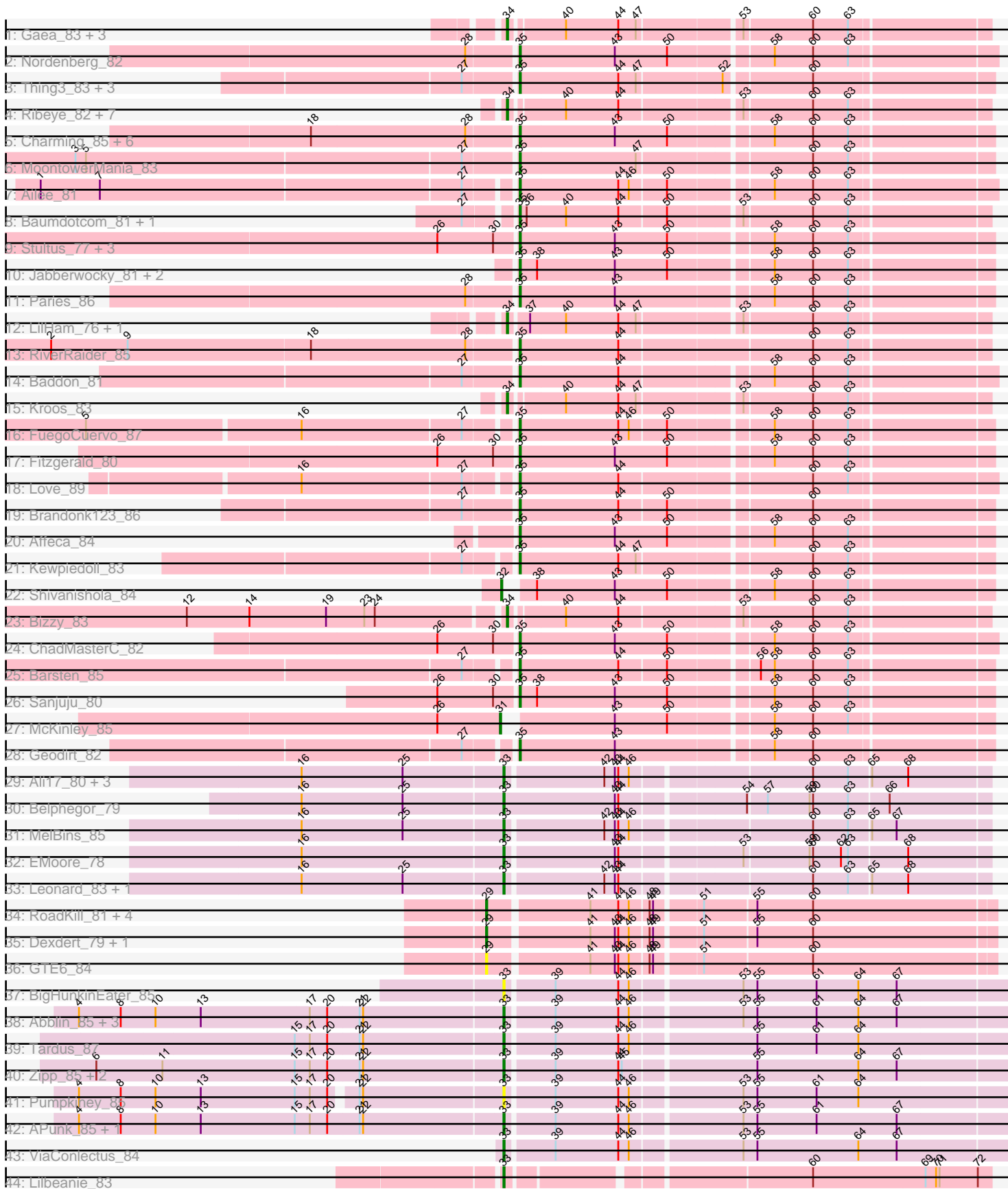


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Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. 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 294642 Report

This analysis was run 04/18/26 on database version 643.

Pham number 294642 has 85 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Gaea\_83, Ashertheman\_82, StorminNorm\_83, YorkOnyx\_82
- Track 2 : Nordenberg\_82
- Track 3 : Thing3\_83, Galadriel\_83, Kamashten\_83, McCrothy\_81
- Track 4 : Ribeye\_82, Flatwoods\_83, Derg\_75, Tycho\_82, Tangerine\_83, Gustavo\_84, Kwobi\_85, Saronaya\_84
- Track 5 : Charming\_85, Tangent\_85, Lennon\_82, BobBob\_84, Fosterous\_84, Rofo\_82, Vivi2\_86
- Track 6 : MoontowerMania\_83
- Track 7 : Ailee\_81
- Track 8 : Baumdotcom\_81, SchottB\_81
- Track 9 : Stultus\_77, Sedona\_80, Bibwit\_80, Keitabear\_80
- Track 10 : Jabberwocky\_81, Angelicage\_81, Sitar\_82
- Track 11 : Paries\_86
- Track 12 : LilHam\_76, JKSyngboy\_79
- Track 13 : RiverRaider\_85
- Track 14 : Baddon\_81
- Track 15 : Kroos\_83
- Track 16 : FuegoCuervo\_87
- Track 17 : Fitzgerald\_80
- Track 18 : Love\_89
- Track 19 : Brandonk123\_86
- Track 20 : Affeca\_84
- Track 21 : Kewpiedoll\_83
- Track 22 : Shivanishola\_84
- Track 23 : Bizzy\_83
- Track 24 : ChadMasterC\_82
- Track 25 : Barsten\_85
- Track 26 : Sanjuju\_80
- Track 27 : McKinley\_85
- Track 28 : Geodirt\_82
- Track 29 : Ali17\_80, Inspectinfecti\_84, Hans\_84, Phauci\_75
- Track 30 : Belphegor\_79
- Track 31 : MelBins\_85
- Track 32 : EMoore\_78
- Track 33 : Leonard\_83, Phinally\_83
- Track 34 : RoadKill\_81, Chickadee\_84, Twonlo\_81, EdmundFerry\_82, Kwekel\_84
- Track 35 : Dxdert\_79, Tiamoceli\_77

- Track 36 : GTE6\_84
- Track 37 : BigHunkinEater\_85
- Track 38 : Abblin\_85, Sampson\_87, Scioto\_85, Natkenzie\_85
- Track 39 : Tardus\_87
- Track 40 : Zipp\_85, DoctorFroggo\_85, Delrey21\_85
- Track 41 : Pumpkiney\_85
- Track 42 : APunk\_85, Zitch\_87
- Track 43 : ViaConlectus\_84
- Track 44 : Lilbeanie\_83

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

The start number called the most often in the published annotations is 35, it was called in 35 of the 78 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Affeca\_84, Ailee\_81, Angelicage\_81, Baddon\_81, Barsten\_85, Baumdotcom\_81, Bibwit\_80, BobBob\_84, Brandonk123\_86, ChadMasterC\_82, Charming\_85, Fitzgerald\_80, Fosterous\_84, FuegoCuervo\_87, Galadriel\_83, Geodirt\_82, Jabberwocky\_81, Kamashten\_83, Keitabear\_80, Kewpiedoll\_83, Lennon\_82, Love\_89, McCrothy\_81, MoontowerMania\_83, Nordenberg\_82, Paries\_86, RiverRaider\_85, Rofo\_82, Sanjuju\_80, SchottB\_81, Sedona\_80, Sitar\_82, Stultus\_77, Tangent\_85, Thing3\_83, Vivi2\_86,

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

- 

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

- APunk\_85, Abblin\_85, Ali17\_80, Ashertheman\_82, Belphegor\_79, BigHunkinEater\_85, Bizzy\_83, Chickadee\_84, Delrey21\_85, Derg\_75, Dxdert\_79, DoctorFroggo\_85, EMoore\_78, EdmundFerry\_82, Flatwoods\_83, GTE6\_84, Gaea\_83, Gustavo\_84, Hans\_84, Inspectinfecti\_84, JKSyngboy\_79, Kroos\_83, Kwekel\_84, Kwobi\_85, Leonard\_83, LilHam\_76, Lilbeanie\_83, McKinley\_85, MelBins\_85, Natkenzie\_85, Phauci\_75, Phinally\_83, Pumpkiney\_85, Ribeye\_82, RoadKill\_81, Sampson\_87, Saronaya\_84, Scioto\_85, Shivanishola\_84, StorminNorm\_83, Tangerine\_83, Tardus\_87, Tiamoceli\_77, Twonlo\_81, Tycho\_82, ViaConlectus\_84, YorkOnyx\_82, Zipp\_85, Zitch\_87,

**Summary by start number:**

Start 29:

- Found in 8 of 85 ( 9.4% ) of genes in pham
- Manual Annotations of this start: 7 of 78
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chickadee\_84 (DE3), Dxdert\_79 (DE3), EdmundFerry\_82 (DE3), GTE6\_84 (DE3), Kwekel\_84 (DE3), RoadKill\_81 (DE3), Tiamoceli\_77 (DE3), Twonlo\_81 (DE3),

Start 31:

- Found in 1 of 85 ( 1.2% ) of genes in pham

- Manual Annotations of this start: 1 of 78
- Called 100.0% of time when present
- Phage (with cluster) where this start called: McKinley\_85 (DE1),

#### Start 32:

- Found in 1 of 85 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 78
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Shivanishola\_84 (DE1),

#### Start 33:

- Found in 23 of 85 ( 27.1% ) of genes in pham
- Manual Annotations of this start: 18 of 78
- Called 100.0% of time when present
- Phage (with cluster) where this start called: APunk\_85 (DE4), Abblin\_85 (DE4), Ali17\_80 (DE2), Belphegor\_79 (DE2), BigHunkinEater\_85 (DE4), Delrey21\_85 (DE4), DoctorFroggo\_85 (DE4), EMoore\_78 (DE2), Hans\_84 (DE2), Inspectinfecti\_84 (DE2), Leonard\_83 (DE2), Lilbeanie\_83 (DE5), MelBins\_85 (DE2), Natkenzie\_85 (DE4), Phauci\_75 (DE2), Phinally\_83 (DE2), Pumpkiney\_85 (DE4), Sampson\_87 (DE4), Scioto\_85 (DE4), Tardus\_87 (DE4), ViaConlectus\_84 (DE4), Zipp\_85 (DE4), Zitch\_87 (DE4),

#### Start 34:

- Found in 16 of 85 ( 18.8% ) of genes in pham
- Manual Annotations of this start: 16 of 78
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ashertheman\_82 (DE1), Bizzy\_83 (DE1), Derg\_75 (DE1), Flatwoods\_83 (DE1), Gaea\_83 (DE1), Gustavo\_84 (DE1), JKSyngboy\_79 (DE1), Kroos\_83 (DE1), Kwobi\_85 (DE1), LilHam\_76 (DE1), Ribeye\_82 (DE1), Saronaya\_84 (DE1), StorminNorm\_83 (DE1), Tangerine\_83 (DE1), Tycho\_82 (DE1), YorkOnyx\_82 (DE1),

#### Start 35:

- Found in 36 of 85 ( 42.4% ) of genes in pham
- Manual Annotations of this start: 35 of 78
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Affeca\_84 (DE1), Ailee\_81 (DE1), Angelicage\_81 (DE1), Baddon\_81 (DE1), Barsten\_85 (DE1), Baumdotcom\_81 (DE1), Bibwit\_80 (DE1), BobBob\_84 (DE1), Brandonk123\_86 (DE1), ChadMasterC\_82 (DE1), Charming\_85 (DE1), Fitzgerald\_80 (DE1), Fosterous\_84 (DE1), FuegoCuervo\_87 (DE1), Galadriel\_83 (DE1), Geodirt\_82 (DE1), Jabberwocky\_81 (DE1), Kamashten\_83 (DE1), Keitabear\_80 (DE1), Kewpiedoll\_83 (DE1), Lennon\_82 (DE1), Love\_89 (DE1), McCrothy\_81 (DE1), MoontowerMania\_83 (DE1), Nordenberg\_82 (DE1), Paries\_86 (DE1), RiverRaider\_85 (DE1), Rofo\_82 (DE1), Sanjuju\_80 (DE1), SchottB\_81 (DE1), Sedona\_80 (DE1), Sitar\_82 (DE1), Stultus\_77 (DE1), Tangent\_85 (DE1), Thing3\_83 (DE1), Vivi2\_86 (DE1),

### Summary by clusters:

There are 5 clusters represented in this pham: DE1, DE2, DE3, DE4, DE5,

Info for manual annotations of cluster DE1:

- Start number 31 was manually annotated 1 time for cluster DE1.

- Start number 32 was manually annotated 1 time for cluster DE1.
- Start number 34 was manually annotated 16 times for cluster DE1.
- Start number 35 was manually annotated 35 times for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 33 was manually annotated 9 times for cluster DE2.

Info for manual annotations of cluster DE3:

- Start number 29 was manually annotated 7 times for cluster DE3.

Info for manual annotations of cluster DE4:

- Start number 33 was manually annotated 8 times for cluster DE4.

Info for manual annotations of cluster DE5:

- Start number 33 was manually annotated 1 time for cluster DE5.

### **Gene Information:**

Gene: APunk\_85 Start: 57620, Stop: 58039, Start Num: 33

Candidate Starts for APunk\_85:

(4, 57260), (8, 57296), (10, 57326), (13, 57365), (15, 57446), (17, 57458), (20, 57473), (21, 57500), (22, 57503), (Start: 33 @57620 has 18 MA's), (39, 57659), (44, 57713), (46, 57722), (53, 57812), (55, 57824), (61, 57875), (67, 57944),

Gene: Abblin\_85 Start: 57778, Stop: 58197, Start Num: 33

Candidate Starts for Abblin\_85:

(4, 57418), (8, 57454), (10, 57484), (13, 57523), (17, 57616), (20, 57631), (21, 57658), (22, 57661), (Start: 33 @57778 has 18 MA's), (39, 57817), (44, 57871), (46, 57880), (53, 57970), (55, 57982), (61, 58033), (64, 58069), (67, 58102),

Gene: Affeca\_84 Start: 57553, Stop: 57939, Start Num: 35

Candidate Starts for Affeca\_84:

(Start: 35 @57553 has 35 MA's), (43, 57634), (50, 57679), (58, 57760), (60, 57793), (63, 57823),

Gene: Ailee\_81 Start: 56885, Stop: 57271, Start Num: 35

Candidate Starts for Ailee\_81:

(1, 56492), (7, 56543), (27, 56849), (Start: 35 @56885 has 35 MA's), (44, 56969), (46, 56978), (50, 57008), (58, 57089), (60, 57122), (63, 57152),

Gene: Ali17\_80 Start: 56155, Stop: 56547, Start Num: 33

Candidate Starts for Ali17\_80:

(16, 55984), (25, 56071), (Start: 33 @56155 has 18 MA's), (42, 56236), (43, 56245), (44, 56248), (46, 56257), (60, 56401), (63, 56431), (65, 56449), (68, 56479),

Gene: Angelicage\_81 Start: 57521, Stop: 57907, Start Num: 35

Candidate Starts for Angelicage\_81:

(Start: 35 @57521 has 35 MA's), (38, 57536), (43, 57602), (50, 57647), (58, 57728), (60, 57761), (63, 57791),

Gene: Ashertheman\_82 Start: 55847, Stop: 56230, Start Num: 34

Candidate Starts for Ashertheman\_82:

(Start: 34 @55847 has 16 MA's), (40, 55889), (44, 55934), (47, 55949), (53, 56030), (60, 56087), (63, 56117),

Gene: Baddon\_81 Start: 56800, Stop: 57186, Start Num: 35

Candidate Starts for Baddon\_81:

(27, 56758), (Start: 35 @56800 has 35 MA's), (44, 56884), (58, 57004), (60, 57037), (63, 57067),

Gene: Barsten\_85 Start: 57789, Stop: 58172, Start Num: 35

Candidate Starts for Barsten\_85:

(27, 57753), (Start: 35 @57789 has 35 MA's), (44, 57873), (50, 57912), (56, 57981), (58, 57993), (60, 58026), (63, 58056),

Gene: Baumdotcom\_81 Start: 56261, Stop: 56641, Start Num: 35

Candidate Starts for Baumdotcom\_81:

(27, 56225), (Start: 35 @56261 has 35 MA's), (36, 56267), (40, 56300), (44, 56345), (50, 56384), (53, 56441), (60, 56498), (63, 56528),

Gene: Belphegor\_79 Start: 57814, Stop: 58212, Start Num: 33

Candidate Starts for Belphegor\_79:

(16, 57643), (25, 57730), (Start: 33 @57814 has 18 MA's), (43, 57910), (44, 57913), (54, 58012), (57, 58027), (59, 58063), (60, 58066), (63, 58096), (66, 58129),

Gene: Bibwit\_80 Start: 55982, Stop: 56368, Start Num: 35

Candidate Starts for Bibwit\_80:

(26, 55916), (30, 55964), (Start: 35 @55982 has 35 MA's), (43, 56063), (50, 56108), (58, 56189), (60, 56222), (63, 56252),

Gene: BigHunkinEater\_85 Start: 57248, Stop: 57667, Start Num: 33

Candidate Starts for BigHunkinEater\_85:

(Start: 33 @57248 has 18 MA's), (39, 57287), (44, 57341), (46, 57350), (53, 57440), (55, 57452), (61, 57503), (64, 57539), (67, 57572),

Gene: Bizzy\_83 Start: 55879, Stop: 56262, Start Num: 34

Candidate Starts for Bizzy\_83:

(12, 55615), (14, 55669), (19, 55735), (23, 55768), (24, 55777), (Start: 34 @55879 has 16 MA's), (40, 55921), (44, 55966), (53, 56062), (60, 56119), (63, 56149),

Gene: BobBob\_84 Start: 56821, Stop: 57207, Start Num: 35

Candidate Starts for BobBob\_84:

(18, 56650), (28, 56782), (Start: 35 @56821 has 35 MA's), (43, 56902), (50, 56947), (58, 57028), (60, 57061), (63, 57091),

Gene: Brandonk123\_86 Start: 56989, Stop: 57372, Start Num: 35

Candidate Starts for Brandonk123\_86:

(27, 56947), (Start: 35 @56989 has 35 MA's), (44, 57073), (50, 57112), (60, 57226),

Gene: ChadMasterC\_82 Start: 58240, Stop: 58629, Start Num: 35

Candidate Starts for ChadMasterC\_82:

(26, 58174), (30, 58222), (Start: 35 @58240 has 35 MA's), (43, 58321), (50, 58366), (58, 58447), (60, 58480), (63, 58510),

Gene: Charming\_85 Start: 56280, Stop: 56666, Start Num: 35

Candidate Starts for Charming\_85:

(18, 56109), (28, 56241), (Start: 35 @56280 has 35 MA's), (43, 56361), (50, 56406), (58, 56487), (60, 56520), (63, 56550),

Gene: Chickadee\_84 Start: 54799, Stop: 55209, Start Num: 29

Candidate Starts for Chickadee\_84:

(Start: 29 @54799 has 7 MA's), (41, 54880), (44, 54904), (46, 54913), (48, 54928), (49, 54931), (51, 54967), (55, 55009), (60, 55057),

Gene: Delrey21\_85 Start: 59189, Stop: 59608, Start Num: 33

Candidate Starts for Delrey21\_85:

(6, 58844), (11, 58901), (15, 59015), (17, 59027), (20, 59042), (21, 59069), (22, 59072), (Start: 33 @59189 has 18 MA's), (39, 59228), (44, 59282), (45, 59285), (55, 59393), (64, 59480), (67, 59513),

Gene: Derg\_75 Start: 54501, Stop: 54884, Start Num: 34

Candidate Starts for Derg\_75:

(Start: 34 @54501 has 16 MA's), (40, 54543), (44, 54588), (53, 54684), (60, 54741), (63, 54771),

Gene: Dextert\_79 Start: 53308, Stop: 53718, Start Num: 29

Candidate Starts for Dextert\_79:

(Start: 29 @53308 has 7 MA's), (41, 53389), (43, 53410), (44, 53413), (46, 53422), (48, 53437), (49, 53440), (51, 53476), (55, 53518), (60, 53566),

Gene: DoctorFroggo\_85 Start: 59189, Stop: 59608, Start Num: 33

Candidate Starts for DoctorFroggo\_85:

(6, 58844), (11, 58901), (15, 59015), (17, 59027), (20, 59042), (21, 59069), (22, 59072), (Start: 33 @59189 has 18 MA's), (39, 59228), (44, 59282), (45, 59285), (55, 59393), (64, 59480), (67, 59513),

Gene: EMoore\_78 Start: 56711, Stop: 57103, Start Num: 33

Candidate Starts for EMoore\_78:

(16, 56540), (Start: 33 @56711 has 18 MA's), (43, 56801), (44, 56804), (53, 56900), (59, 56954), (60, 56957), (62, 56981), (63, 56987), (68, 57035),

Gene: EdmundFerry\_82 Start: 54342, Stop: 54752, Start Num: 29

Candidate Starts for EdmundFerry\_82:

(Start: 29 @54342 has 7 MA's), (41, 54423), (44, 54447), (46, 54456), (48, 54471), (49, 54474), (51, 54510), (55, 54552), (60, 54600),

Gene: Fitzgerald\_80 Start: 57132, Stop: 57518, Start Num: 35

Candidate Starts for Fitzgerald\_80:

(26, 57066), (30, 57114), (Start: 35 @57132 has 35 MA's), (43, 57213), (50, 57258), (58, 57339), (60, 57372), (63, 57402),

Gene: Flatwoods\_83 Start: 55414, Stop: 55797, Start Num: 34

Candidate Starts for Flatwoods\_83:

(Start: 34 @55414 has 16 MA's), (40, 55456), (44, 55501), (53, 55597), (60, 55654), (63, 55684),

Gene: Fosterous\_84 Start: 57273, Stop: 57659, Start Num: 35

Candidate Starts for Fosterous\_84:

(18, 57102), (28, 57234), (Start: 35 @57273 has 35 MA's), (43, 57354), (50, 57399), (58, 57480), (60, 57513), (63, 57543),

Gene: FuegoCuervo\_87 Start: 57325, Stop: 57708, Start Num: 35

Candidate Starts for FuegoCuervo\_87:

(5, 56974), (16, 57154), (27, 57289), (Start: 35 @57325 has 35 MA's), (44, 57409), (46, 57418), (50, 57448), (58, 57529), (60, 57562), (63, 57592),

Gene: GTE6\_84 Start: 55485, Stop: 55895, Start Num: 29

Candidate Starts for GTE6\_84:

(Start: 29 @55485 has 7 MA's), (41, 55566), (43, 55587), (44, 55590), (46, 55599), (48, 55614), (49, 55617), (51, 55653), (60, 55743),

Gene: Gaea\_83 Start: 55765, Stop: 56148, Start Num: 34

Candidate Starts for Gaea\_83:

(Start: 34 @55765 has 16 MA's), (40, 55807), (44, 55852), (47, 55867), (53, 55948), (60, 56005), (63, 56035),

Gene: Galadriel\_83 Start: 57492, Stop: 57875, Start Num: 35

Candidate Starts for Galadriel\_83:

(27, 57450), (Start: 35 @57492 has 35 MA's), (44, 57576), (47, 57591), (52, 57660), (60, 57729),

Gene: Geodirt\_82 Start: 57783, Stop: 58169, Start Num: 35

Candidate Starts for Geodirt\_82:

(27, 57747), (Start: 35 @57783 has 35 MA's), (43, 57864), (58, 57990), (60, 58023),

Gene: Gustavo\_84 Start: 56597, Stop: 56980, Start Num: 34

Candidate Starts for Gustavo\_84:

(Start: 34 @56597 has 16 MA's), (40, 56639), (44, 56684), (53, 56780), (60, 56837), (63, 56867),

Gene: Hans\_84 Start: 57079, Stop: 57471, Start Num: 33

Candidate Starts for Hans\_84:

(16, 56908), (25, 56995), (Start: 33 @57079 has 18 MA's), (42, 57160), (43, 57169), (44, 57172), (46, 57181), (60, 57325), (63, 57355), (65, 57373), (68, 57403),

Gene: Inspectinfecti\_84 Start: 57059, Stop: 57451, Start Num: 33

Candidate Starts for Inspectinfecti\_84:

(16, 56888), (25, 56975), (Start: 33 @57059 has 18 MA's), (42, 57140), (43, 57149), (44, 57152), (46, 57161), (60, 57305), (63, 57335), (65, 57353), (68, 57383),

Gene: JKSyngboy\_79 Start: 56278, Stop: 56664, Start Num: 34

Candidate Starts for JKSyngboy\_79:

(Start: 34 @56278 has 16 MA's), (37, 56293), (40, 56323), (44, 56368), (47, 56383), (53, 56464), (60, 56521), (63, 56551),

Gene: Jabberwocky\_81 Start: 57593, Stop: 57979, Start Num: 35

Candidate Starts for Jabberwocky\_81:

(Start: 35 @57593 has 35 MA's), (38, 57608), (43, 57674), (50, 57719), (58, 57800), (60, 57833), (63, 57863),

Gene: Kamashten\_83 Start: 57386, Stop: 57769, Start Num: 35

Candidate Starts for Kamashten\_83:

(27, 57344), (Start: 35 @57386 has 35 MA's), (44, 57470), (47, 57485), (52, 57554), (60, 57623),

Gene: Keitabear\_80 Start: 57903, Stop: 58289, Start Num: 35

Candidate Starts for Keitabear\_80:

(26, 57837), (30, 57885), (Start: 35 @57903 has 35 MA's), (43, 57984), (50, 58029), (58, 58110), (60, 58143), (63, 58173),

Gene: Kewpiedoll\_83 Start: 57771, Stop: 58154, Start Num: 35

Candidate Starts for Kewpiedoll\_83:

(27, 57735), (Start: 35 @57771 has 35 MA's), (44, 57855), (47, 57870), (60, 58008), (63, 58038),

Gene: Kroos\_83 Start: 56540, Stop: 56923, Start Num: 34

Candidate Starts for Kroos\_83:

(Start: 34 @56540 has 16 MA's), (40, 56582), (44, 56627), (47, 56642), (53, 56723), (60, 56780), (63, 56810),

Gene: Kwekel\_84 Start: 54712, Stop: 55122, Start Num: 29

Candidate Starts for Kwekel\_84:

(Start: 29 @54712 has 7 MA's), (41, 54793), (44, 54817), (46, 54826), (48, 54841), (49, 54844), (51, 54880), (55, 54922), (60, 54970),

Gene: Kwobi\_85 Start: 57049, Stop: 57432, Start Num: 34

Candidate Starts for Kwobi\_85:

(Start: 34 @57049 has 16 MA's), (40, 57091), (44, 57136), (53, 57232), (60, 57289), (63, 57319),

Gene: Lennon\_82 Start: 58333, Stop: 58719, Start Num: 35

Candidate Starts for Lennon\_82:

(18, 58162), (28, 58294), (Start: 35 @58333 has 35 MA's), (43, 58414), (50, 58459), (58, 58540), (60, 58573), (63, 58603),

Gene: Leonard\_83 Start: 57122, Stop: 57514, Start Num: 33

Candidate Starts for Leonard\_83:

(16, 56951), (25, 57038), (Start: 33 @57122 has 18 MA's), (42, 57203), (43, 57212), (44, 57215), (60, 57368), (63, 57398), (65, 57416), (68, 57446),

Gene: LilHam\_76 Start: 53895, Stop: 54281, Start Num: 34

Candidate Starts for LilHam\_76:

(Start: 34 @53895 has 16 MA's), (37, 53910), (40, 53940), (44, 53985), (47, 54000), (53, 54081), (60, 54138), (63, 54168),

Gene: Lilbeanie\_83 Start: 52031, Stop: 52420, Start Num: 33

Candidate Starts for Lilbeanie\_83:

(Start: 33 @52031 has 18 MA's), (60, 52268), (69, 52364), (70, 52373), (71, 52376), (72, 52409),

Gene: Love\_89 Start: 58411, Stop: 58797, Start Num: 35

Candidate Starts for Love\_89:

(16, 58240), (27, 58375), (Start: 35 @58411 has 35 MA's), (44, 58495), (60, 58648), (63, 58678),

Gene: McCrothy\_81 Start: 58116, Stop: 58499, Start Num: 35

Candidate Starts for McCrothy\_81:

(27, 58074), (Start: 35 @58116 has 35 MA's), (44, 58200), (47, 58215), (52, 58284), (60, 58353),

Gene: McKinley\_85 Start: 57124, Stop: 57510, Start Num: 31

Candidate Starts for McKinley\_85:

(26, 57070), (Start: 31 @57124 has 1 MA's), (43, 57205), (50, 57250), (58, 57331), (60, 57364), (63, 57394),

Gene: MelBins\_85 Start: 57514, Stop: 57906, Start Num: 33

Candidate Starts for MelBins\_85:

(16, 57343), (25, 57430), (Start: 33 @57514 has 18 MA's), (42, 57595), (43, 57604), (44, 57607), (46, 57616), (60, 57760), (63, 57790), (65, 57808), (67, 57829),

Gene: MoontowerMania\_83 Start: 58245, Stop: 58628, Start Num: 35

Candidate Starts for MoontowerMania\_83:

(3, 57876), (5, 57885), (27, 58203), (Start: 35 @58245 has 35 MA's), (47, 58344), (60, 58482), (63, 58512),

Gene: Natkenzie\_85 Start: 57778, Stop: 58197, Start Num: 33

Candidate Starts for Natkenzie\_85:

(4, 57418), (8, 57454), (10, 57484), (13, 57523), (17, 57616), (20, 57631), (21, 57658), (22, 57661), (Start: 33 @57778 has 18 MA's), (39, 57817), (44, 57871), (46, 57880), (53, 57970), (55, 57982), (61, 58033), (64, 58069), (67, 58102),

Gene: Nordenberg\_82 Start: 56127, Stop: 56516, Start Num: 35

Candidate Starts for Nordenberg\_82:

(28, 56088), (Start: 35 @56127 has 35 MA's), (43, 56208), (50, 56253), (58, 56334), (60, 56367), (63, 56397),

Gene: Paries\_86 Start: 58415, Stop: 58801, Start Num: 35

Candidate Starts for Paries\_86:

(28, 58376), (Start: 35 @58415 has 35 MA's), (43, 58496), (58, 58622), (60, 58655), (63, 58685),

Gene: Phauci\_75 Start: 54156, Stop: 54548, Start Num: 33

Candidate Starts for Phauci\_75:

(16, 53985), (25, 54072), (Start: 33 @54156 has 18 MA's), (42, 54237), (43, 54246), (44, 54249), (46, 54258), (60, 54402), (63, 54432), (65, 54450), (68, 54480),

Gene: Phinally\_83 Start: 57119, Stop: 57511, Start Num: 33

Candidate Starts for Phinally\_83:

(16, 56948), (25, 57035), (Start: 33 @57119 has 18 MA's), (42, 57200), (43, 57209), (44, 57212), (60, 57365), (63, 57395), (65, 57413), (68, 57443),

Gene: Pumpkiney\_85 Start: 56367, Stop: 56786, Start Num: 33

Candidate Starts for Pumpkiney\_85:

(4, 56016), (8, 56052), (10, 56082), (13, 56121), (15, 56202), (17, 56214), (20, 56229), (21, 56247), (22, 56250), (Start: 33 @56367 has 18 MA's), (39, 56406), (44, 56460), (46, 56469), (53, 56559), (55, 56571), (61, 56622), (64, 56658),

Gene: Ribeye\_82 Start: 55740, Stop: 56123, Start Num: 34

Candidate Starts for Ribeye\_82:

(Start: 34 @55740 has 16 MA's), (40, 55782), (44, 55827), (53, 55923), (60, 55980), (63, 56010),

Gene: RiverRaider\_85 Start: 55471, Stop: 55857, Start Num: 35

Candidate Starts for RiverRaider\_85:

(2, 55078), (9, 55144), (18, 55300), (28, 55432), (Start: 35 @55471 has 35 MA's), (44, 55555), (60, 55714), (63, 55744),

Gene: RoadKill\_81 Start: 54241, Stop: 54651, Start Num: 29

Candidate Starts for RoadKill\_81:

(Start: 29 @54241 has 7 MA's), (41, 54322), (44, 54346), (46, 54355), (48, 54370), (49, 54373), (51, 54409), (55, 54451), (60, 54499),

Gene: Rofo\_82 Start: 56856, Stop: 57242, Start Num: 35

Candidate Starts for Rofo\_82:

(18, 56685), (28, 56817), (Start: 35 @56856 has 35 MA's), (43, 56937), (50, 56982), (58, 57063), (60, 57096), (63, 57126),

Gene: Sampson\_87 Start: 57929, Stop: 58348, Start Num: 33

Candidate Starts for Sampson\_87:

(4, 57569), (8, 57605), (10, 57635), (13, 57674), (17, 57767), (20, 57782), (21, 57809), (22, 57812), (Start: 33 @57929 has 18 MA's), (39, 57968), (44, 58022), (46, 58031), (53, 58121), (55, 58133), (61, 58184), (64, 58220), (67, 58253),

Gene: Sanjuju\_80 Start: 57218, Stop: 57604, Start Num: 35

Candidate Starts for Sanjuju\_80:

(26, 57152), (30, 57200), (Start: 35 @57218 has 35 MA's), (38, 57233), (43, 57299), (50, 57344), (58, 57425), (60, 57458), (63, 57488),

Gene: Saronaya\_84 Start: 56597, Stop: 56980, Start Num: 34

Candidate Starts for Saronaya\_84:

(Start: 34 @56597 has 16 MA's), (40, 56639), (44, 56684), (53, 56780), (60, 56837), (63, 56867),

Gene: SchottB\_81 Start: 56675, Stop: 57055, Start Num: 35

Candidate Starts for SchottB\_81:

(27, 56639), (Start: 35 @56675 has 35 MA's), (36, 56681), (40, 56714), (44, 56759), (50, 56798), (53, 56855), (60, 56912), (63, 56942),

Gene: Scioto\_85 Start: 57779, Stop: 58198, Start Num: 33

Candidate Starts for Scioto\_85:

(4, 57419), (8, 57455), (10, 57485), (13, 57524), (17, 57617), (20, 57632), (21, 57659), (22, 57662), (Start: 33 @57779 has 18 MA's), (39, 57818), (44, 57872), (46, 57881), (53, 57971), (55, 57983), (61, 58034), (64, 58070), (67, 58103),

Gene: Sedona\_80 Start: 57715, Stop: 58101, Start Num: 35

Candidate Starts for Sedona\_80:

(26, 57649), (30, 57697), (Start: 35 @57715 has 35 MA's), (43, 57796), (50, 57841), (58, 57922), (60, 57955), (63, 57985),

Gene: Shivanishola\_84 Start: 55879, Stop: 56265, Start Num: 32

Candidate Starts for Shivanishola\_84:

(Start: 32 @55879 has 1 MA's), (38, 55894), (43, 55960), (50, 56005), (58, 56086), (60, 56119), (63, 56149),

Gene: Sitar\_82 Start: 58001, Stop: 58390, Start Num: 35

Candidate Starts for Sitar\_82:

(Start: 35 @58001 has 35 MA's), (38, 58016), (43, 58082), (50, 58127), (58, 58208), (60, 58241), (63, 58271),

Gene: StorminNorm\_83 Start: 56541, Stop: 56924, Start Num: 34

Candidate Starts for StorminNorm\_83:

(Start: 34 @56541 has 16 MA's), (40, 56583), (44, 56628), (47, 56643), (53, 56724), (60, 56781), (63, 56811),

Gene: Stultus\_77 Start: 56009, Stop: 56395, Start Num: 35

Candidate Starts for Stultus\_77:

(26, 55943), (30, 55991), (Start: 35 @56009 has 35 MA's), (43, 56090), (50, 56135), (58, 56216), (60, 56249), (63, 56279),

Gene: Tangent\_85 Start: 56561, Stop: 56947, Start Num: 35

Candidate Starts for Tangent\_85:

(18, 56390), (28, 56522), (Start: 35 @56561 has 35 MA's), (43, 56642), (50, 56687), (58, 56768), (60, 56801), (63, 56831),

Gene: Tangerine\_83 Start: 55873, Stop: 56256, Start Num: 34

Candidate Starts for Tangerine\_83:

(Start: 34 @55873 has 16 MA's), (40, 55915), (44, 55960), (53, 56056), (60, 56113), (63, 56143),

Gene: Tardus\_87 Start: 58271, Stop: 58690, Start Num: 33

Candidate Starts for Tardus\_87:

(15, 58097), (17, 58109), (20, 58124), (21, 58151), (22, 58154), (Start: 33 @58271 has 18 MA's), (39, 58310), (44, 58364), (46, 58373), (55, 58475), (61, 58526), (64, 58562),

Gene: Thing3\_83 Start: 57386, Stop: 57769, Start Num: 35

Candidate Starts for Thing3\_83:

(27, 57344), (Start: 35 @57386 has 35 MA's), (44, 57470), (47, 57485), (52, 57554), (60, 57623),

Gene: Tiamoceli\_77 Start: 54131, Stop: 54541, Start Num: 29

Candidate Starts for Tiamoceli\_77:

(Start: 29 @54131 has 7 MA's), (41, 54212), (43, 54233), (44, 54236), (46, 54245), (48, 54260), (49, 54263), (51, 54299), (55, 54341), (60, 54389),

Gene: Twonlo\_81 Start: 54832, Stop: 55242, Start Num: 29

Candidate Starts for Twonlo\_81:

(Start: 29 @54832 has 7 MA's), (41, 54913), (44, 54937), (46, 54946), (48, 54961), (49, 54964), (51, 55000), (55, 55042), (60, 55090),

Gene: Tycho\_82 Start: 56075, Stop: 56458, Start Num: 34

Candidate Starts for Tycho\_82:

(Start: 34 @56075 has 16 MA's), (40, 56117), (44, 56162), (53, 56258), (60, 56315), (63, 56345),

Gene: ViaConlectus\_84 Start: 56617, Stop: 57036, Start Num: 33

Candidate Starts for ViaConlectus\_84:

(Start: 33 @56617 has 18 MA's), (39, 56656), (44, 56710), (46, 56719), (53, 56809), (55, 56821), (64, 56908), (67, 56941),

Gene: Vivi2\_86 Start: 57617, Stop: 58003, Start Num: 35

Candidate Starts for Vivi2\_86:

(18, 57446), (28, 57578), (Start: 35 @57617 has 35 MA's), (43, 57698), (50, 57743), (58, 57824), (60, 57857), (63, 57887),

Gene: YorkOnyx\_82 Start: 55988, Stop: 56368, Start Num: 34

Candidate Starts for YorkOnyx\_82:

(Start: 34 @55988 has 16 MA's), (40, 56027), (44, 56072), (47, 56087), (53, 56168), (60, 56225), (63, 56255),

Gene: Zipp\_85 Start: 58932, Stop: 59351, Start Num: 33

Candidate Starts for Zipp\_85:

(6, 58587), (11, 58644), (15, 58758), (17, 58770), (20, 58785), (21, 58812), (22, 58815), (Start: 33 @58932 has 18 MA's), (39, 58971), (44, 59025), (45, 59028), (55, 59136), (64, 59223), (67, 59256),

Gene: Zitch\_87 Start: 57244, Stop: 57663, Start Num: 33

Candidate Starts for Zitch\_87:

(4, 56884), (8, 56920), (10, 56950), (13, 56989), (15, 57070), (17, 57082), (20, 57097), (21, 57124), (22, 57127), (Start: 33 @57244 has 18 MA's), (39, 57283), (44, 57337), (46, 57346), (53, 57436), (55, 57448), (61, 57499), (67, 57568),