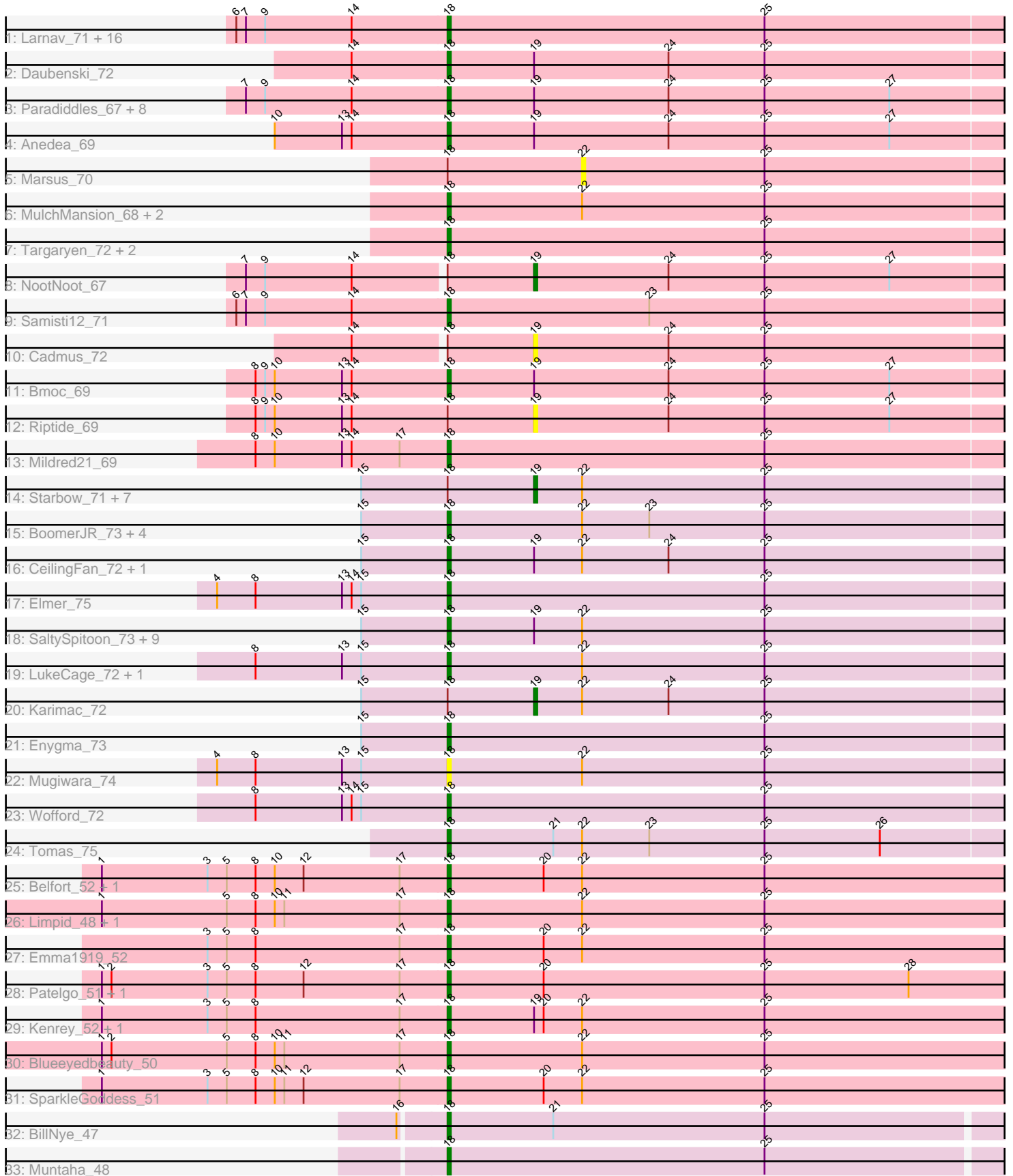


Pham 223059



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 223059 Report

This analysis was run 03/28/25 on database version 593.

Pham number 223059 has 87 members, 8 are drafts.

Phages represented in each track:

- Track 1 : Larnav\_71, EGole\_72, Cursive\_69, HangryHippo\_71, Watermoore\_71, BlueOtter\_71, Tribute\_69, PacManQ\_70, Leo04\_72, Teutsch\_71, Scheme\_72, Cross\_71, Pepperwood\_71, Sushi23\_71, Lululemon\_70, Peebs\_70, Shuckle\_69
- Track 2 : Daubenski\_72
- Track 3 : Paradiddles\_67, Braelyn\_70, Persimmon\_67, Squillium\_70, Navo\_69, Bartholomune\_69, PinkiePie\_69, Liandry\_70, WhereRU\_68
- Track 4 : Anedea\_69
- Track 5 : Marsus\_70
- Track 6 : MulchMansion\_68, LilMartin\_68, Angela\_68
- Track 7 : Targaryen\_72, Evy\_72, Warpy\_75
- Track 8 : NootNoot\_67
- Track 9 : Samisti12\_71
- Track 10 : Cadmus\_72
- Track 11 : Bmoc\_69
- Track 12 : Riptide\_69
- Track 13 : Mildred21\_69
- Track 14 : Starbow\_71, Battuta\_71, Quaran19\_73, Rikishi\_76, Birchlyn\_70, Bordeaux\_71, Gibbi\_77, Amabiko\_73
- Track 15 : BoomerJR\_73, Stanimal\_73, Sollertia\_73, Genie2\_73, Yaboi\_73
- Track 16 : CeilingFan\_72, IchabodCrane\_70
- Track 17 : Elmer\_75
- Track 18 : SaltySpittoon\_73, Spelly\_73, TomSawyer\_71, Spilled\_74, JimJam\_73, KentuckyRacer\_73, PumpkinSpice\_72, Jollison\_72, MindFlayer\_71, Wipeout\_71
- Track 19 : LukeCage\_72, StarPlatinum\_73
- Track 20 : Karimac\_72
- Track 21 : Enygma\_73
- Track 22 : Mugiwara\_74
- Track 23 : Wofford\_72
- Track 24 : Tomas\_75
- Track 25 : Belfort\_52, Comrade\_51
- Track 26 : Limpid\_48, Annadreamy\_48
- Track 27 : Emma1919\_52
- Track 28 : Patelgo\_51, Moab\_51
- Track 29 : Kenrey\_52, Phredrick\_50
- Track 30 : Blueeyedbeauty\_50
- Track 31 : SparkleGoddess\_51
- Track 32 : BillNye\_47

- Track 33 : Muntaha\_48

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

The start number called the most often in the published annotations is 18, it was called in 71 of the 79 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Anedea\_69, Angela\_68, Annadreamy\_48, Bartholomune\_69, Belfort\_52, BillNye\_47, BlueOtter\_71, Blueeyedbeauty\_50, Bmoc\_69, BoomerJR\_73, Braelyn\_70, CeilingFan\_72, Comrade\_51, Cross\_71, Cursive\_69, Daubenski\_72, EGole\_72, Elmer\_75, Emma1919\_52, Enygma\_73, Evy\_72, Genie2\_73, HangryHippo\_71, IchabodCrane\_70, JimJam\_73, Jollison\_72, Kenrey\_52, KentuckyRacer\_73, Larnav\_71, Leo04\_72, Liandry\_70, LilMartin\_68, Limpid\_48, LukeCage\_72, Lululemon\_70, Mildred21\_69, MindFlayer\_71, Moab\_51, Mugiwara\_74, MulchMansion\_68, Muntaha\_48, Navo\_69, PacManQ\_70, Paradiddles\_67, Patelgo\_51, Peebs\_70, Pepperwood\_71, Persimmon\_67, Phredrick\_50, PinkiePie\_69, PumpkinSpice\_72, SaltySpitoon\_73, Samisti12\_71, Scheme\_72, Shuckle\_69, Sollertia\_73, SparkleGoddess\_51, Spelly\_73, Spilled\_74, Squillium\_70, Stanimal\_73, StarPlatinum\_73, Sushi23\_71, Targaryen\_72, Teutsch\_71, TomSawyer\_71, Tomas\_75, Tribute\_69, Warpy\_75, Watermoore\_71, WhereRU\_68, Wipeout\_71, Wofford\_72, Yaboi\_73,

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

- Amabiko\_73, Battuta\_71, Birchlyn\_70, Bordeaux\_71, Cadmus\_72, Gibbi\_77, Karimac\_72, Marsus\_70, NootNoot\_67, Quarant19\_73, Rikishi\_76, Riptide\_69, Starbow\_71,

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

- 

### **Summary by start number:**

Start 18:

- Found in 87 of 87 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 71 of 79
- Called 85.1% of time when present
- Phage (with cluster) where this start called: Anedea\_69 (BE1), Angela\_68 (BE1), Annadreamy\_48 (BK1), Bartholomune\_69 (BE1), Belfort\_52 (BK1), BillNye\_47 (BK2), BlueOtter\_71 (BE1), Blueeyedbeauty\_50 (BK1), Bmoc\_69 (BE1), BoomerJR\_73 (BE2), Braelyn\_70 (BE1), CeilingFan\_72 (BE2), Comrade\_51 (BK1), Cross\_71 (BE1), Cursive\_69 (BE1), Daubenski\_72 (BE1), EGole\_72 (BE1), Elmer\_75 (BE2), Emma1919\_52 (BK1), Enygma\_73 (BE2), Evy\_72 (BE1), Genie2\_73 (BE2), HangryHippo\_71 (BE1), IchabodCrane\_70 (BE2), JimJam\_73 (BE2), Jollison\_72 (BE2), Kenrey\_52 (BK1), KentuckyRacer\_73 (BE2), Larnav\_71 (BE1), Leo04\_72 (BE1), Liandry\_70 (BE1), LilMartin\_68 (BE1), Limpid\_48 (BK1), LukeCage\_72 (BE2), Lululemon\_70 (BE1), Mildred21\_69 (BE1), MindFlayer\_71 (BE2), Moab\_51 (BK1), Mugiwara\_74 (BE2), MulchMansion\_68 (BE1), Muntaha\_48 (BK2), Navo\_69 (BE1), PacManQ\_70 (BE1), Paradiddles\_67 (BE1), Patelgo\_51 (BK1), Peebs\_70 (BE1), Pepperwood\_71 (BE1), Persimmon\_67 (BE1), Phredrick\_50 (BK1), PinkiePie\_69

(BE1), PumpkinSpice\_72 (BE2), SaltySpittoon\_73 (BE2), Samisti12\_71 (BE1), Scheme\_72 (BE1), Shuckle\_69 (BE1), Sollertia\_73 (BE2), SparkleGoddess\_51 (BK1), Spelly\_73 (BE2), Spilled\_74 (BE2), Squillium\_70 (BE1), Stanimal\_73 (BE2), StarPlatinum\_73 (BE2), Sushi23\_71 (BE1), Targaryen\_72 (BE1), Teutsch\_71 (BE1), TomSawyer\_71 (BE2), Tomas\_75 (BE2), Tribute\_69 (BE1), Warpy\_75 (BE1), Watermoore\_71 (BE1), WhereRU\_68 (BE1), Wipeout\_71 (BE2), Wofford\_72 (BE2), Yaboi\_73 (BE2),

Start 19:

- Found in 38 of 87 ( 43.7% ) of genes in pham
- Manual Annotations of this start: 8 of 79
- Called 31.6% of time when present
- Phage (with cluster) where this start called: Amabiko\_73 (BE2), Battuta\_71 (BE2), Birchlyn\_70 (BE2), Bordeaux\_71 (BE2), Cadmus\_72 (BE1), Gibbi\_77 (BE2), Karimac\_72 (BE2), NootNoot\_67 (BE1), Quaran19\_73 (BE2), Rikishi\_76 (BE2), Riptide\_69 (BE1), Starbow\_71 (BE2),

Start 22:

- Found in 43 of 87 ( 49.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.3% of time when present
- Phage (with cluster) where this start called: Marsus\_70 (BE1),

### **Summary by clusters:**

There are 4 clusters represented in this pham: BE2, BE1, BK1, BK2,

Info for manual annotations of cluster BE1:

- Start number 18 was manually annotated 35 times for cluster BE1.
- Start number 19 was manually annotated 1 time for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 18 was manually annotated 23 times for cluster BE2.
- Start number 19 was manually annotated 7 times for cluster BE2.

Info for manual annotations of cluster BK1:

- Start number 18 was manually annotated 11 times for cluster BK1.

Info for manual annotations of cluster BK2:

- Start number 18 was manually annotated 2 times for cluster BK2.

### **Gene Information:**

Gene: Amabiko\_73 Start: 53394, Stop: 53546, Start Num: 19

Candidate Starts for Amabiko\_73:

(15, 53340), (Start: 18 @53367 has 71 MA's), (Start: 19 @53394 has 8 MA's), (22, 53409), (25, 53466),

Gene: Anedea\_69 Start: 52939, Stop: 53118, Start Num: 18

Candidate Starts for Anedea\_69:

(10, 52885), (13, 52906), (14, 52909), (Start: 18 @52939 has 71 MA's), (Start: 19 @52966 has 8 MA's), (24, 53008), (25, 53038), (27, 53077),

Gene: Angela\_68 Start: 52399, Stop: 52578, Start Num: 18

Candidate Starts for Angela\_68:

(Start: 18 @52399 has 71 MA's), (22, 52441), (25, 52498),

Gene: Annadreamy\_48 Start: 42410, Stop: 42601, Start Num: 18

Candidate Starts for Annadreamy\_48:

(1, 42305), (5, 42344), (8, 42353), (10, 42359), (11, 42362), (17, 42398), (Start: 18 @42410 has 71 MA's), (22, 42452), (25, 42509),

Gene: Bartholomune\_69 Start: 52765, Stop: 52944, Start Num: 18

Candidate Starts for Bartholomune\_69:

(7, 52705), (9, 52711), (14, 52738), (Start: 18 @52765 has 71 MA's), (Start: 19 @52792 has 8 MA's), (24, 52834), (25, 52864), (27, 52903),

Gene: Battuta\_71 Start: 53368, Stop: 53520, Start Num: 19

Candidate Starts for Battuta\_71:

(15, 53314), (Start: 18 @53341 has 71 MA's), (Start: 19 @53368 has 8 MA's), (22, 53383), (25, 53440),

Gene: Belfort\_52 Start: 44931, Stop: 45122, Start Num: 18

Candidate Starts for Belfort\_52:

(1, 44826), (3, 44859), (5, 44865), (8, 44874), (10, 44880), (12, 44889), (17, 44919), (Start: 18 @44931 has 71 MA's), (20, 44961), (22, 44973), (25, 45030),

Gene: BillNye\_47 Start: 46338, Stop: 46523, Start Num: 18

Candidate Starts for BillNye\_47:

(16, 46329), (Start: 18 @46338 has 71 MA's), (21, 46371), (25, 46437),

Gene: Birchlyn\_70 Start: 51251, Stop: 51403, Start Num: 19

Candidate Starts for Birchlyn\_70:

(15, 51197), (Start: 18 @51224 has 71 MA's), (Start: 19 @51251 has 8 MA's), (22, 51266), (25, 51323),

Gene: BlueOtter\_71 Start: 54139, Stop: 54318, Start Num: 18

Candidate Starts for BlueOtter\_71:

(6, 54076), (7, 54079), (9, 54085), (14, 54112), (Start: 18 @54139 has 71 MA's), (25, 54238),

Gene: Blueeyedbeauty\_50 Start: 42922, Stop: 43113, Start Num: 18

Candidate Starts for Blueeyedbeauty\_50:

(1, 42817), (2, 42820), (5, 42856), (8, 42865), (10, 42871), (11, 42874), (17, 42910), (Start: 18 @42922 has 71 MA's), (22, 42964), (25, 43021),

Gene: Bmoc\_69 Start: 52743, Stop: 52922, Start Num: 18

Candidate Starts for Bmoc\_69:

(8, 52683), (9, 52686), (10, 52689), (13, 52710), (14, 52713), (Start: 18 @52743 has 71 MA's), (Start: 19 @52770 has 8 MA's), (24, 52812), (25, 52842), (27, 52881),

Gene: BoomerJR\_73 Start: 53219, Stop: 53398, Start Num: 18

Candidate Starts for BoomerJR\_73:

(15, 53192), (Start: 18 @53219 has 71 MA's), (22, 53261), (23, 53282), (25, 53318),

Gene: Bordeaux\_71 Start: 53523, Stop: 53675, Start Num: 19

Candidate Starts for Bordeaux\_71:

(15, 53469), (Start: 18 @53496 has 71 MA's), (Start: 19 @53523 has 8 MA's), (22, 53538), (25, 53595),

Gene: Braelyn\_70 Start: 53532, Stop: 53711, Start Num: 18

Candidate Starts for Braelyn\_70:

(7, 53472), (9, 53478), (14, 53505), (Start: 18 @53532 has 71 MA's), (Start: 19 @53559 has 8 MA's), (24, 53601), (25, 53631), (27, 53670),

Gene: Cadmus\_72 Start: 53176, Stop: 53328, Start Num: 19

Candidate Starts for Cadmus\_72:

(14, 53122), (Start: 18 @53149 has 71 MA's), (Start: 19 @53176 has 8 MA's), (24, 53218), (25, 53248),

Gene: CeilingFan\_72 Start: 53256, Stop: 53435, Start Num: 18

Candidate Starts for CeilingFan\_72:

(15, 53229), (Start: 18 @53256 has 71 MA's), (Start: 19 @53283 has 8 MA's), (22, 53298), (24, 53325), (25, 53355),

Gene: Comrade\_51 Start: 44547, Stop: 44738, Start Num: 18

Candidate Starts for Comrade\_51:

(1, 44442), (3, 44475), (5, 44481), (8, 44490), (10, 44496), (12, 44505), (17, 44535), (Start: 18 @44547 has 71 MA's), (20, 44577), (22, 44589), (25, 44646),

Gene: Cross\_71 Start: 54140, Stop: 54319, Start Num: 18

Candidate Starts for Cross\_71:

(6, 54077), (7, 54080), (9, 54086), (14, 54113), (Start: 18 @54140 has 71 MA's), (25, 54239),

Gene: Cursive\_69 Start: 53665, Stop: 53844, Start Num: 18

Candidate Starts for Cursive\_69:

(6, 53602), (7, 53605), (9, 53611), (14, 53638), (Start: 18 @53665 has 71 MA's), (25, 53764),

Gene: Daubenski\_72 Start: 53913, Stop: 54092, Start Num: 18

Candidate Starts for Daubenski\_72:

(14, 53886), (Start: 18 @53913 has 71 MA's), (Start: 19 @53940 has 8 MA's), (24, 53982), (25, 54012),

Gene: EGole\_72 Start: 55086, Stop: 55265, Start Num: 18

Candidate Starts for EGole\_72:

(6, 55023), (7, 55026), (9, 55032), (14, 55059), (Start: 18 @55086 has 71 MA's), (25, 55185),

Gene: Elmer\_75 Start: 54434, Stop: 54613, Start Num: 18

Candidate Starts for Elmer\_75:

(4, 54362), (8, 54374), (13, 54401), (14, 54404), (15, 54407), (Start: 18 @54434 has 71 MA's), (25, 54533),

Gene: Emma1919\_52 Start: 43344, Stop: 43535, Start Num: 18

Candidate Starts for Emma1919\_52:

(3, 43272), (5, 43278), (8, 43287), (17, 43332), (Start: 18 @43344 has 71 MA's), (20, 43374), (22, 43386), (25, 43443),

Gene: Enygma\_73 Start: 55159, Stop: 55338, Start Num: 18

Candidate Starts for Enygma\_73:

(15, 55132), (Start: 18 @55159 has 71 MA's), (25, 55258),

Gene: Evy\_72 Start: 54034, Stop: 54213, Start Num: 18

Candidate Starts for Evy\_72:

(Start: 18 @54034 has 71 MA's), (25, 54133),

Gene: Genie2\_73 Start: 53333, Stop: 53512, Start Num: 18

Candidate Starts for Genie2\_73:

(15, 53306), (Start: 18 @53333 has 71 MA's), (22, 53375), (23, 53396), (25, 53432),

Gene: Gibbi\_77 Start: 53506, Stop: 53658, Start Num: 19

Candidate Starts for Gibbi\_77:

(15, 53452), (Start: 18 @53479 has 71 MA's), (Start: 19 @53506 has 8 MA's), (22, 53521), (25, 53578),

Gene: HangryHippo\_71 Start: 54139, Stop: 54318, Start Num: 18

Candidate Starts for HangryHippo\_71:

(6, 54076), (7, 54079), (9, 54085), (14, 54112), (Start: 18 @54139 has 71 MA's), (25, 54238),

Gene: IchabodCrane\_70 Start: 53068, Stop: 53247, Start Num: 18

Candidate Starts for IchabodCrane\_70:

(15, 53041), (Start: 18 @53068 has 71 MA's), (Start: 19 @53095 has 8 MA's), (22, 53110), (24, 53137), (25, 53167),

Gene: JimJam\_73 Start: 53442, Stop: 53621, Start Num: 18

Candidate Starts for JimJam\_73:

(15, 53415), (Start: 18 @53442 has 71 MA's), (Start: 19 @53469 has 8 MA's), (22, 53484), (25, 53541),

Gene: Jollison\_72 Start: 53324, Stop: 53503, Start Num: 18

Candidate Starts for Jollison\_72:

(15, 53297), (Start: 18 @53324 has 71 MA's), (Start: 19 @53351 has 8 MA's), (22, 53366), (25, 53423),

Gene: Karimac\_72 Start: 53500, Stop: 53652, Start Num: 19

Candidate Starts for Karimac\_72:

(15, 53446), (Start: 18 @53473 has 71 MA's), (Start: 19 @53500 has 8 MA's), (22, 53515), (24, 53542), (25, 53572),

Gene: Kenrey\_52 Start: 43492, Stop: 43683, Start Num: 18

Candidate Starts for Kenrey\_52:

(1, 43387), (3, 43420), (5, 43426), (8, 43435), (17, 43480), (Start: 18 @43492 has 71 MA's), (Start: 19 @43519 has 8 MA's), (20, 43522), (22, 43534), (25, 43591),

Gene: KentuckyRacer\_73 Start: 53257, Stop: 53436, Start Num: 18

Candidate Starts for KentuckyRacer\_73:

(15, 53230), (Start: 18 @53257 has 71 MA's), (Start: 19 @53284 has 8 MA's), (22, 53299), (25, 53356),

Gene: Larnav\_71 Start: 54124, Stop: 54303, Start Num: 18

Candidate Starts for Larnav\_71:

(6, 54061), (7, 54064), (9, 54070), (14, 54097), (Start: 18 @54124 has 71 MA's), (25, 54223),

Gene: Leo04\_72 Start: 54639, Stop: 54818, Start Num: 18

Candidate Starts for Leo04\_72:

(6, 54576), (7, 54579), (9, 54585), (14, 54612), (Start: 18 @54639 has 71 MA's), (25, 54738),

Gene: Liandry\_70 Start: 53514, Stop: 53693, Start Num: 18

Candidate Starts for Liandry\_70:

(7, 53454), (9, 53460), (14, 53487), (Start: 18 @53514 has 71 MA's), (Start: 19 @53541 has 8 MA's), (24, 53583), (25, 53613), (27, 53652),

Gene: LilMartin\_68 Start: 52347, Stop: 52526, Start Num: 18

Candidate Starts for LilMartin\_68:

(Start: 18 @52347 has 71 MA's), (22, 52389), (25, 52446),

Gene: Limpid\_48 Start: 42409, Stop: 42600, Start Num: 18

Candidate Starts for Limpid\_48:

(1, 42304), (5, 42343), (8, 42352), (10, 42358), (11, 42361), (17, 42397), (Start: 18 @42409 has 71 MA's), (22, 42451), (25, 42508),

Gene: LukeCage\_72 Start: 53227, Stop: 53406, Start Num: 18

Candidate Starts for LukeCage\_72:

(8, 53167), (13, 53194), (15, 53200), (Start: 18 @53227 has 71 MA's), (22, 53269), (25, 53326),

Gene: Lululemon\_70 Start: 53520, Stop: 53699, Start Num: 18

Candidate Starts for Lululemon\_70:

(6, 53457), (7, 53460), (9, 53466), (14, 53493), (Start: 18 @53520 has 71 MA's), (25, 53619),

Gene: Marsus\_70 Start: 52661, Stop: 52798, Start Num: 22

Candidate Starts for Marsus\_70:

(Start: 18 @52619 has 71 MA's), (22, 52661), (25, 52718),

Gene: Mildred21\_69 Start: 52544, Stop: 52723, Start Num: 18

Candidate Starts for Mildred21\_69:

(8, 52484), (10, 52490), (13, 52511), (14, 52514), (17, 52529), (Start: 18 @52544 has 71 MA's), (25, 52643),

Gene: MindFlayer\_71 Start: 52975, Stop: 53154, Start Num: 18

Candidate Starts for MindFlayer\_71:

(15, 52948), (Start: 18 @52975 has 71 MA's), (Start: 19 @53002 has 8 MA's), (22, 53017), (25, 53074),

Gene: Moab\_51 Start: 44517, Stop: 44708, Start Num: 18

Candidate Starts for Moab\_51:

(1, 44412), (2, 44415), (3, 44445), (5, 44451), (8, 44460), (12, 44475), (17, 44505), (Start: 18 @44517 has 71 MA's), (20, 44547), (25, 44616), (28, 44661),

Gene: Mugiwara\_74 Start: 53726, Stop: 53905, Start Num: 18

Candidate Starts for Mugiwara\_74:

(4, 53654), (8, 53666), (13, 53693), (15, 53699), (Start: 18 @53726 has 71 MA's), (22, 53768), (25, 53825),

Gene: MulchMansion\_68 Start: 52347, Stop: 52526, Start Num: 18

Candidate Starts for MulchMansion\_68:

(Start: 18 @52347 has 71 MA's), (22, 52389), (25, 52446),

Gene: Muntaha\_48 Start: 44734, Stop: 44919, Start Num: 18

Candidate Starts for Muntaha\_48:

(Start: 18 @44734 has 71 MA's), (25, 44833),

Gene: Navo\_69 Start: 53436, Stop: 53615, Start Num: 18

Candidate Starts for Navo\_69:

(7, 53376), (9, 53382), (14, 53409), (Start: 18 @53436 has 71 MA's), (Start: 19 @53463 has 8 MA's), (24, 53505), (25, 53535), (27, 53574),



Gene: NootNoot\_67 Start: 52455, Stop: 52607, Start Num: 19

Candidate Starts for NootNoot\_67:

(7, 52368), (9, 52374), (14, 52401), (Start: 18 @52428 has 71 MA's), (Start: 19 @52455 has 8 MA's), (24, 52497), (25, 52527), (27, 52566),

Gene: PacManQ\_70 Start: 53520, Stop: 53699, Start Num: 18

Candidate Starts for PacManQ\_70:

(6, 53457), (7, 53460), (9, 53466), (14, 53493), (Start: 18 @53520 has 71 MA's), (25, 53619),

Gene: Paradiddles\_67 Start: 52692, Stop: 52871, Start Num: 18

Candidate Starts for Paradiddles\_67:

(7, 52632), (9, 52638), (14, 52665), (Start: 18 @52692 has 71 MA's), (Start: 19 @52719 has 8 MA's), (24, 52761), (25, 52791), (27, 52830),

Gene: Patelgo\_51 Start: 44704, Stop: 44895, Start Num: 18

Candidate Starts for Patelgo\_51:

(1, 44599), (2, 44602), (3, 44632), (5, 44638), (8, 44647), (12, 44662), (17, 44692), (Start: 18 @44704 has 71 MA's), (20, 44734), (25, 44803), (28, 44848),

Gene: Peebs\_70 Start: 53874, Stop: 54053, Start Num: 18

Candidate Starts for Peebs\_70:

(6, 53811), (7, 53814), (9, 53820), (14, 53847), (Start: 18 @53874 has 71 MA's), (25, 53973),

Gene: Pepperwood\_71 Start: 54007, Stop: 54186, Start Num: 18

Candidate Starts for Pepperwood\_71:

(6, 53944), (7, 53947), (9, 53953), (14, 53980), (Start: 18 @54007 has 71 MA's), (25, 54106),

Gene: Persimmon\_67 Start: 52361, Stop: 52540, Start Num: 18

Candidate Starts for Persimmon\_67:

(7, 52301), (9, 52307), (14, 52334), (Start: 18 @52361 has 71 MA's), (Start: 19 @52388 has 8 MA's), (24, 52430), (25, 52460), (27, 52499),

Gene: Phredrick\_50 Start: 42563, Stop: 42754, Start Num: 18

Candidate Starts for Phredrick\_50:

(1, 42458), (3, 42491), (5, 42497), (8, 42506), (17, 42551), (Start: 18 @42563 has 71 MA's), (Start: 19 @42590 has 8 MA's), (20, 42593), (22, 42605), (25, 42662),

Gene: PinkiePie\_69 Start: 53514, Stop: 53693, Start Num: 18

Candidate Starts for PinkiePie\_69:

(7, 53454), (9, 53460), (14, 53487), (Start: 18 @53514 has 71 MA's), (Start: 19 @53541 has 8 MA's), (24, 53583), (25, 53613), (27, 53652),

Gene: PumpkinSpice\_72 Start: 53367, Stop: 53546, Start Num: 18

Candidate Starts for PumpkinSpice\_72:

(15, 53340), (Start: 18 @53367 has 71 MA's), (Start: 19 @53394 has 8 MA's), (22, 53409), (25, 53466),

Gene: Quaran19\_73 Start: 53385, Stop: 53537, Start Num: 19

Candidate Starts for Quaran19\_73:

(15, 53331), (Start: 18 @53358 has 71 MA's), (Start: 19 @53385 has 8 MA's), (22, 53400), (25, 53457),

Gene: Rikishi\_76 Start: 53300, Stop: 53452, Start Num: 19

Candidate Starts for Rikishi\_76:

(15, 53246), (Start: 18 @53273 has 71 MA's), (Start: 19 @53300 has 8 MA's), (22, 53315), (25, 53372),

Gene: Riptide\_69 Start: 52188, Stop: 52340, Start Num: 19

Candidate Starts for Riptide\_69:

(8, 52101), (9, 52104), (10, 52107), (13, 52128), (14, 52131), (Start: 18 @52161 has 71 MA's), (Start: 19 @52188 has 8 MA's), (24, 52230), (25, 52260), (27, 52299),

Gene: SaltySpittoon\_73 Start: 53367, Stop: 53546, Start Num: 18

Candidate Starts for SaltySpittoon\_73:

(15, 53340), (Start: 18 @53367 has 71 MA's), (Start: 19 @53394 has 8 MA's), (22, 53409), (25, 53466),

Gene: Samisti12\_71 Start: 55317, Stop: 55496, Start Num: 18

Candidate Starts for Samisti12\_71:

(6, 55254), (7, 55257), (9, 55263), (14, 55290), (Start: 18 @55317 has 71 MA's), (23, 55380), (25, 55416),

Gene: Scheme\_72 Start: 54721, Stop: 54900, Start Num: 18

Candidate Starts for Scheme\_72:

(6, 54658), (7, 54661), (9, 54667), (14, 54694), (Start: 18 @54721 has 71 MA's), (25, 54820),

Gene: Shuckle\_69 Start: 54331, Stop: 54510, Start Num: 18

Candidate Starts for Shuckle\_69:

(6, 54268), (7, 54271), (9, 54277), (14, 54304), (Start: 18 @54331 has 71 MA's), (25, 54430),

Gene: Sollertia\_73 Start: 53333, Stop: 53512, Start Num: 18

Candidate Starts for Sollertia\_73:

(15, 53306), (Start: 18 @53333 has 71 MA's), (22, 53375), (23, 53396), (25, 53432),

Gene: SparkleGoddess\_51 Start: 44548, Stop: 44739, Start Num: 18

Candidate Starts for SparkleGoddess\_51:

(1, 44443), (3, 44476), (5, 44482), (8, 44491), (10, 44497), (11, 44500), (12, 44506), (17, 44536), (Start: 18 @44548 has 71 MA's), (20, 44578), (22, 44590), (25, 44647),

Gene: Spelly\_73 Start: 53322, Stop: 53501, Start Num: 18

Candidate Starts for Spelly\_73:

(15, 53295), (Start: 18 @53322 has 71 MA's), (Start: 19 @53349 has 8 MA's), (22, 53364), (25, 53421),

Gene: Spilled\_74 Start: 53439, Stop: 53618, Start Num: 18

Candidate Starts for Spilled\_74:

(15, 53412), (Start: 18 @53439 has 71 MA's), (Start: 19 @53466 has 8 MA's), (22, 53481), (25, 53538),

Gene: Squillium\_70 Start: 53515, Stop: 53694, Start Num: 18

Candidate Starts for Squillium\_70:

(7, 53455), (9, 53461), (14, 53488), (Start: 18 @53515 has 71 MA's), (Start: 19 @53542 has 8 MA's), (24, 53584), (25, 53614), (27, 53653),

Gene: Stanimal\_73 Start: 53222, Stop: 53401, Start Num: 18

Candidate Starts for Stanimal\_73:

(15, 53195), (Start: 18 @53222 has 71 MA's), (22, 53264), (23, 53285), (25, 53321),

Gene: StarPlatinum\_73 Start: 53867, Stop: 54046, Start Num: 18

Candidate Starts for StarPlatinum\_73:

(8, 53807), (13, 53834), (15, 53840), (Start: 18 @53867 has 71 MA's), (22, 53909), (25, 53966),

Gene: Starbow\_71 Start: 53370, Stop: 53522, Start Num: 19  
Candidate Starts for Starbow\_71:  
(15, 53316), (Start: 18 @53343 has 71 MA's), (Start: 19 @53370 has 8 MA's), (22, 53385), (25, 53442),

Gene: Sushi23\_71 Start: 54232, Stop: 54411, Start Num: 18  
Candidate Starts for Sushi23\_71:  
(6, 54169), (7, 54172), (9, 54178), (14, 54205), (Start: 18 @54232 has 71 MA's), (25, 54331),

Gene: Targaryen\_72 Start: 54936, Stop: 55115, Start Num: 18  
Candidate Starts for Targaryen\_72:  
(Start: 18 @54936 has 71 MA's), (25, 55035),

Gene: Deutsch\_71 Start: 54495, Stop: 54674, Start Num: 18  
Candidate Starts for Deutsch\_71:  
(6, 54432), (7, 54435), (9, 54441), (14, 54468), (Start: 18 @54495 has 71 MA's), (25, 54594),

Gene: TomSawyer\_71 Start: 52961, Stop: 53140, Start Num: 18  
Candidate Starts for TomSawyer\_71:  
(15, 52934), (Start: 18 @52961 has 71 MA's), (Start: 19 @52988 has 8 MA's), (22, 53003), (25, 53060),

Gene: Tomas\_75 Start: 55682, Stop: 55861, Start Num: 18  
Candidate Starts for Tomas\_75:  
(Start: 18 @55682 has 71 MA's), (21, 55715), (22, 55724), (23, 55745), (25, 55781), (26, 55817),

Gene: Tribute\_69 Start: 53701, Stop: 53880, Start Num: 18  
Candidate Starts for Tribute\_69:  
(6, 53638), (7, 53641), (9, 53647), (14, 53674), (Start: 18 @53701 has 71 MA's), (25, 53800),

Gene: Warpy\_75 Start: 54400, Stop: 54579, Start Num: 18  
Candidate Starts for Warpy\_75:  
(Start: 18 @54400 has 71 MA's), (25, 54499),

Gene: Watermoore\_71 Start: 54711, Stop: 54890, Start Num: 18  
Candidate Starts for Watermoore\_71:  
(6, 54648), (7, 54651), (9, 54657), (14, 54684), (Start: 18 @54711 has 71 MA's), (25, 54810),

Gene: WhereRU\_68 Start: 52952, Stop: 53131, Start Num: 18  
Candidate Starts for WhereRU\_68:  
(7, 52892), (9, 52898), (14, 52925), (Start: 18 @52952 has 71 MA's), (Start: 19 @52979 has 8 MA's),  
(24, 53021), (25, 53051), (27, 53090),

Gene: Wipeout\_71 Start: 53712, Stop: 53891, Start Num: 18  
Candidate Starts for Wipeout\_71:  
(15, 53685), (Start: 18 @53712 has 71 MA's), (Start: 19 @53739 has 8 MA's), (22, 53754), (25, 53811),

Gene: Wofford\_72 Start: 54397, Stop: 54576, Start Num: 18  
Candidate Starts for Wofford\_72:  
(8, 54337), (13, 54364), (14, 54367), (15, 54370), (Start: 18 @54397 has 71 MA's), (25, 54496),

Gene: Yaboi\_73 Start: 53310, Stop: 53489, Start Num: 18  
Candidate Starts for Yaboi\_73:  
(15, 53283), (Start: 18 @53310 has 71 MA's), (22, 53352), (23, 53373), (25, 53409),