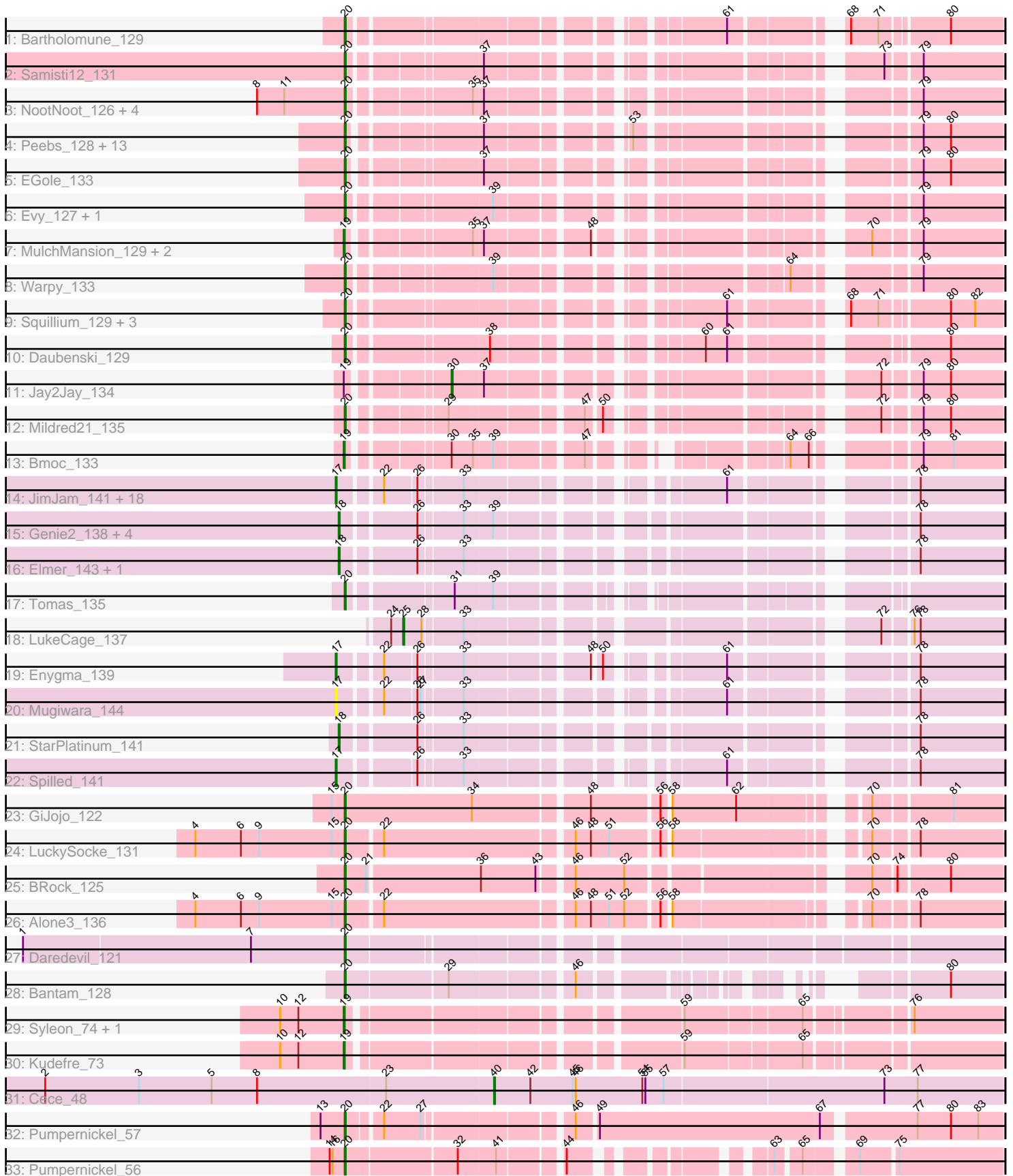


# Pham 65860



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 65860 Report

This analysis was run 04/28/24 on database version 559.

Pham number 65860 has 80 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Bartholomune\_129
- Track 2 : Samisti12\_131
- Track 3 : NootNoot\_126, Persimmon\_129, WhereRU\_131, Navo\_131, Braelyn\_130
- Track 4 : Peebs\_128, Sushi23\_129, HangryHippo\_132, Cross\_130, Larnav\_137, Teutsch\_129, Tribute\_129, Watermoore\_129, BlueOtter\_132, Leo04\_131, Cursive\_128, Lululemon\_131, PacManQ\_131, Pepperwood\_129
- Track 5 : EGole\_133
- Track 6 : Evy\_127, Targaryen\_130
- Track 7 : MulchMansion\_129, Angela\_130, LilMartin\_129
- Track 8 : Warpy\_133
- Track 9 : Squillium\_129, Paradiddles\_125, Liandry\_129, PinkiePie\_126
- Track 10 : Daubenski\_129
- Track 11 : Jay2Jay\_134
- Track 12 : Mildred21\_135
- Track 13 : Bmoc\_133
- Track 14 : JimJam\_141, IchabodCrane\_133, Wipeout\_132, KentuckyRacer\_144, Karimac\_137, TomSawyer\_139, Amabiko\_139, PumpkinSpice\_140, Gibbi\_144, Bordeaux\_137, CeilingFan\_144, Starbow\_136, Spelly\_140, Jollison\_143, Battuta\_137, SaltySpitoon\_138, Birchlyn\_137, MindFlayer\_134, Quarant19\_138
- Track 15 : Genie2\_138, BoomerJR\_138, Sollertia\_137, Stanimal\_136, Yaboi\_137
- Track 16 : Elmer\_143, Wofford\_133
- Track 17 : Tomas\_135
- Track 18 : LukeCage\_137
- Track 19 : Enygma\_139
- Track 20 : Mugiwara\_144
- Track 21 : StarPlatinum\_141
- Track 22 : Spilled\_141
- Track 23 : GiJojo\_122
- Track 24 : LuckySocke\_131
- Track 25 : BRock\_125
- Track 26 : Alone3\_136
- Track 27 : Daredevil\_121
- Track 28 : Bantam\_128
- Track 29 : Syleon\_74, Sephiroth\_72
- Track 30 : Kudrefre\_73
- Track 31 : Cece\_48
- Track 32 : Pumpnickel\_57

- Track 33 : Pumpernickel\_56

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

The start number called the most often in the published annotations is 20, it was called in 33 of the 67 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alone3\_136, BRock\_125, Bantam\_128, Bartholomune\_129, BlueOtter\_132, Braelyn\_130, Cross\_130, Cursive\_128, Daredevil\_121, Daubenski\_129, EGole\_133, Evy\_127, GiJojo\_122, HangryHippo\_132, Larnav\_137, Leo04\_131, Liandry\_129, LuckySocke\_131, Lululemon\_131, Mildred21\_135, Navo\_131, NootNoot\_126, PacManQ\_131, Paradiddles\_125, Peebs\_128, Pepperwood\_129, Persimmon\_129, PinkiePie\_126, Pumpernickel\_56, Pumpernickel\_57, Samisti12\_131, Squillium\_129, Sushi23\_129, Targaryen\_130, Deutsch\_129, Tomas\_135, Tribute\_129, Warpy\_133, Watermoore\_129, WhereRU\_131,

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

- 

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

- Amabiko\_139, Angela\_130, Battuta\_137, Birchlyn\_137, Bmoc\_133, BoomerJR\_138, Bordeaux\_137, Cece\_48, CeilingFan\_144, Elmer\_143, Enygma\_139, Genie2\_138, Gibbi\_144, IchabodCrane\_133, Jay2Jay\_134, JimJam\_141, Jollison\_143, Karimac\_137, KentuckyRacer\_144, Kudrefre\_73, LilMartin\_129, LukeCage\_137, MindFlayer\_134, Mugiwara\_144, MulchMansion\_129, PumpkinSpice\_140, Quarant19\_138, SaltySpittoon\_138, Sephiroth\_72, Sollertia\_137, Spelly\_140, Spilled\_141, Stanimal\_136, StarPlatinum\_141, Starbow\_136, Syleon\_74, TomSawyer\_139, Wipeout\_132, Wofford\_133, Yaboi\_137,

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

Start 17:

- Found in 22 of 80 ( 27.5% ) of genes in pham
- Manual Annotations of this start: 17 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amabiko\_139 (BE2), Battuta\_137 (BE2), Birchlyn\_137 (BE2), Bordeaux\_137 (BE2), CeilingFan\_144 (BE2), Enygma\_139 (BE2), Gibbi\_144 (BE2), IchabodCrane\_133 (BE2), JimJam\_141 (BE2), Jollison\_143 (BE2), Karimac\_137 (BE2), KentuckyRacer\_144 (BE2), MindFlayer\_134 (BE2), Mugiwara\_144 (BE2), PumpkinSpice\_140 (BE2), Quarant19\_138 (BE2), SaltySpittoon\_138 (BE2), Spelly\_140 (BE2), Spilled\_141 (BE2), Starbow\_136 (BE2), TomSawyer\_139 (BE2), Wipeout\_132 (BE2),

Start 18:

- Found in 8 of 80 ( 10.0% ) of genes in pham
- Manual Annotations of this start: 7 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BoomerJR\_138 (BE2), Elmer\_143 (BE2), Genie2\_138 (BE2), Sollertia\_137 (BE2), Stanimal\_136 (BE2),

StarPlatinum\_141 (BE2), Wofford\_133 (BE2), Yaboi\_137 (BE2),

Start 19:

- Found in 8 of 80 ( 10.0% ) of genes in pham
- Manual Annotations of this start: 7 of 67
- Called 87.5% of time when present
- Phage (with cluster) where this start called: Angela\_130 (BE1), Bmoc\_133 (BE1), Kudrefre\_73 (DU1), LilMartin\_129 (BE1), MulchMansion\_129 (BE1), Sephiroth\_72 (DU1), Syleon\_74 (DU1),

Start 20:

- Found in 40 of 80 ( 50.0% ) of genes in pham
- Manual Annotations of this start: 33 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alone3\_136 (BS), BRock\_125 (BS), Bantam\_128 (DL), Bartholomune\_129 (BE1), BlueOtter\_132 (BE1), Braelyn\_130 (BE1), Cross\_130 (BE1), Cursive\_128 (BE1), Daredevil\_121 (DL), Daubenski\_129 (BE1), EGole\_133 (BE1), Evy\_127 (BE1), GiJojo\_122 (BS), HangryHippo\_132 (BE1), Larnav\_137 (BE1), Leo04\_131 (BE1), Liandry\_129 (BE1), LuckySocke\_131 (BS), Lululemon\_131 (BE1), Mildred21\_135 (BE1), Navo\_131 (BE1), NootNoot\_126 (BE1), PacManQ\_131 (BE1), Paradiddles\_125 (BE1), Peebs\_128 (BE1), Pepperwood\_129 (BE1), Persimmon\_129 (BE1), PinkiePie\_126 (BE1), Pumpernickel\_56 (GD4), Pumpernickel\_57 (GD4), Samisti12\_131 (BE1), Squillium\_129 (BE1), Sushi23\_129 (BE1), Targaryen\_130 (BE1), Teutsch\_129 (BE1), Tomas\_135 (BE2), Tribute\_129 (BE1), Warpy\_133 (BE1), Watermoore\_129 (BE1), WhereRU\_131 (BE1),

Start 25:

- Found in 1 of 80 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LukeCage\_137 (BE2),

Start 30:

- Found in 2 of 80 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 1 of 67
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Jay2Jay\_134 (BE1),

Start 40:

- Found in 1 of 80 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cece\_48 (GD3),

### Summary by clusters:

There are 7 clusters represented in this pham: DL, GD3, GD4, BS, BE2, DU1, BE1,

Info for manual annotations of cluster BE1:

- Start number 19 was manually annotated 4 times for cluster BE1.
- Start number 20 was manually annotated 24 times for cluster BE1.
- Start number 30 was manually annotated 1 time for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 17 was manually annotated 17 times for cluster BE2.
- Start number 18 was manually annotated 7 times for cluster BE2.
- Start number 20 was manually annotated 1 time for cluster BE2.
- Start number 25 was manually annotated 1 time for cluster BE2.

Info for manual annotations of cluster BS:

- Start number 20 was manually annotated 4 times for cluster BS.

Info for manual annotations of cluster DL:

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

Info for manual annotations of cluster DU1:

- Start number 19 was manually annotated 3 times for cluster DU1.

Info for manual annotations of cluster GD3:

- Start number 40 was manually annotated 1 time for cluster GD3.

Info for manual annotations of cluster GD4:

- Start number 20 was manually annotated 2 times for cluster GD4.

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

Gene: Alone3\_136 Start: 72885, Stop: 73457, Start Num: 20

Candidate Starts for Alone3\_136:

(4, 72738), (6, 72783), (9, 72801), (15, 72873), (Start: 20 @72885 has 33 MA's), (22, 72918), (46, 73095), (48, 73110), (51, 73128), (52, 73143), (56, 73173), (58, 73179), (70, 73338), (78, 73377),

Gene: Amabiko\_139 Start: 84183, Stop: 84722, Start Num: 17

Candidate Starts for Amabiko\_139:

(Start: 17 @84183 has 17 MA's), (22, 84219), (26, 84249), (33, 84288), (61, 84492), (78, 84639),

Gene: Angela\_130 Start: 82931, Stop: 83455, Start Num: 19

Candidate Starts for Angela\_130:

(Start: 19 @82931 has 7 MA's), (35, 83033), (37, 83042), (48, 83132), (70, 83336), (79, 83378),

Gene: BRock\_125 Start: 67431, Stop: 68009, Start Num: 20

Candidate Starts for BRock\_125:

(Start: 20 @67431 has 33 MA's), (21, 67452), (36, 67560), (43, 67614), (46, 67641), (52, 67689), (70, 67890), (74, 67911), (80, 67959),

Gene: Bantam\_128 Start: 76459, Stop: 76956, Start Num: 20

Candidate Starts for Bantam\_128:

(Start: 20 @76459 has 33 MA's), (29, 76555), (46, 76663), (80, 76906),

Gene: Bartholomune\_129 Start: 82729, Stop: 83259, Start Num: 20

Candidate Starts for Bartholomune\_129:

(Start: 20 @82729 has 33 MA's), (61, 83035), (68, 83122), (71, 83149), (80, 83209),

Gene: Battuta\_137 Start: 84156, Stop: 84695, Start Num: 17

Candidate Starts for Battuta\_137:

(Start: 17 @84156 has 17 MA's), (22, 84192), (26, 84222), (33, 84261), (61, 84465), (78, 84612),

Gene: Birchlyn\_137 Start: 82043, Stop: 82582, Start Num: 17

Candidate Starts for Birchlyn\_137:

(Start: 17 @82043 has 17 MA's), (22, 82079), (26, 82109), (33, 82148), (61, 82352), (78, 82499),

Gene: BlueOtter\_132 Start: 84968, Stop: 85492, Start Num: 20

Candidate Starts for BlueOtter\_132:

(Start: 20 @84968 has 33 MA's), (37, 85079), (53, 85190), (79, 85415), (80, 85442),

Gene: Bmoc\_133 Start: 83226, Stop: 83732, Start Num: 19

Candidate Starts for Bmoc\_133:

(Start: 19 @83226 has 7 MA's), (Start: 30 @83307 has 1 MA's), (35, 83328), (39, 83346), (47, 83421), (64, 83559), (66, 83577), (79, 83655), (81, 83685),

Gene: BoomerJR\_138 Start: 84486, Stop: 85031, Start Num: 18

Candidate Starts for BoomerJR\_138:

(Start: 18 @84486 has 7 MA's), (26, 84552), (33, 84591), (39, 84618), (78, 84948),

Gene: Bordeaux\_137 Start: 84311, Stop: 84850, Start Num: 17

Candidate Starts for Bordeaux\_137:

(Start: 17 @84311 has 17 MA's), (22, 84347), (26, 84377), (33, 84416), (61, 84620), (78, 84767),

Gene: Braelyn\_130 Start: 83603, Stop: 84130, Start Num: 20

Candidate Starts for Braelyn\_130:

(8, 83516), (11, 83543), (Start: 20 @83603 has 33 MA's), (35, 83708), (37, 83717), (79, 84053),

Gene: Cece\_48 Start: 19112, Stop: 18615, Start Num: 40

Candidate Starts for Cece\_48:

(2, 19553), (3, 19460), (5, 19388), (8, 19343), (23, 19217), (Start: 40 @19112 has 1 MA's), (42, 19076), (45, 19034), (46, 19031), (54, 18965), (55, 18962), (57, 18944), (73, 18731), (77, 18698),

Gene: CeilingFan\_144 Start: 84074, Stop: 84613, Start Num: 17

Candidate Starts for CeilingFan\_144:

(Start: 17 @84074 has 17 MA's), (22, 84110), (26, 84140), (33, 84179), (61, 84383), (78, 84530),

Gene: Cross\_130 Start: 84969, Stop: 85493, Start Num: 20

Candidate Starts for Cross\_130:

(Start: 20 @84969 has 33 MA's), (37, 85080), (53, 85191), (79, 85416), (80, 85443),

Gene: Cursive\_128 Start: 83178, Stop: 83702, Start Num: 20

Candidate Starts for Cursive\_128:

(Start: 20 @83178 has 33 MA's), (37, 83289), (53, 83400), (79, 83625), (80, 83652),

Gene: Daredevil\_121 Start: 73097, Stop: 73678, Start Num: 20

Candidate Starts for Daredevil\_121:

(1, 72782), (7, 73004), (Start: 20 @73097 has 33 MA's),

Gene: Daubenski\_129 Start: 84407, Stop: 84937, Start Num: 20

Candidate Starts for Daubenski\_129:

(Start: 20 @84407 has 33 MA's), (38, 84530), (60, 84692), (61, 84713), (80, 84887),

Gene: EGole\_133 Start: 85996, Stop: 86520, Start Num: 20

Candidate Starts for EGole\_133:

(Start: 20 @85996 has 33 MA's), (37, 86107), (79, 86443), (80, 86470),

Gene: Elmer\_143 Start: 85512, Stop: 86057, Start Num: 18

Candidate Starts for Elmer\_143:

(Start: 18 @85512 has 7 MA's), (26, 85578), (33, 85617), (78, 85974),

Gene: Enygma\_139 Start: 85995, Stop: 86534, Start Num: 17

Candidate Starts for Enygma\_139:

(Start: 17 @85995 has 17 MA's), (22, 86031), (26, 86061), (33, 86100), (48, 86208), (50, 86214), (61, 86304), (78, 86451),

Gene: Evy\_127 Start: 84722, Stop: 85249, Start Num: 20

Candidate Starts for Evy\_127:

(Start: 20 @84722 has 33 MA's), (39, 84845), (79, 85172),

Gene: Genie2\_138 Start: 84600, Stop: 85145, Start Num: 18

Candidate Starts for Genie2\_138:

(Start: 18 @84600 has 7 MA's), (26, 84666), (33, 84705), (39, 84732), (78, 85062),

Gene: GiJojo\_122 Start: 71916, Stop: 72497, Start Num: 20

Candidate Starts for GiJojo\_122:

(15, 71904), (Start: 20 @71916 has 33 MA's), (34, 72042), (48, 72147), (56, 72210), (58, 72216), (62, 72279), (70, 72378), (81, 72450),

Gene: Gibbi\_144 Start: 84295, Stop: 84834, Start Num: 17

Candidate Starts for Gibbi\_144:

(Start: 17 @84295 has 17 MA's), (22, 84331), (26, 84361), (33, 84400), (61, 84604), (78, 84751),

Gene: HangryHippo\_132 Start: 84968, Stop: 85492, Start Num: 20

Candidate Starts for HangryHippo\_132:

(Start: 20 @84968 has 33 MA's), (37, 85079), (53, 85190), (79, 85415), (80, 85442),

Gene: IchabodCrane\_133 Start: 83884, Stop: 84423, Start Num: 17

Candidate Starts for IchabodCrane\_133:

(Start: 17 @83884 has 17 MA's), (22, 83920), (26, 83950), (33, 83989), (61, 84193), (78, 84340),

Gene: Jay2Jay\_134 Start: 85640, Stop: 86086, Start Num: 30

Candidate Starts for Jay2Jay\_134:

(Start: 19 @85559 has 7 MA's), (Start: 30 @85640 has 1 MA's), (37, 85670), (72, 85976), (79, 86009), (80, 86036),

Gene: JimJam\_141 Start: 84705, Stop: 85244, Start Num: 17

Candidate Starts for JimJam\_141:

(Start: 17 @84705 has 17 MA's), (22, 84741), (26, 84771), (33, 84810), (61, 85014), (78, 85161),

Gene: Jollison\_143 Start: 84139, Stop: 84678, Start Num: 17

Candidate Starts for Jollison\_143:

(Start: 17 @84139 has 17 MA's), (22, 84175), (26, 84205), (33, 84244), (61, 84448), (78, 84595),

Gene: Karimac\_137 Start: 84422, Stop: 84961, Start Num: 17

Candidate Starts for Karimac\_137:

(Start: 17 @84422 has 17 MA's), (22, 84458), (26, 84488), (33, 84527), (61, 84731), (78, 84878),

Gene: KentuckyRacer\_144 Start: 84570, Stop: 85109, Start Num: 17  
Candidate Starts for KentuckyRacer\_144:  
(Start: 17 @84570 has 17 MA's), (22, 84606), (26, 84636), (33, 84675), (61, 84879), (78, 85026),

Gene: Kudefre\_73 Start: 45296, Stop: 45865, Start Num: 19  
Candidate Starts for Kudefre\_73:  
(10, 45233), (12, 45251), (Start: 19 @45296 has 7 MA's), (59, 45581), (65, 45689),

Gene: Larnav\_137 Start: 84952, Stop: 85476, Start Num: 20  
Candidate Starts for Larnav\_137:  
(Start: 20 @84952 has 33 MA's), (37, 85063), (53, 85174), (79, 85399), (80, 85426),

Gene: Leo04\_131 Start: 85468, Stop: 85992, Start Num: 20  
Candidate Starts for Leo04\_131:  
(Start: 20 @85468 has 33 MA's), (37, 85579), (53, 85690), (79, 85915), (80, 85942),

Gene: Liandry\_129 Start: 83472, Stop: 84002, Start Num: 20  
Candidate Starts for Liandry\_129:  
(Start: 20 @83472 has 33 MA's), (61, 83778), (68, 83865), (71, 83892), (80, 83952), (82, 83976),

Gene: LilMartin\_129 Start: 82833, Stop: 83357, Start Num: 19  
Candidate Starts for LilMartin\_129:  
(Start: 19 @82833 has 7 MA's), (35, 82935), (37, 82944), (48, 83034), (70, 83238), (79, 83280),

Gene: LuckySocke\_131 Start: 70798, Stop: 71370, Start Num: 20  
Candidate Starts for LuckySocke\_131:  
(4, 70651), (6, 70696), (9, 70714), (15, 70786), (Start: 20 @70798 has 33 MA's), (22, 70831), (46, 71008), (48, 71023), (51, 71041), (56, 71086), (58, 71092), (70, 71251), (78, 71290),

Gene: LukeCage\_137 Start: 85251, Stop: 85751, Start Num: 25  
Candidate Starts for LukeCage\_137:  
(24, 85239), (Start: 25 @85251 has 1 MA's), (28, 85269), (33, 85305), (72, 85638), (76, 85662), (78, 85668),

Gene: Lululemon\_131 Start: 84349, Stop: 84873, Start Num: 20  
Candidate Starts for Lululemon\_131:  
(Start: 20 @84349 has 33 MA's), (37, 84460), (53, 84571), (79, 84796), (80, 84823),

Gene: Mildred21\_135 Start: 83403, Stop: 83927, Start Num: 20  
Candidate Starts for Mildred21\_135:  
(Start: 20 @83403 has 33 MA's), (29, 83481), (47, 83598), (50, 83610), (72, 83817), (79, 83850), (80, 83877),

Gene: MindFlayer\_134 Start: 83791, Stop: 84330, Start Num: 17  
Candidate Starts for MindFlayer\_134:  
(Start: 17 @83791 has 17 MA's), (22, 83827), (26, 83857), (33, 83896), (61, 84100), (78, 84247),

Gene: Mugiwara\_144 Start: 85032, Stop: 85571, Start Num: 17  
Candidate Starts for Mugiwara\_144:  
(Start: 17 @85032 has 17 MA's), (22, 85068), (26, 85098), (27, 85101), (33, 85137), (61, 85341), (78, 85488),



Gene: MulchMansion\_129 Start: 82879, Stop: 83403, Start Num: 19  
Candidate Starts for MulchMansion\_129:  
(Start: 19 @82879 has 7 MA's), (35, 82981), (37, 82990), (48, 83080), (70, 83284), (79, 83326),

Gene: Navo\_131 Start: 83265, Stop: 83792, Start Num: 20  
Candidate Starts for Navo\_131:  
(8, 83178), (11, 83205), (Start: 20 @83265 has 33 MA's), (35, 83370), (37, 83379), (79, 83715),

Gene: NootNoot\_126 Start: 82374, Stop: 82901, Start Num: 20  
Candidate Starts for NootNoot\_126:  
(8, 82287), (11, 82314), (Start: 20 @82374 has 33 MA's), (35, 82479), (37, 82488), (79, 82824),

Gene: PacManQ\_131 Start: 84349, Stop: 84873, Start Num: 20  
Candidate Starts for PacManQ\_131:  
(Start: 20 @84349 has 33 MA's), (37, 84460), (53, 84571), (79, 84796), (80, 84823),

Gene: Paradiddles\_125 Start: 84669, Stop: 85199, Start Num: 20  
Candidate Starts for Paradiddles\_125:  
(Start: 20 @84669 has 33 MA's), (61, 84975), (68, 85062), (71, 85089), (80, 85149), (82, 85173),

Gene: Peebs\_128 Start: 84765, Stop: 85289, Start Num: 20  
Candidate Starts for Peebs\_128:  
(Start: 20 @84765 has 33 MA's), (37, 84876), (53, 84987), (79, 85212), (80, 85239),

Gene: Pepperwood\_129 Start: 84895, Stop: 85419, Start Num: 20  
Candidate Starts for Pepperwood\_129:  
(Start: 20 @84895 has 33 MA's), (37, 85006), (53, 85117), (79, 85342), (80, 85369),

Gene: Persimmon\_129 Start: 82308, Stop: 82835, Start Num: 20  
Candidate Starts for Persimmon\_129:  
(8, 82221), (11, 82248), (Start: 20 @82308 has 33 MA's), (35, 82413), (37, 82422), (79, 82758),

Gene: PinkiePie\_126 Start: 83472, Stop: 84002, Start Num: 20  
Candidate Starts for PinkiePie\_126:  
(Start: 20 @83472 has 33 MA's), (61, 83778), (68, 83865), (71, 83892), (80, 83952), (82, 83976),

Gene: Pumpernickel\_57 Start: 22003, Stop: 21407, Start Num: 20  
Candidate Starts for Pumpernickel\_57:  
(13, 22027), (Start: 20 @22003 has 33 MA's), (22, 21973), (27, 21937), (46, 21808), (49, 21790), (67, 21574), (77, 21490), (80, 21457), (83, 21430),

Gene: Pumpernickel\_56 Start: 21420, Stop: 20887, Start Num: 20  
Candidate Starts for Pumpernickel\_56:  
(14, 21435), (16, 21432), (Start: 20 @21420 has 33 MA's), (32, 21315), (41, 21279), (44, 21225), (63, 21084), (65, 21063), (69, 21021), (75, 20988),

Gene: PumpkinSpice\_140 Start: 84747, Stop: 85286, Start Num: 17  
Candidate Starts for PumpkinSpice\_140:  
(Start: 17 @84747 has 17 MA's), (22, 84783), (26, 84813), (33, 84852), (61, 85056), (78, 85203),

Gene: Quaran19\_138 Start: 84173, Stop: 84712, Start Num: 17  
Candidate Starts for Quaran19\_138:  
(Start: 17 @84173 has 17 MA's), (22, 84209), (26, 84239), (33, 84278), (61, 84482), (78, 84629),

Gene: SaltySpittoon\_138 Start: 84186, Stop: 84725, Start Num: 17  
Candidate Starts for SaltySpittoon\_138:  
(Start: 17 @84186 has 17 MA's), (22, 84222), (26, 84252), (33, 84291), (61, 84495), (78, 84642),

Gene: Samisti12\_131 Start: 86144, Stop: 86671, Start Num: 20  
Candidate Starts for Samisti12\_131:  
(Start: 20 @86144 has 33 MA's), (37, 86258), (73, 86564), (79, 86594),

Gene: Sephiroth\_72 Start: 45468, Stop: 46037, Start Num: 19  
Candidate Starts for Sephiroth\_72:  
(10, 45405), (12, 45423), (Start: 19 @45468 has 7 MA's), (59, 45753), (65, 45861), (76, 45951),

Gene: Sollertia\_137 Start: 84600, Stop: 85145, Start Num: 18  
Candidate Starts for Sollertia\_137:  
(Start: 18 @84600 has 7 MA's), (26, 84666), (33, 84705), (39, 84732), (78, 85062),

Gene: Spelly\_140 Start: 84138, Stop: 84677, Start Num: 17  
Candidate Starts for Spelly\_140:  
(Start: 17 @84138 has 17 MA's), (22, 84174), (26, 84204), (33, 84243), (61, 84447), (78, 84594),

Gene: Spilled\_141 Start: 84256, Stop: 84795, Start Num: 17  
Candidate Starts for Spilled\_141:  
(Start: 17 @84256 has 17 MA's), (26, 84322), (33, 84361), (61, 84565), (78, 84712),

Gene: Squillium\_129 Start: 83474, Stop: 84004, Start Num: 20  
Candidate Starts for Squillium\_129:  
(Start: 20 @83474 has 33 MA's), (61, 83780), (68, 83867), (71, 83894), (80, 83954), (82, 83978),

Gene: Stanimal\_136 Start: 84489, Stop: 85034, Start Num: 18  
Candidate Starts for Stanimal\_136:  
(Start: 18 @84489 has 7 MA's), (26, 84555), (33, 84594), (39, 84621), (78, 84951),

Gene: StarPlatinum\_141 Start: 85649, Stop: 86194, Start Num: 18  
Candidate Starts for StarPlatinum\_141:  
(Start: 18 @85649 has 7 MA's), (26, 85715), (33, 85754), (78, 86111),

Gene: Starbow\_136 Start: 84158, Stop: 84697, Start Num: 17  
Candidate Starts for Starbow\_136:  
(Start: 17 @84158 has 17 MA's), (22, 84194), (26, 84224), (33, 84263), (61, 84467), (78, 84614),

Gene: Sushi23\_129 Start: 85121, Stop: 85645, Start Num: 20  
Candidate Starts for Sushi23\_129:  
(Start: 20 @85121 has 33 MA's), (37, 85232), (53, 85343), (79, 85568), (80, 85595),

Gene: Syleon\_74 Start: 45406, Stop: 45975, Start Num: 19  
Candidate Starts for Syleon\_74:  
(10, 45343), (12, 45361), (Start: 19 @45406 has 7 MA's), (59, 45691), (65, 45799), (76, 45889),

Gene: Targaryen\_130 Start: 85702, Stop: 86229, Start Num: 20  
Candidate Starts for Targaryen\_130:  
(Start: 20 @85702 has 33 MA's), (39, 85825), (79, 86152),

Gene: Deutsch\_129 Start: 85326, Stop: 85850, Start Num: 20

Candidate Starts for Deutsch\_129:

(Start: 20 @85326 has 33 MA's), (37, 85437), (53, 85548), (79, 85773), (80, 85800),

Gene: TomSawyer\_139 Start: 84204, Stop: 84743, Start Num: 17

Candidate Starts for TomSawyer\_139:

(Start: 17 @84204 has 17 MA's), (22, 84240), (26, 84270), (33, 84309), (61, 84513), (78, 84660),

Gene: Tomas\_135 Start: 86321, Stop: 86842, Start Num: 20

Candidate Starts for Tomas\_135:

(Start: 20 @86321 has 33 MA's), (31, 86411), (39, 86447),

Gene: Tribute\_129 Start: 85313, Stop: 85837, Start Num: 20

Candidate Starts for Tribute\_129:

(Start: 20 @85313 has 33 MA's), (37, 85424), (53, 85535), (79, 85760), (80, 85787),

Gene: Warpy\_133 Start: 85214, Stop: 85741, Start Num: 20

Candidate Starts for Warpy\_133:

(Start: 20 @85214 has 33 MA's), (39, 85337), (64, 85568), (79, 85664),

Gene: Watermoore\_129 Start: 85540, Stop: 86064, Start Num: 20

Candidate Starts for Watermoore\_129:

(Start: 20 @85540 has 33 MA's), (37, 85651), (53, 85762), (79, 85987), (80, 86014),

Gene: WhereRU\_131 Start: 83060, Stop: 83587, Start Num: 20

Candidate Starts for WhereRU\_131:

(8, 82973), (11, 83000), (Start: 20 @83060 has 33 MA's), (35, 83165), (37, 83174), (79, 83510),

Gene: Wipeout\_132 Start: 84528, Stop: 85067, Start Num: 17

Candidate Starts for Wipeout\_132:

(Start: 17 @84528 has 17 MA's), (22, 84564), (26, 84594), (33, 84633), (61, 84837), (78, 84984),

Gene: Wofford\_133 Start: 85477, Stop: 86022, Start Num: 18

Candidate Starts for Wofford\_133:

(Start: 18 @85477 has 7 MA's), (26, 85543), (33, 85582), (78, 85939),

Gene: Yaboi\_137 Start: 84062, Stop: 84607, Start Num: 18

Candidate Starts for Yaboi\_137:

(Start: 18 @84062 has 7 MA's), (26, 84128), (33, 84167), (39, 84194), (78, 84524),