 5 @36134 has 2 MA's), (13, 36485), (15, 36524), (22, 36626), (36, 36788), (37, 36797), (39, 36806), (40, 36812), (41, 36815), (43, 36845), (47, 36875), (49, 36893), (54, 36956), (60, 37016), (65, 37055), (75, 37142), (91, 37331), (103, 37433), (109, 37484), (111, 37505), (112, 37508), (115, 37532), (117, 37547), (120, 37580), (126, 37631), (135, 37685), (136, 37697),

Gene: SchottB\_40 Start: 37140, Stop: 38723, Start Num: 4

Candidate Starts for SchottB\_40:

(Start: 1 @37101 has 1 MA's), (Start: 4 @37140 has 18 MA's), (Start: 5 @37155 has 2 MA's), (11, 37425), (13, 37506), (15, 37545), (22, 37629), (37, 37800), (39, 37809), (40, 37815), (41, 37818), (43, 37848), (47, 37878), (54, 37959), (60, 38019), (75, 38145), (76, 38154), (86, 38280), (103, 38436), (109, 38484), (111, 38505), (112, 38508), (115, 38532), (117, 38547), (120, 38580), (121, 38607), (136, 38697),

Gene: Scioto\_43 Start: 37696, Stop: 39303, Start Num: 4

Candidate Starts for Scioto\_43:

(Start: 4 @37696 has 18 MA's), (Start: 5 @37711 has 2 MA's), (8, 37819), (13, 38062), (15, 38101), (19, 38182), (36, 38371), (51, 38500), (54, 38539), (69, 38665), (76, 38740), (78, 38752), (87, 38881), (92, 38932), (98, 38971), (103, 39022), (111, 39088), (113, 39094), (117, 39130), (128, 39223), (133, 39268), (138, 39289),

Gene: Tangerine\_41 Start: 36012, Stop: 37595, Start Num: 4

Candidate Starts for Tangerine\_41:

(Start: 1 @35973 has 1 MA's), (Start: 4 @36012 has 18 MA's), (Start: 5 @36027 has 2 MA's), (13, 36378), (15, 36417), (22, 36501), (37, 36672), (39, 36681), (40, 36687), (41, 36690), (43, 36720), (47, 36750), (54, 36831), (60, 36891), (75, 37017), (76, 37026), (103, 37308), (109, 37356), (111, 37377), (112, 37380), (115, 37404), (117, 37419), (120, 37452), (136, 37569),

Gene: Tardus\_43 Start: 37065, Stop: 38660, Start Num: 5

Candidate Starts for Tardus\_43:

(Start: 4 @37050 has 18 MA's), (Start: 5 @37065 has 2 MA's), (13, 37416), (15, 37455), (19, 37539), (36, 37728), (51, 37857), (54, 37896), (69, 38022), (76, 38097), (78, 38109), (87, 38238), (92, 38289), (98, 38328), (103, 38379), (111, 38445), (113, 38451), (117, 38487), (128, 38580), (133, 38625), (138, 38646),

Gene: Trogglehumper\_50 Start: 44419, Stop: 46098, Start Num: 17

Candidate Starts for Trogglehumper\_50:

(14, 44332), (Start: 17 @44419 has 1 MA's), (Start: 20 @44458 has 2 MA's), (43, 44698), (52, 44779), (89, 45124), (93, 45163), (95, 45187), (110, 45319), (117, 45373), (131, 45481), (143, 45625), (144, 45658), (145, 45667), (146, 45727), (147, 45733), (148, 45781), (150, 45841), (151, 45898), (152, 45931),

Gene: Tycho\_41 Start: 36099, Stop: 37682, Start Num: 4

Candidate Starts for Tycho\_41:

(Start: 1 @36060 has 1 MA's), (Start: 4 @36099 has 18 MA's), (Start: 5 @36114 has 2 MA's), (11, 36384), (13, 36465), (15, 36504), (22, 36588), (37, 36759), (39, 36768), (40, 36774), (41, 36777), (43, 36807), (47, 36837), (54, 36918), (60, 36978), (75, 37104), (76, 37113), (103, 37395), (109, 37443), (111, 37464), (112, 37467), (115, 37491), (117, 37506), (120, 37539), (136, 37656),

Gene: Vasanti\_18 Start: 16494, Stop: 17552, Start Num: 24

Candidate Starts for Vasanti\_18:

(12, 16344), (Start: 24 @16494 has 6 MA's), (37, 16662), (39, 16671), (40, 16677), (43, 16710), (54, 16821), (59, 16878), (74, 17010), (85, 17127), (106, 17289), (113, 17334), (120, 17403), (136, 17520),

Gene: Verity\_41 Start: 37882, Stop: 39492, Start Num: 4

Candidate Starts for Verity\_41:

(Start: 4 @37882 has 18 MA's), (Start: 5 @37897 has 2 MA's), (13, 38248), (15, 38287), (19, 38371), (34, 38554), (36, 38560), (54, 38728), (69, 38854), (76, 38929), (78, 38941), (87, 39070), (91, 39109), (92, 39121), (98, 39160), (103, 39211), (111, 39277), (113, 39283), (117, 39319), (128, 39412), (133, 39457), (136, 39475), (138, 39478),

Gene: ViaConlectus\_42 Start: 36330, Stop: 37937, Start Num: 4

Candidate Starts for ViaConlectus\_42:

(2, 36312), (Start: 4 @36330 has 18 MA's), (Start: 5 @36345 has 2 MA's), (13, 36696), (15, 36735), (19, 36816), (36, 37005), (51, 37134), (54, 37173), (69, 37299), (76, 37374), (78, 37386), (87, 37515), (92, 37566), (98, 37605), (103, 37656), (111, 37722), (113, 37728), (117, 37764), (128, 37857), (133, 37902), (138, 37923),

Gene: Weasels2\_67 Start: 28157, Stop: 29557, Start Num: 10

Candidate Starts for Weasels2\_67:

(Start: 10 @28157 has 3 MA's), (16, 28334), (26, 28478), (27, 28487), (28, 28499), (31, 28556), (44, 28670), (48, 28694), (61, 28844), (63, 28880), (67, 28892), (128, 29450),

Gene: Widow\_21 Start: 17493, Stop: 18578, Start Num: 20

Candidate Starts for Widow\_21:

(Start: 20 @17493 has 2 MA's), (25, 17529), (39, 17682), (40, 17688), (41, 17691), (42, 17718), (50, 17775), (55, 17838), (57, 17874), (64, 17934), (68, 17952), (79, 18039), (80, 18045), (83, 18054), (96, 18225), (105, 18300), (134, 18516), (142, 18570),

Gene: YorkOnyx\_42 Start: 36358, Stop: 37941, Start Num: 4

Candidate Starts for YorkOnyx\_42:

(Start: 1 @36319 has 1 MA's), (Start: 4 @36358 has 18 MA's), (Start: 5 @36373 has 2 MA's), (13, 36724), (15, 36763), (22, 36847), (37, 37018), (39, 37027), (40, 37033), (41, 37036), (43, 37066), (47, 37096), (54, 37177), (60, 37237), (75, 37363), (76, 37372), (94, 37576), (102, 37642), (103, 37654), (109, 37702), (111, 37723), (112, 37726), (114, 37738), (115, 37750), (117, 37765), (120, 37798), (121, 37825), (136, 37915),

Gene: Zipp\_41 Start: 37800, Stop: 39395, Start Num: 5

Candidate Starts for Zipp\_41:

(Start: 4 @37785 has 18 MA's), (Start: 5 @37800 has 2 MA's), (13, 38151), (15, 38190), (19, 38274), (36, 38463), (51, 38592), (54, 38631), (69, 38757), (78, 38844), (87, 38973), (91, 39012), (92, 39024), (98, 39063), (103, 39114), (109, 39159), (111, 39180), (113, 39186), (117, 39222), (128, 39315), (133, 39360), (136, 39378), (138, 39381), (140, 39387),

Gene: Zitch\_45 Start: 36483, Stop: 38093, Start Num: 4

Candidate Starts for Zitch\_45:

(Start: 4 @36483 has 18 MA's), (Start: 5 @36498 has 2 MA's), (13, 36849), (15, 36888), (19, 36972), (Start: 24 @37002 has 6 MA's), (34, 37155), (36, 37161), (46, 37245), (51, 37290), (54, 37329), (69, 37455), (76, 37530), (78, 37542), (87, 37671), (91, 37710), (92, 37722), (98, 37761), (103, 37812), (111, 37878), (113, 37884), (117, 37920), (128, 38013), (133, 38058), (138, 38079),