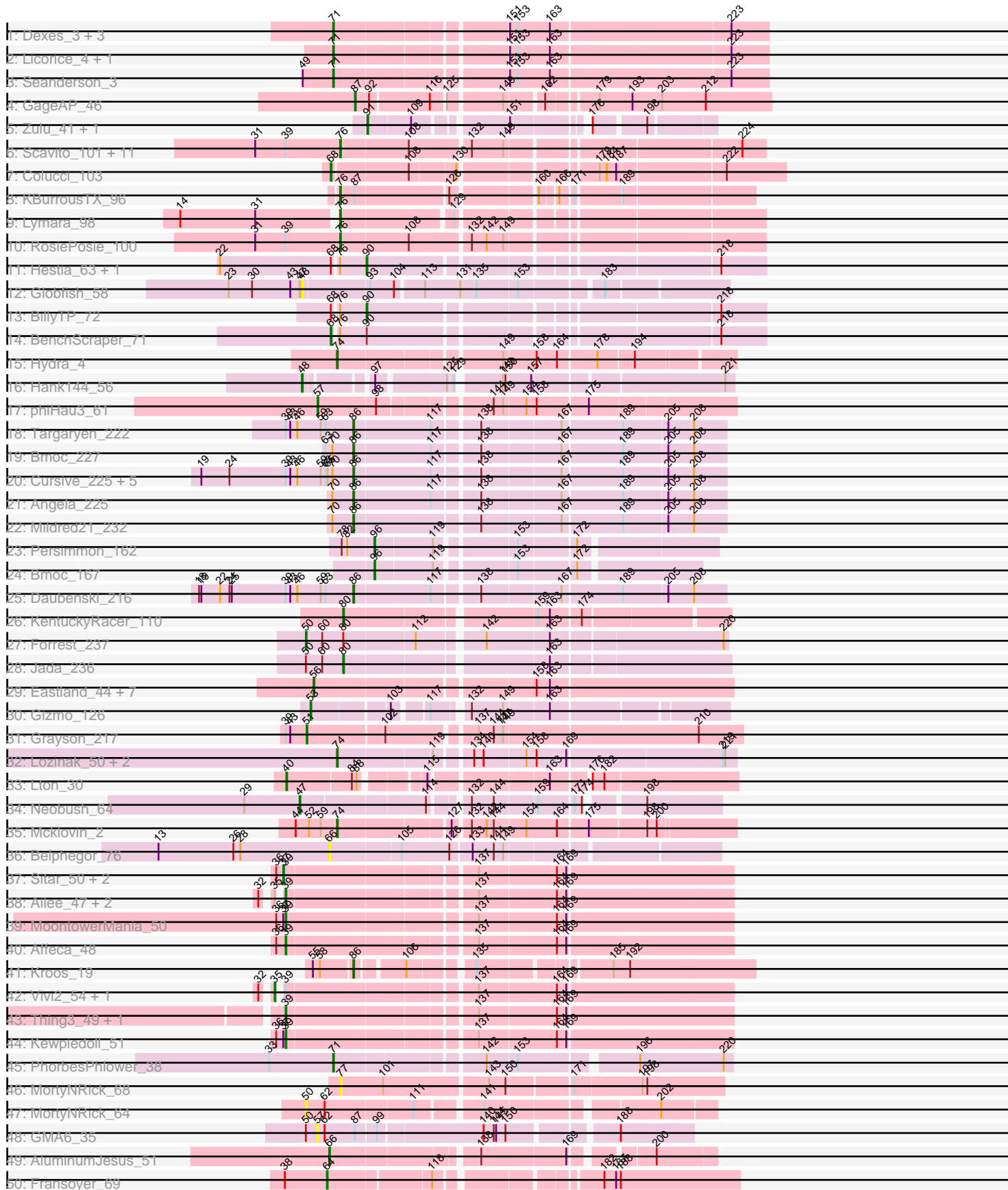
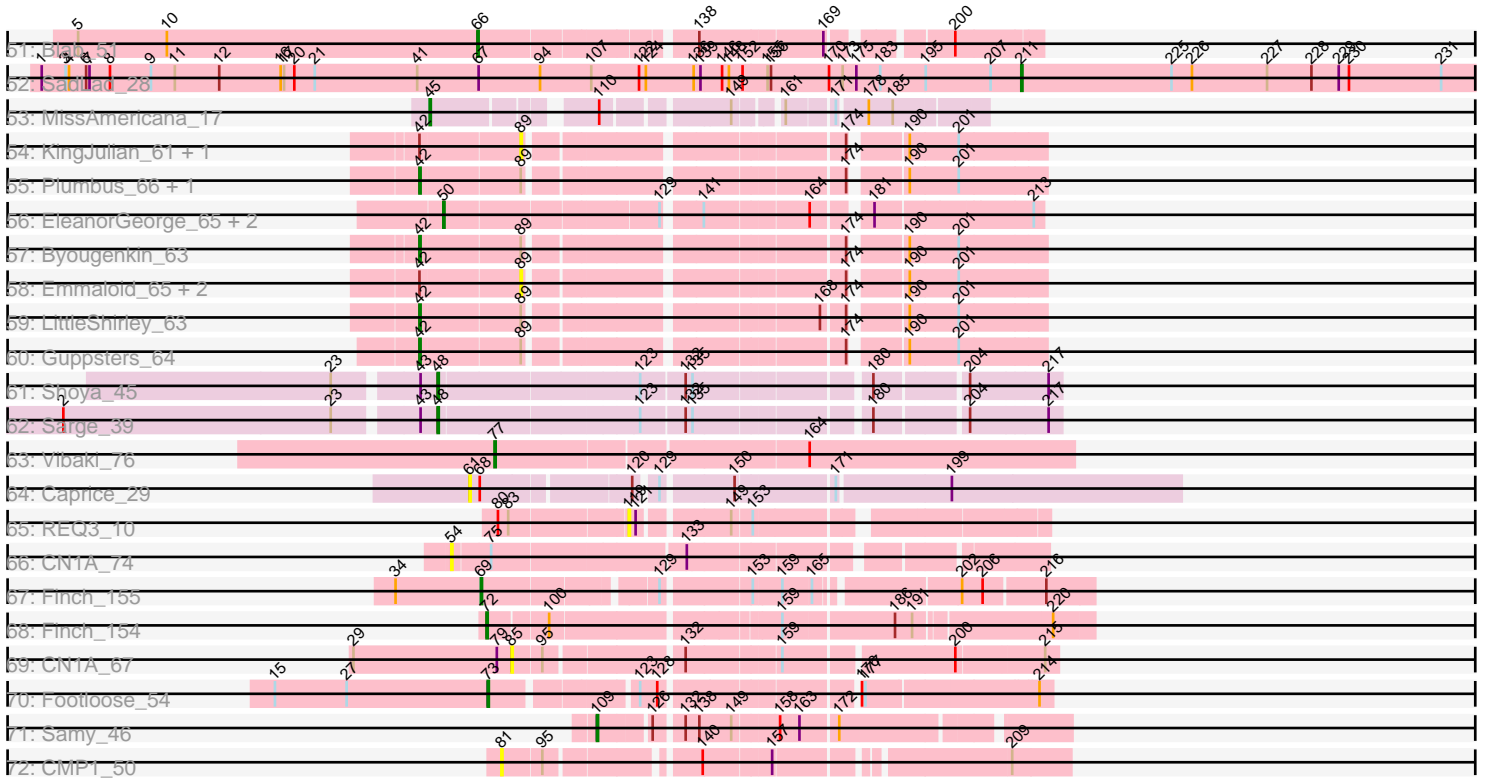


Pham 215985



Pham 215985



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 215985 Report

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

Pham number 215985 has 115 members, 17 are drafts.

Phages represented in each track:

- Track 1 : Dexes\_3, Smairt\_2, Smeagol\_2, Gyzlar\_3
- Track 2 : Licorice\_4, BigPaolini\_3
- Track 3 : Seanderson\_3
- Track 4 : GageAP\_46
- Track 5 : Zulu\_41, Tucker\_41
- Track 6 : Scavito\_101, PrincessTrina\_101, Chipper1996\_1010, HumptyDumpty\_100, Mordred\_100, JaNo\_99, Linus\_100, Chocolat\_100, Chubster\_100, Tophat\_101, Kabreeze\_100, EdgarPoe\_100
- Track 7 : Colucci\_103
- Track 8 : KBurrousTX\_96
- Track 9 : Lymara\_98
- Track 10 : RosiePosie\_100
- Track 11 : Hestia\_63, Faja\_72
- Track 12 : Globfish\_58
- Track 13 : BillyTP\_72
- Track 14 : BenchScraper\_71
- Track 15 : Hydra\_4
- Track 16 : Hank144\_56
- Track 17 : phiHau3\_61
- Track 18 : Targaryen\_222
- Track 19 : Bmoc\_227
- Track 20 : Cursive\_225, PacManQ\_219, Sushi23\_223, Lululemon\_219, Shuckle\_225, Larnav\_222
- Track 21 : Angela\_225
- Track 22 : Mildred21\_232
- Track 23 : Persimmon\_162
- Track 24 : Bmoc\_167
- Track 25 : Daubenski\_216
- Track 26 : KentuckyRacer\_110
- Track 27 : Forrest\_237
- Track 28 : Jada\_236
- Track 29 : Eastland\_44, Piccadilly\_44, Ignacio\_44, HFrancette\_45, AxeJC\_43, Vondra\_43, Eklok\_44, Cumberbatch\_45
- Track 30 : Gizmo\_126
- Track 31 : Grayson\_217
- Track 32 : Lozinak\_50, Engineer\_51, Smoothie\_51
- Track 33 : Lton\_30

- Track 34 : Neobush\_64
- Track 35 : Mcklovin\_2
- Track 36 : Belphegor\_76
- Track 37 : Sitar\_50, Lennon\_50, Angelicage\_48
- Track 38 : Ailee\_47, Love\_55, Shivanishola\_50
- Track 39 : MoontowerMania\_50
- Track 40 : Affeca\_48
- Track 41 : Kroos\_19
- Track 42 : Vivi2\_54, Keitabear\_50
- Track 43 : Thing3\_49, Kamashten\_49
- Track 44 : Kewpiedoll\_51
- Track 45 : PhorbessPhlower\_38
- Track 46 : MortyNRick\_68
- Track 47 : MortyNRick\_64
- Track 48 : GMA6\_35
- Track 49 : AluminumJesus\_51
- Track 50 : Fransoyer\_69
- Track 51 : Blab\_51
- Track 52 : SadLad\_28
- Track 53 : MissAmericana\_17
- Track 54 : KingJulian\_61, Corium\_61
- Track 55 : Plumbus\_66, Totinger\_63
- Track 56 : EleanorGeorge\_65, Firehouse51\_66, Mutaforma13\_69
- Track 57 : Byougenkin\_63
- Track 58 : Emmaloid\_65, Ms6\_60, Slim\_65
- Track 59 : LittleShirley\_63
- Track 60 : Guppsters\_64
- Track 61 : Shoya\_45
- Track 62 : Sarge\_39
- Track 63 : Vibaki\_76
- Track 64 : Caprice\_29
- Track 65 : REQ3\_10
- Track 66 : CN1A\_74
- Track 67 : Finch\_155
- Track 68 : Finch\_154
- Track 69 : CN1A\_67
- Track 70 : Footloose\_54
- Track 71 : Samy\_46
- Track 72 : CMP1\_50

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

The start number called the most often in the published annotations is 76, it was called in 15 of the 98 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• Chipper1996\_1010, Chocolat\_100, Chubster\_100, EdgarPoe\_100, HumptyDumpty\_100, JaNo\_99, KBurrousTX\_96, Kabreeze\_100, Linus\_100, Lymara\_98, Mordred\_100, PrincessTrina\_101, RosiePosie\_100, Scavito\_101, Tophat\_101,

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

- BenchScraper\_71, BillyTP\_72, Faja\_72, Hestia\_63,

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

- Affeca\_48, Ailee\_47, AluminumJesus\_51, Angela\_225, Angelicage\_48, AxeJC\_43, Belphegor\_76, BigPaolini\_3, Blab\_51, Bmoc\_167, Bmoc\_227, Byougenkin\_63, CMP1\_50, CN1A\_67, CN1A\_74, Caprice\_29, Colucci\_103, Corium\_61, Cumberbatch\_45, Cursive\_225, Daubenski\_216, Dexes\_3, Eastland\_44, Eklok\_44, EleanorGeorge\_65, Emmaloid\_65, Engineer\_51, Finch\_154, Finch\_155, Firehouse51\_66, Footloose\_54, Forrest\_237, Fransoyer\_69, GMA6\_35, GageAP\_46, Gizmo\_126, Globfish\_58, Grayson\_217, Guppsters\_64, Gyzlar\_3, HFrancette\_45, Hank144\_56, Hydra\_4, Ignacio\_44, Jada\_236, Kamashten\_49, Keitabear\_50, KentuckyRacer\_110, Kewpiedoll\_51, KingJulian\_61, Kroos\_19, Larnav\_222, Lennon\_50, Licorice\_4, LittleShirley\_63, Love\_55, Lozinak\_50, Lton\_30, Lululemon\_219, Mcklovin\_2, Mildred21\_232, MissAmericana\_17, MoontowerMania\_50, MortyNRick\_64, MortyNRick\_68, Ms6\_60, Mutaforma13\_69, Neobush\_64, PacManQ\_219, Persimmon\_162, PhorbPhlower\_38, Piccadilly\_44, Plumbus\_66, REQ3\_10, SadLad\_28, Samy\_46, Sarge\_39, Seanderson\_3, Shivanishola\_50, Shoya\_45, Shuckle\_225, Sitar\_50, Slim\_65, Smairt\_2, Smeagol\_2, Smoothie\_51, Sushi23\_223, Targaryen\_222, Thing3\_49, Totinger\_63, Tucker\_41, Vibaki\_76, Vivi2\_54, Vondra\_43, Zulu\_41, phiHau3\_61,

### Summary by start number:

Start 35:

- Found in 5 of 115 ( 4.3% ) of genes in pham
- Manual Annotations of this start: 2 of 98
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Keitabear\_50 (DE1), Vivi2\_54 (DE1),

Start 37:

- Found in 5 of 115 ( 4.3% ) of genes in pham
- Manual Annotations of this start: 3 of 98
- Called 60.0% of time when present
- Phage (with cluster) where this start called: Angelicage\_48 (DE1), Lennon\_50 (DE1), Sitar\_50 (DE1),

Start 39:

- Found in 35 of 115 ( 30.4% ) of genes in pham
- Manual Annotations of this start: 7 of 98
- Called 22.9% of time when present
- Phage (with cluster) where this start called: Affeca\_48 (DE1), Ailee\_47 (DE1), Kamashten\_49 (DE1), Kewpiedoll\_51 (DE1), Love\_55 (DE1), MoontowerMania\_50 (DE1), Shivanishola\_50 (DE1), Thing3\_49 (DE1),

Start 40:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lton\_30 (CZ),

Start 42:

- Found in 10 of 115 ( 8.7% ) of genes in pham
- Manual Annotations of this start: 5 of 98
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Byougenkin\_63 (F1), Guppsters\_64 (F1), LittleShirley\_63 (F1), Plumbus\_66 (F1), Totinger\_63 (F1),

Start 45:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MissAmericana\_17 (EM2),

Start 47:

- Found in 2 of 115 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Neobush\_64 (CZ1),

Start 48:

- Found in 4 of 115 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 3 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Globfish\_58 (AY), Hank144\_56 (BD2), Sarge\_39 (FB), Shoya\_45 (FB),

Start 50:

- Found in 7 of 115 ( 6.1% ) of genes in pham
- Manual Annotations of this start: 4 of 98
- Called 71.4% of time when present
- Phage (with cluster) where this start called: EleanorGeorge\_65 (F1), Firehouse51\_66 (F1), Forrest\_237 (BK1), MortyNRick\_64 (DN), Mutaforma13\_69 (F1),

Start 51:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Grayson\_217 (CB),

Start 53:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Gizmo\_126 (C1),

Start 54:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CN1A\_74 (singleton),

Start 56:

- Found in 8 of 115 ( 7.0% ) of genes in pham

- Manual Annotations of this start: 8 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AxeJC\_43 (BP), Cumberbatch\_45 (BP), Eastland\_44 (BP), Eklok\_44 (BP), HFrancette\_45 (BP), Ignacio\_44 (BP), Piccadilly\_44 (BP), Vondra\_43 (BP),

Start 57:

- Found in 2 of 115 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GMA6\_35 (DQ), phiHau3\_61 (BD4),

Start 61:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Caprice\_29 (S),

Start 64:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fransoyer\_69 (EG),

Start 66:

- Found in 3 of 115 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 2 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AluminumJesus\_51 (EG), Belphegor\_76 (DE), Blab\_51 (EG),

Start 68:

- Found in 6 of 115 ( 5.2% ) of genes in pham
- Manual Annotations of this start: 2 of 98
- Called 33.3% of time when present
- Phage (with cluster) where this start called: BenchScraper\_71 (AY), Colucci\_103 (AR),

Start 69:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Finch\_155 (singleton),

Start 71:

- Found in 8 of 115 ( 7.0% ) of genes in pham
- Manual Annotations of this start: 8 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BigPaolini\_3 (A1), Dexes\_3 (A1), Gyzlar\_3 (A1), Licorice\_4 (A1), PhorbesPhlower\_38 (DH), Seanderson\_3 (A1), Smairt\_2 (A1), Smeagol\_2 (A1),

Start 72:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Finch\_154 (singleton),

#### Start 73:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Footloose\_54 (singleton),

#### Start 74:

- Found in 5 of 115 ( 4.3% ) of genes in pham
- Manual Annotations of this start: 5 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Engineer\_51 (CQ1), Hydra\_4 (BD1), Lozinak\_50 (CQ1), Mcklovin\_2 (CZ4), Smoothie\_51 (CQ1),

#### Start 76:

- Found in 19 of 115 ( 16.5% ) of genes in pham
- Manual Annotations of this start: 15 of 98
- Called 78.9% of time when present
- Phage (with cluster) where this start called: Chipper1996\_1010 (AR), Chocolat\_100 (AR), Chubster\_100 (AR), EdgarPoe\_100 (AR), HumptyDumpty\_100 (AR), JaNo\_99 (AR), KBurrousTX\_96 (AR), Kabreeze\_100 (AR), Linus\_100 (AR), Lymara\_98 (AR), Mordred\_100 (AR), PrincessTrina\_101 (AR), RosiePosie\_100 (AR), Scavito\_101 (AR), Tophat\_101 (AR),

#### Start 77:

- Found in 2 of 115 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MortyNRick\_68 (DN), Vibaki\_76 (FL),

#### Start 80:

- Found in 4 of 115 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 2 of 98
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Jada\_236 (BK1), KentuckyRacer\_110 (BE2),

#### Start 81:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CMP1\_50 (singleton),

#### Start 85:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CN1A\_67 (singleton),



Start 86:

- Found in 12 of 115 ( 10.4% ) of genes in pham
- Manual Annotations of this start: 11 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Angela\_225 (BE1), Bmoc\_227 (BE1), Cursive\_225 (BE1), Daubenski\_216 (BE1), Kroos\_19 (DE1), Larnav\_222 (BE1), Lululemon\_219 (BE1), Mildred21\_232 (BE1), PacManQ\_219 (BE1), Shuckle\_225 (BE1), Sushi23\_223 (BE1), Targaryen\_222 (BE1),

Start 87:

- Found in 3 of 115 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 33.3% of time when present
- Phage (with cluster) where this start called: GageAP\_46 (A1),

Start 89:

- Found in 10 of 115 ( 8.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Corium\_61 (F1), Emmaloid\_65 (F1), KingJulian\_61 (F1), Ms6\_60 (F1), Slim\_65 (F1),

Start 90:

- Found in 4 of 115 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 3 of 98
- Called 75.0% of time when present
- Phage (with cluster) where this start called: BillyTP\_72 (AY), Faja\_72 (AY), Hestia\_63 (AY),

Start 91:

- Found in 2 of 115 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 2 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Tucker\_41 (A6), Zulu\_41 (A6),

Start 96:

- Found in 2 of 115 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 2 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bmoc\_167 (BE1), Persimmon\_162 (BE1),

Start 109:

- Found in 3 of 115 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Samy\_46 (singleton),

Start 119:

- Found in 6 of 115 ( 5.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 16.7% of time when present
- Phage (with cluster) where this start called: REQ3\_10 (singleton),

Start 211:

- Found in 1 of 115 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 98
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SadLad\_28 (EG),

### **Summary by clusters:**

There are 29 clusters represented in this pham: DN, singleton, DH, DE, CZ4, FB, BP, FL, DQ, A1, BD4, BD1, BD2, CQ1, CZ1, CB, EG, A6, CZ, S, AR, BK1, AY, C1, F1, DE1, EM2, BE2, BE1,

Info for manual annotations of cluster A1:

- Start number 71 was manually annotated 7 times for cluster A1.
- Start number 87 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster A6:

- Start number 91 was manually annotated 2 times for cluster A6.

Info for manual annotations of cluster AR:

- Start number 68 was manually annotated 1 time for cluster AR.
- Start number 76 was manually annotated 15 times for cluster AR.

Info for manual annotations of cluster AY:

- Start number 68 was manually annotated 1 time for cluster AY.
- Start number 90 was manually annotated 3 times for cluster AY.

Info for manual annotations of cluster BD1:

- Start number 74 was manually annotated 1 time for cluster BD1.

Info for manual annotations of cluster BD2:

- Start number 48 was manually annotated 1 time for cluster BD2.

Info for manual annotations of cluster BD4:

- Start number 57 was manually annotated 1 time for cluster BD4.

Info for manual annotations of cluster BE1:

- Start number 86 was manually annotated 10 times for cluster BE1.
- Start number 96 was manually annotated 2 times for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 80 was manually annotated 1 time for cluster BE2.

Info for manual annotations of cluster BK1:

- Start number 50 was manually annotated 1 time for cluster BK1.
- Start number 80 was manually annotated 1 time for cluster BK1.

Info for manual annotations of cluster BP:

- Start number 56 was manually annotated 8 times for cluster BP.

Info for manual annotations of cluster C1:

- Start number 53 was manually annotated 1 time for cluster C1.

Info for manual annotations of cluster CB:

- Start number 51 was manually annotated 1 time for cluster CB.

Info for manual annotations of cluster CQ1:

- Start number 74 was manually annotated 3 times for cluster CQ1.

Info for manual annotations of cluster CZ:

- Start number 40 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ1:

- Start number 47 was manually annotated 1 time for cluster CZ1.

Info for manual annotations of cluster CZ4:

- Start number 74 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster DE1:

- Start number 35 was manually annotated 2 times for cluster DE1.
- Start number 37 was manually annotated 3 times for cluster DE1.
- Start number 39 was manually annotated 7 times for cluster DE1.
- Start number 86 was manually annotated 1 time for cluster DE1.

Info for manual annotations of cluster DH:

- Start number 71 was manually annotated 1 time for cluster DH.

Info for manual annotations of cluster EG:

- Start number 64 was manually annotated 1 time for cluster EG.
- Start number 66 was manually annotated 2 times for cluster EG.
- Start number 211 was manually annotated 1 time for cluster EG.

Info for manual annotations of cluster EM2:

- Start number 45 was manually annotated 1 time for cluster EM2.

Info for manual annotations of cluster F1:

- Start number 42 was manually annotated 5 times for cluster F1.
- Start number 50 was manually annotated 3 times for cluster F1.

Info for manual annotations of cluster FB:

- Start number 48 was manually annotated 2 times for cluster FB.

Info for manual annotations of cluster FL:

- Start number 77 was manually annotated 1 time for cluster FL.

**Gene Information:**

Gene: Affeca\_48 Start: 42397, Stop: 42915, Start Num: 39

Candidate Starts for Affeca\_48:

(36, 42385), (Start: 39 @42397 has 7 MA's), (137, 42613), (164, 42703), (169, 42715),

Gene: Ailee\_47 Start: 42002, Stop: 42520, Start Num: 39

Candidate Starts for Ailee\_47:

(32, 41990), (Start: 35 @41999 has 2 MA's), (Start: 39 @42002 has 7 MA's), (137, 42218), (164, 42308), (169, 42320),

Gene: AluminumJesus\_51 Start: 40979, Stop: 40554, Start Num: 66

Candidate Starts for AluminumJesus\_51:

(Start: 66 @40979 has 2 MA's), (138, 40811), (169, 40709), (200, 40625),

Gene: Angela\_225 Start: 112366, Stop: 112806, Start Num: 86

Candidate Starts for Angela\_225:

(70, 112339), (Start: 86 @112366 has 11 MA's), (117, 112462), (138, 112513), (167, 112606), (189, 112678), (205, 112732), (208, 112765),

Gene: Angelicage\_48 Start: 42812, Stop: 43333, Start Num: 37

Candidate Starts for Angelicage\_48:

(36, 42803), (Start: 37 @42812 has 3 MA's), (Start: 39 @42815 has 7 MA's), (137, 43031), (164, 43121), (169, 43133),

Gene: AxeJC\_43 Start: 29903, Stop: 30394, Start Num: 56

Candidate Starts for AxeJC\_43:

(Start: 56 @29903 has 8 MA's), (158, 30155), (163, 30170),

Gene: Belphegor\_76 Start: 56290, Stop: 56739, Start Num: 66

Candidate Starts for Belphegor\_76:

(13, 56071), (26, 56167), (28, 56176), (Start: 66 @56290 has 2 MA's), (105, 56374), (126, 56431), (133, 56455), (144, 56479), (149, 56491),

Gene: BenchScraper\_71 Start: 37047, Stop: 37535, Start Num: 68

Candidate Starts for BenchScraper\_71:

(Start: 68 @37047 has 2 MA's), (Start: 76 @37053 has 15 MA's), (Start: 90 @37083 has 3 MA's), (218, 37479),

Gene: BigPaolini\_3 Start: 1128, Stop: 1637, Start Num: 71

Candidate Starts for BigPaolini\_3:

(Start: 71 @1128 has 8 MA's), (151, 1323), (153, 1332), (163, 1368), (223, 1590),

Gene: BillyTP\_72 Start: 38938, Stop: 39390, Start Num: 90

Candidate Starts for BillyTP\_72:

(Start: 68 @38902 has 2 MA's), (Start: 76 @38908 has 15 MA's), (Start: 90 @38938 has 3 MA's), (218, 39334),

Gene: Blab\_51 Start: 40826, Stop: 40401, Start Num: 66

Candidate Starts for Blab\_51:

(5, 41177), (10, 41099), (Start: 66 @40826 has 2 MA's), (138, 40658), (169, 40556), (200, 40472),

Gene: Bmoc\_227 Start: 112807, Stop: 113247, Start Num: 86

Candidate Starts for Bmoc\_227:

(63, 112771), (70, 112780), (Start: 86 @112807 has 11 MA's), (117, 112903), (138, 112954), (167, 113047), (189, 113119), (205, 113173), (208, 113206),

Gene: Bmoc\_167 Start: 91666, Stop: 92031, Start Num: 96  
Candidate Starts for Bmoc\_167:  
(Start: 96 @91666 has 2 MA's), (119, 91735), (153, 91822), (172, 91888),

Gene: Byougenkin\_63 Start: 41134, Stop: 41616, Start Num: 42  
Candidate Starts for Byougenkin\_63:  
(Start: 42 @41134 has 5 MA's), (89, 41218), (174, 41461), (190, 41500), (201, 41542),

Gene: CMP1\_50 Start: 47245, Stop: 46814, Start Num: 81  
Candidate Starts for CMP1\_50:  
(81, 47245), (95, 47212), (140, 47098), (157, 47044), (209, 46864),

Gene: CN1A\_74 Start: 54320, Stop: 53856, Start Num: 54  
Candidate Starts for CN1A\_74:  
(54, 54320), (75, 54290), (133, 54131),

Gene: CN1A\_67 Start: 52198, Stop: 51770, Start Num: 85  
Candidate Starts for CN1A\_67:  
(29, 52336), (79, 52210), (85, 52198), (95, 52174), (132, 52066), (159, 51991), (200, 51853), (215, 51781),

Gene: Caprice\_29 Start: 9273, Stop: 9845, Start Num: 61  
Candidate Starts for Caprice\_29:  
(61, 9273), (Start: 68 @9282 has 2 MA's), (120, 9402), (129, 9417), (150, 9474), (171, 9552), (199, 9645),

Gene: Chipper1996\_1010 Start: 63867, Stop: 64361, Start Num: 76  
Candidate Starts for Chipper1996\_1010:  
(31, 63759), (Start: 39 @63798 has 7 MA's), (Start: 76 @63867 has 15 MA's), (108, 63951), (132, 64023), (149, 64062), (224, 64332),

Gene: Chocolat\_100 Start: 63574, Stop: 64068, Start Num: 76  
Candidate Starts for Chocolat\_100:  
(31, 63466), (Start: 39 @63505 has 7 MA's), (Start: 76 @63574 has 15 MA's), (108, 63658), (132, 63730), (149, 63769), (224, 64039),

Gene: Chubster\_100 Start: 63814, Stop: 64308, Start Num: 76  
Candidate Starts for Chubster\_100:  
(31, 63706), (Start: 39 @63745 has 7 MA's), (Start: 76 @63814 has 15 MA's), (108, 63898), (132, 63970), (149, 64009), (224, 64279),

Gene: Colucci\_103 Start: 64172, Stop: 64684, Start Num: 68  
Candidate Starts for Colucci\_103:  
(Start: 68 @64172 has 2 MA's), (108, 64262), (130, 64316), (179, 64463), (184, 64472), (187, 64481), (222, 64610),

Gene: Corium\_61 Start: 40510, Stop: 40908, Start Num: 89  
Candidate Starts for Corium\_61:  
(Start: 42 @40426 has 5 MA's), (89, 40510), (174, 40753), (190, 40792), (201, 40834),

Gene: Cumberbatch\_45 Start: 30201, Stop: 30692, Start Num: 56  
Candidate Starts for Cumberbatch\_45:  
(Start: 56 @30201 has 8 MA's), (158, 30453), (163, 30468),

Gene: Cursive\_225 Start: 113007, Stop: 113447, Start Num: 86

Candidate Starts for Cursive\_225:

(19, 112812), (24, 112848), (Start: 39 @112920 has 7 MA's), (43, 112926), (46, 112935), (59, 112965), (63, 112971), (65, 112974), (70, 112980), (Start: 86 @113007 has 11 MA's), (117, 113103), (138, 113154), (167, 113247), (189, 113319), (205, 113373), (208, 113406),

Gene: Daubenski\_216 Start: 113389, Stop: 113829, Start Num: 86

Candidate Starts for Daubenski\_216:

(18, 113191), (19, 113194), (22, 113218), (24, 113230), (25, 113233), (Start: 39 @113302 has 7 MA's), (43, 113308), (46, 113317), (59, 113347), (63, 113353), (Start: 86 @113389 has 11 MA's), (117, 113485), (138, 113536), (167, 113629), (189, 113701), (205, 113755), (208, 113788),

Gene: Dexes\_3 Start: 1113, Stop: 1622, Start Num: 71

Candidate Starts for Dexes\_3:

(Start: 71 @1113 has 8 MA's), (151, 1308), (153, 1317), (163, 1353), (223, 1575),

Gene: Eastland\_44 Start: 30161, Stop: 30652, Start Num: 56

Candidate Starts for Eastland\_44:

(Start: 56 @30161 has 8 MA's), (158, 30413), (163, 30428),

Gene: EdgarPoe\_100 Start: 63731, Stop: 64225, Start Num: 76

Candidate Starts for EdgarPoe\_100:

(31, 63623), (Start: 39 @63662 has 7 MA's), (Start: 76 @63731 has 15 MA's), (108, 63815), (132, 63887), (149, 63926), (224, 64196),

Gene: Eklok\_44 Start: 29960, Stop: 30451, Start Num: 56

Candidate Starts for Eklok\_44:

(Start: 56 @29960 has 8 MA's), (158, 30212), (163, 30227),

Gene: EleanorGeorge\_65 Start: 42284, Stop: 42745, Start Num: 50

Candidate Starts for EleanorGeorge\_65:

(Start: 50 @42284 has 4 MA's), (129, 42458), (141, 42485), (164, 42569), (181, 42608), (213, 42737),

Gene: Emmaloid\_65 Start: 42092, Stop: 42490, Start Num: 89

Candidate Starts for Emmaloid\_65:

(Start: 42 @42008 has 5 MA's), (89, 42092), (174, 42335), (190, 42374), (201, 42416),

Gene: Engineer\_51 Start: 31923, Stop: 32384, Start Num: 74

Candidate Starts for Engineer\_51:

(Start: 74 @31923 has 5 MA's), (119, 32031), (134, 32070), (140, 32082), (154, 32130), (158, 32142), (169, 32178), (219, 32367), (221, 32370),

Gene: Faja\_72 Start: 38688, Stop: 39140, Start Num: 90

Candidate Starts for Faja\_72:

(22, 38511), (Start: 68 @38652 has 2 MA's), (Start: 76 @38658 has 15 MA's), (Start: 90 @38688 has 3 MA's), (218, 39084),

Gene: Finch\_155 Start: 99620, Stop: 100087, Start Num: 69

Candidate Starts for Finch\_155:

(34, 99545), (Start: 69 @99620 has 1 MA's), (129, 99755), (153, 99824), (159, 99845), (165, 99869), (202, 99977), (206, 99995), (216, 100046),

Gene: Finch\_154 Start: 99144, Stop: 99620, Start Num: 72  
Candidate Starts for Finch\_154:  
(Start: 72 @99144 has 1 MA's), (100, 99192), (159, 99372), (186, 99462), (191, 99477), (220, 99588),

Gene: Firehouse51\_66 Start: 45330, Stop: 45791, Start Num: 50  
Candidate Starts for Firehouse51\_66:  
(Start: 50 @45330 has 4 MA's), (129, 45504), (141, 45531), (164, 45615), (181, 45654), (213, 45783),

Gene: Footloose\_54 Start: 31404, Stop: 31829, Start Num: 73  
Candidate Starts for Footloose\_54:  
(15, 31218), (27, 31281), (Start: 73 @31404 has 1 MA's), (123, 31515), (128, 31530), (176, 31677),  
(177, 31680), (214, 31818),

Gene: Forrest\_237 Start: 114096, Stop: 114590, Start Num: 50  
Candidate Starts for Forrest\_237:  
(Start: 50 @114096 has 4 MA's), (60, 114117), (Start: 80 @114144 has 2 MA's), (112, 114231), (142, 114303), (163, 114378), (220, 114585),

Gene: Fransoyer\_69 Start: 49557, Stop: 49093, Start Num: 64  
Candidate Starts for Fransoyer\_69:  
(38, 49611), (Start: 64 @49557 has 1 MA's), (118, 49434), (182, 49263), (187, 49248), (188, 49242),

Gene: GMA6\_35 Start: 29073, Stop: 29516, Start Num: 57  
Candidate Starts for GMA6\_35:  
(Start: 50 @29058 has 4 MA's), (Start: 57 @29073 has 1 MA's), (62, 29082), (Start: 87 @29121 has 1 MA's), (99, 29145), (140, 29274), (144, 29286), (145, 29289), (150, 29301), (188, 29424),

Gene: GageAP\_46 Start: 34874, Stop: 34401, Start Num: 87  
Candidate Starts for GageAP\_46:  
(Start: 87 @34874 has 1 MA's), (92, 34859), (116, 34787), (125, 34772), (149, 34709), (162, 34670),  
(179, 34616), (193, 34574), (203, 34538), (212, 34484),

Gene: Gizmo\_126 Start: 66298, Stop: 65843, Start Num: 53  
Candidate Starts for Gizmo\_126:  
(Start: 53 @66298 has 1 MA's), (103, 66211), (117, 66175), (132, 66139), (149, 66100), (163, 66049),

Gene: Globfish\_58 Start: 33707, Stop: 34201, Start Num: 48  
Candidate Starts for Globfish\_58:  
(23, 33614), (30, 33644), (43, 33692), (Start: 47 @33704 has 1 MA's), (Start: 48 @33707 has 3 MA's),  
(93, 33788), (104, 33818), (113, 33851), (131, 33896), (135, 33917), (153, 33965), (183, 34058),

Gene: Grayson\_217 Start: 108140, Stop: 108661, Start Num: 51  
Candidate Starts for Grayson\_217:  
(Start: 39 @108113 has 7 MA's), (43, 108119), (Start: 51 @108140 has 1 MA's), (102, 108236), (137, 108338), (144, 108356), (147, 108365), (149, 108368), (210, 108605),

Gene: Guppsters\_64 Start: 40923, Stop: 41405, Start Num: 42  
Candidate Starts for Guppsters\_64:  
(Start: 42 @40923 has 5 MA's), (89, 41007), (174, 41250), (190, 41289), (201, 41331),

Gene: Gyzlar\_3 Start: 1073, Stop: 1582, Start Num: 71  
Candidate Starts for Gyzlar\_3:  
(Start: 71 @1073 has 8 MA's), (151, 1268), (153, 1277), (163, 1313), (223, 1535),

Gene: HFrancette\_45 Start: 30939, Stop: 31430, Start Num: 56

Candidate Starts for HFrancette\_45:

(Start: 56 @30939 has 8 MA's), (158, 31191), (163, 31206),

Gene: Hank144\_56 Start: 39762, Stop: 39295, Start Num: 48

Candidate Starts for Hank144\_56:

(Start: 48 @39762 has 3 MA's), (97, 39693), (125, 39615), (129, 39609), (149, 39561), (150, 39558), (157, 39531), (221, 39306),

Gene: Hestia\_63 Start: 34911, Stop: 35363, Start Num: 90

Candidate Starts for Hestia\_63:

(22, 34734), (Start: 68 @34875 has 2 MA's), (Start: 76 @34881 has 15 MA's), (Start: 90 @34911 has 3 MA's), (218, 35307),

Gene: HumptyDumpty\_100 Start: 63534, Stop: 64028, Start Num: 76

Candidate Starts for HumptyDumpty\_100:

(31, 63426), (Start: 39 @63465 has 7 MA's), (Start: 76 @63534 has 15 MA's), (108, 63618), (132, 63690), (149, 63729), (224, 63999),

Gene: Hydra\_4 Start: 1342, Stop: 1785, Start Num: 74

Candidate Starts for Hydra\_4:

(Start: 74 @1342 has 5 MA's), (149, 1525), (158, 1561), (164, 1585), (178, 1630), (194, 1672),

Gene: Ignacio\_44 Start: 30842, Stop: 31333, Start Num: 56

Candidate Starts for Ignacio\_44:

(Start: 56 @30842 has 8 MA's), (158, 31094), (163, 31109),

Gene: JaNo\_99 Start: 63505, Stop: 63999, Start Num: 76

Candidate Starts for JaNo\_99:

(31, 63397), (Start: 39 @63436 has 7 MA's), (Start: 76 @63505 has 15 MA's), (108, 63589), (132, 63661), (149, 63700), (224, 63970),

Gene: Jada\_236 Start: 113382, Stop: 113834, Start Num: 80

Candidate Starts for Jada\_236:

(Start: 50 @113334 has 4 MA's), (60, 113355), (Start: 80 @113382 has 2 MA's), (163, 113616),

Gene: KBurrousTX\_96 Start: 64281, Stop: 64742, Start Num: 76

Candidate Starts for KBurrousTX\_96:

(Start: 76 @64281 has 15 MA's), (Start: 87 @64299 has 1 MA's), (126, 64410), (160, 64503), (166, 64521), (171, 64536), (189, 64584),

Gene: Kabreeze\_100 Start: 63591, Stop: 64085, Start Num: 76

Candidate Starts for Kabreeze\_100:

(31, 63483), (Start: 39 @63522 has 7 MA's), (Start: 76 @63591 has 15 MA's), (108, 63675), (132, 63747), (149, 63786), (224, 64056),

Gene: Kamashten\_49 Start: 42108, Stop: 42626, Start Num: 39

Candidate Starts for Kamashten\_49:

(Start: 39 @42108 has 7 MA's), (137, 42324), (164, 42414), (169, 42426),

Gene: Keitabear\_50 Start: 43627, Stop: 44148, Start Num: 35

Candidate Starts for Keitabear\_50:



(32, 43618), (Start: 35 @43627 has 2 MA's), (Start: 39 @43630 has 7 MA's), (137, 43846), (164, 43936), (169, 43948),

Gene: KentuckyRacer\_110 Start: 73819, Stop: 74262, Start Num: 80

Candidate Starts for KentuckyRacer\_110:

(Start: 80 @73819 has 2 MA's), (159, 74038), (163, 74053), (174, 74089),

Gene: Kewpiedoll\_51 Start: 43059, Stop: 43577, Start Num: 39

Candidate Starts for Kewpiedoll\_51:

(36, 43047), (Start: 37 @43056 has 3 MA's), (Start: 39 @43059 has 7 MA's), (137, 43275), (164, 43365), (169, 43377),

Gene: KingJulian\_61 Start: 40510, Stop: 40908, Start Num: 89

Candidate Starts for KingJulian\_61:

(Start: 42 @40426 has 5 MA's), (89, 40510), (174, 40753), (190, 40792), (201, 40834),

Gene: Kroos\_19 Start: 14665, Stop: 15102, Start Num: 86

Candidate Starts for Kroos\_19:

(55, 14620), (58, 14629), (Start: 86 @14665 has 11 MA's), (106, 14716), (135, 14782), (185, 14926), (192, 14947),

Gene: Larnav\_222 Start: 113173, Stop: 113613, Start Num: 86

Candidate Starts for Larnav\_222:

(19, 112978), (24, 113014), (Start: 39 @113086 has 7 MA's), (43, 113092), (46, 113101), (59, 113131), (63, 113137), (65, 113140), (70, 113146), (Start: 86 @113173 has 11 MA's), (117, 113269), (138, 113320), (167, 113413), (189, 113485), (205, 113539), (208, 113572),

Gene: Lennon\_50 Start: 43707, Stop: 44228, Start Num: 37

Candidate Starts for Lennon\_50:

(36, 43698), (Start: 37 @43707 has 3 MA's), (Start: 39 @43710 has 7 MA's), (137, 43926), (164, 44016), (169, 44028),

Gene: Licorice\_4 Start: 1283, Stop: 1792, Start Num: 71

Candidate Starts for Licorice\_4:

(Start: 71 @1283 has 8 MA's), (151, 1478), (153, 1487), (163, 1523), (223, 1745),

Gene: Linus\_100 Start: 64039, Stop: 64533, Start Num: 76

Candidate Starts for Linus\_100:

(31, 63931), (Start: 39 @63970 has 7 MA's), (Start: 76 @64039 has 15 MA's), (108, 64123), (132, 64195), (149, 64234), (224, 64504),

Gene: LittleShirley\_63 Start: 41739, Stop: 42221, Start Num: 42

Candidate Starts for LittleShirley\_63:

(Start: 42 @41739 has 5 MA's), (89, 41823), (168, 42048), (174, 42066), (190, 42105), (201, 42147),

Gene: Love\_55 Start: 44334, Stop: 44852, Start Num: 39

Candidate Starts for Love\_55:

(32, 44322), (Start: 35 @44331 has 2 MA's), (Start: 39 @44334 has 7 MA's), (137, 44550), (164, 44640), (169, 44652),

Gene: Lozinak\_50 Start: 31978, Stop: 32439, Start Num: 74

Candidate Starts for Lozinak\_50:

(Start: 74 @31978 has 5 MA's), (119, 32086), (134, 32125), (140, 32137), (154, 32185), (158, 32197), (169, 32233), (219, 32422), (221, 32425),

Gene: Lton\_30 Start: 23640, Stop: 24134, Start Num: 40

Candidate Starts for Lton\_30:

(Start: 40 @23640 has 1 MA's), (84, 23715), (88, 23721), (115, 23784), (163, 23916), (176, 23958), (182, 23973),

Gene: Lululemon\_219 Start: 112060, Stop: 112500, Start Num: 86

Candidate Starts for Lululemon\_219:

(19, 111865), (24, 111901), (Start: 39 @111973 has 7 MA's), (43, 111979), (46, 111988), (59, 112018), (63, 112024), (65, 112027), (70, 112033), (Start: 86 @112060 has 11 MA's), (117, 112156), (138, 112207), (167, 112300), (189, 112372), (205, 112426), (208, 112459),

Gene: Lymara\_98 Start: 62394, Stop: 62876, Start Num: 76

Candidate Starts for Lymara\_98:

(14, 62202), (31, 62298), (Start: 76 @62394 has 15 MA's), (129, 62526),

Gene: Mcklovin\_2 Start: 532, Stop: 981, Start Num: 74

Candidate Starts for Mcklovin\_2:

(44, 484), (52, 499), (59, 514), (Start: 74 @532 has 5 MA's), (127, 658), (132, 676), (142, 694), (144, 703), (154, 739), (164, 775), (175, 811), (198, 874), (200, 886),

Gene: Mildred21\_232 Start: 111445, Stop: 111885, Start Num: 86

Candidate Starts for Mildred21\_232:

(70, 111418), (Start: 86 @111445 has 11 MA's), (138, 111592), (167, 111685), (189, 111757), (205, 111811), (208, 111844),

Gene: MissAmericana\_17 Start: 11528, Stop: 11133, Start Num: 45

Candidate Starts for MissAmericana\_17:

(Start: 45 @11528 has 1 MA's), (110, 11408), (149, 11315), (161, 11285), (171, 11249), (178, 11228), (185, 11207),

Gene: MoontowerMania\_50 Start: 43336, Stop: 43860, Start Num: 39

Candidate Starts for MoontowerMania\_50:

(36, 43324), (Start: 37 @43333 has 3 MA's), (Start: 39 @43336 has 7 MA's), (137, 43558), (164, 43648), (169, 43660),

Gene: Mordred\_100 Start: 63630, Stop: 64124, Start Num: 76

Candidate Starts for Mordred\_100:

(31, 63522), (Start: 39 @63561 has 7 MA's), (Start: 76 @63630 has 15 MA's), (108, 63714), (132, 63786), (149, 63825), (224, 64095),

Gene: MortyNRick\_68 Start: 43724, Stop: 44188, Start Num: 77

Candidate Starts for MortyNRick\_68:

(Start: 77 @43724 has 1 MA's), (101, 43778), (143, 43904), (150, 43925), (171, 44000), (197, 44084), (198, 44090),

Gene: MortyNRick\_64 Start: 42082, Stop: 42537, Start Num: 50

Candidate Starts for MortyNRick\_64:

(Start: 50 @42082 has 4 MA's), (62, 42106), (111, 42211), (141, 42283), (202, 42475),

Gene: Ms6\_60 Start: 36767, Stop: 37165, Start Num: 89

Candidate Starts for Ms6\_60:

(Start: 42 @36683 has 5 MA's), (89, 36767), (174, 37010), (190, 37049), (201, 37091),

Gene: Mutaforma13\_69 Start: 44640, Stop: 45101, Start Num: 50

Candidate Starts for Mutaforma13\_69:

(Start: 50 @44640 has 4 MA's), (129, 44814), (141, 44841), (164, 44925), (181, 44964), (213, 45093),

Gene: Neobush\_64 Start: 42273, Stop: 42734, Start Num: 47

Candidate Starts for Neobush\_64:

(29, 42207), (Start: 47 @42273 has 1 MA's), (114, 42420), (132, 42456), (144, 42483), (159, 42531), (171, 42573), (174, 42582), (198, 42642),

Gene: PacManQ\_219 Start: 112060, Stop: 112500, Start Num: 86

Candidate Starts for PacManQ\_219:

(19, 111865), (24, 111901), (Start: 39 @111973 has 7 MA's), (43, 111979), (46, 111988), (59, 112018), (63, 112024), (65, 112027), (70, 112033), (Start: 86 @112060 has 11 MA's), (117, 112156), (138, 112207), (167, 112300), (189, 112372), (205, 112426), (208, 112459),

Gene: Persimmon\_162 Start: 90873, Stop: 91259, Start Num: 96

Candidate Starts for Persimmon\_162:

(78, 90837), (82, 90843), (Start: 96 @90873 has 2 MA's), (119, 90942), (153, 91029), (172, 91095),

Gene: PhorbesPhlower\_38 Start: 28562, Stop: 29011, Start Num: 71

Candidate Starts for PhorbesPhlower\_38:

(33, 28481), (Start: 71 @28562 has 8 MA's), (142, 28730), (153, 28766), (196, 28895), (220, 29000),

Gene: Piccadilly\_44 Start: 30160, Stop: 30651, Start Num: 56

Candidate Starts for Piccadilly\_44:

(Start: 56 @30160 has 8 MA's), (158, 30412), (163, 30427),

Gene: Plumbus\_66 Start: 41519, Stop: 42001, Start Num: 42

Candidate Starts for Plumbus\_66:

(Start: 42 @41519 has 5 MA's), (89, 41603), (174, 41846), (190, 41885), (201, 41927),

Gene: PrincessTrina\_101 Start: 63821, Stop: 64315, Start Num: 76

Candidate Starts for PrincessTrina\_101:

(31, 63713), (Start: 39 @63752 has 7 MA's), (Start: 76 @63821 has 15 MA's), (108, 63905), (132, 63977), (149, 64016), (224, 64286),

Gene: REQ3\_10 Start: 4829, Stop: 5143, Start Num: 119

Candidate Starts for REQ3\_10:

(Start: 80 @4724 has 2 MA's), (83, 4733), (119, 4829), (121, 4835), (149, 4904), (153, 4919),

Gene: RosiePosie\_100 Start: 63686, Stop: 64180, Start Num: 76

Candidate Starts for RosiePosie\_100:

(31, 63578), (Start: 39 @63617 has 7 MA's), (Start: 76 @63686 has 15 MA's), (108, 63770), (132, 63842), (142, 63860), (149, 63881),

Gene: SadLad\_28 Start: 14537, Stop: 14064, Start Num: 211

Candidate Starts for SadLad\_28:

(1, 15395), (3, 15374), (4, 15371), (6, 15356), (7, 15353), (8, 15335), (9, 15299), (11, 15278), (12, 15239), (16, 15185), (17, 15182), (20, 15173), (21, 15155), (41, 15065), (67, 15011), (94, 14957), (107, 14912), (122, 14870), (124, 14864), (136, 14822), (139, 14816), (146, 14798), (148, 14792), (152,

14780), (155, 14759), (156, 14756), (170, 14705), (173, 14693), (175, 14681), (183, 14660), (195, 14621), (207, 14564), (Start: 211 @14537 has 1 MA's), (225, 14405), (226, 14387), (227, 14321), (228, 14282), (229, 14258), (230, 14249), (231, 14168),

Gene: Samy\_46 Start: 31456, Stop: 31815, Start Num: 109

Candidate Starts for Samy\_46:

(Start: 109 @31456 has 1 MA's), (126, 31495), (132, 31516), (138, 31528), (149, 31555), (158, 31591), (163, 31606), (172, 31636),

Gene: Sarge\_39 Start: 25703, Stop: 26194, Start Num: 48

Candidate Starts for Sarge\_39:

(2, 25388), (23, 25622), (43, 25688), (Start: 48 @25703 has 3 MA's), (123, 25868), (132, 25904), (135, 25910), (180, 26045), (204, 26117), (217, 26183),

Gene: Scavito\_101 Start: 63679, Stop: 64173, Start Num: 76

Candidate Starts for Scavito\_101:

(31, 63571), (Start: 39 @63610 has 7 MA's), (Start: 76 @63679 has 15 MA's), (108, 63763), (132, 63835), (149, 63874), (224, 64144),

Gene: Seanderson\_3 Start: 1096, Stop: 1605, Start Num: 71

Candidate Starts for Seanderson\_3:

(49, 1057), (Start: 71 @1096 has 8 MA's), (151, 1291), (153, 1300), (163, 1336), (223, 1558),

Gene: Shivanishola\_50 Start: 42031, Stop: 42549, Start Num: 39

Candidate Starts for Shivanishola\_50:

(32, 42019), (Start: 35 @42028 has 2 MA's), (Start: 39 @42031 has 7 MA's), (137, 42247), (164, 42337), (169, 42349),

Gene: Shoya\_45 Start: 27671, Stop: 28162, Start Num: 48

Candidate Starts for Shoya\_45:

(23, 27590), (43, 27656), (Start: 48 @27671 has 3 MA's), (123, 27836), (132, 27872), (135, 27878), (180, 28013), (204, 28085), (217, 28151),

Gene: Shuckle\_225 Start: 113504, Stop: 113944, Start Num: 86

Candidate Starts for Shuckle\_225:

(19, 113309), (24, 113345), (Start: 39 @113417 has 7 MA's), (43, 113423), (46, 113432), (59, 113462), (63, 113468), (65, 113471), (70, 113477), (Start: 86 @113504 has 11 MA's), (117, 113600), (138, 113651), (167, 113744), (189, 113816), (205, 113870), (208, 113903),

Gene: Sitar\_50 Start: 43707, Stop: 44228, Start Num: 37

Candidate Starts for Sitar\_50:

(36, 43698), (Start: 37 @43707 has 3 MA's), (Start: 39 @43710 has 7 MA's), (137, 43926), (164, 44016), (169, 44028),

Gene: Slim\_65 Start: 42083, Stop: 42481, Start Num: 89

Candidate Starts for Slim\_65:

(Start: 42 @41999 has 5 MA's), (89, 42083), (174, 42326), (190, 42365), (201, 42407),

Gene: Smairt\_2 Start: 926, Stop: 1435, Start Num: 71

Candidate Starts for Smairt\_2:

(Start: 71 @926 has 8 MA's), (151, 1121), (153, 1130), (163, 1166), (223, 1388),

Gene: Smeagol\_2 Start: 927, Stop: 1436, Start Num: 71

Candidate Starts for Smeagol\_2:

(Start: 71 @927 has 8 MA's), (151, 1122), (153, 1131), (163, 1167), (223, 1389),

Gene: Smoothie\_51 Start: 31978, Stop: 32439, Start Num: 74

Candidate Starts for Smoothie\_51:

(Start: 74 @31978 has 5 MA's), (119, 32086), (134, 32125), (140, 32137), (154, 32185), (158, 32197), (169, 32233), (219, 32422), (221, 32425),

Gene: Sushi23\_223 Start: 114010, Stop: 114450, Start Num: 86

Candidate Starts for Sushi23\_223:

(19, 113815), (24, 113851), (Start: 39 @113923 has 7 MA's), (43, 113929), (46, 113938), (59, 113968), (63, 113974), (65, 113977), (70, 113983), (Start: 86 @114010 has 11 MA's), (117, 114106), (138, 114157), (167, 114250), (189, 114322), (205, 114376), (208, 114409),

Gene: Targaryen\_222 Start: 114182, Stop: 114622, Start Num: 86

Candidate Starts for Targaryen\_222:

(Start: 39 @114095 has 7 MA's), (43, 114101), (46, 114110), (59, 114140), (63, 114146), (Start: 86 @114182 has 11 MA's), (117, 114278), (138, 114329), (167, 114422), (189, 114494), (205, 114548), (208, 114581),

Gene: Thing3\_49 Start: 42108, Stop: 42626, Start Num: 39

Candidate Starts for Thing3\_49:

(Start: 39 @42108 has 7 MA's), (137, 42324), (164, 42414), (169, 42426),

Gene: Tophat\_101 Start: 63868, Stop: 64362, Start Num: 76

Candidate Starts for Tophat\_101:

(31, 63760), (Start: 39 @63799 has 7 MA's), (Start: 76 @63868 has 15 MA's), (108, 63952), (132, 64024), (149, 64063), (224, 64333),

Gene: Totinger\_63 Start: 40465, Stop: 40947, Start Num: 42

Candidate Starts for Totinger\_63:

(Start: 42 @40465 has 5 MA's), (89, 40549), (174, 40792), (190, 40831), (201, 40873),

Gene: Tucker\_41 Start: 26756, Stop: 26394, Start Num: 91

Candidate Starts for Tucker\_41:

(Start: 91 @26756 has 2 MA's), (Start: 109 @26708 has 1 MA's), (151, 26609), (176, 26531), (198, 26471),

Gene: Vibaki\_76 Start: 46752, Stop: 47243, Start Num: 77

Candidate Starts for Vibaki\_76:

(Start: 77 @46752 has 1 MA's), (164, 47013),

Gene: Vivi2\_54 Start: 43935, Stop: 44456, Start Num: 35

Candidate Starts for Vivi2\_54:

(32, 43926), (Start: 35 @43935 has 2 MA's), (Start: 39 @43938 has 7 MA's), (137, 44154), (164, 44244), (169, 44256),

Gene: Vondra\_43 Start: 30012, Stop: 30503, Start Num: 56

Candidate Starts for Vondra\_43:

(Start: 56 @30012 has 8 MA's), (158, 30264), (163, 30279),

Gene: Zulu\_41 Start: 26737, Stop: 26375, Start Num: 91

Candidate Starts for Zulu\_41:

(Start: 91 @26737 has 2 MA's), (Start: 109 @26689 has 1 MA's), (151, 26590), (176, 26512), (198, 26452),

Gene: phiHau3\_61 Start: 41644, Stop: 41168, Start Num: 57

Candidate Starts for phiHau3\_61:

(Start: 57 @41644 has 1 MA's), (98, 41575), (144, 41452), (149, 41440), (154, 41416), (158, 41404), (175, 41344),