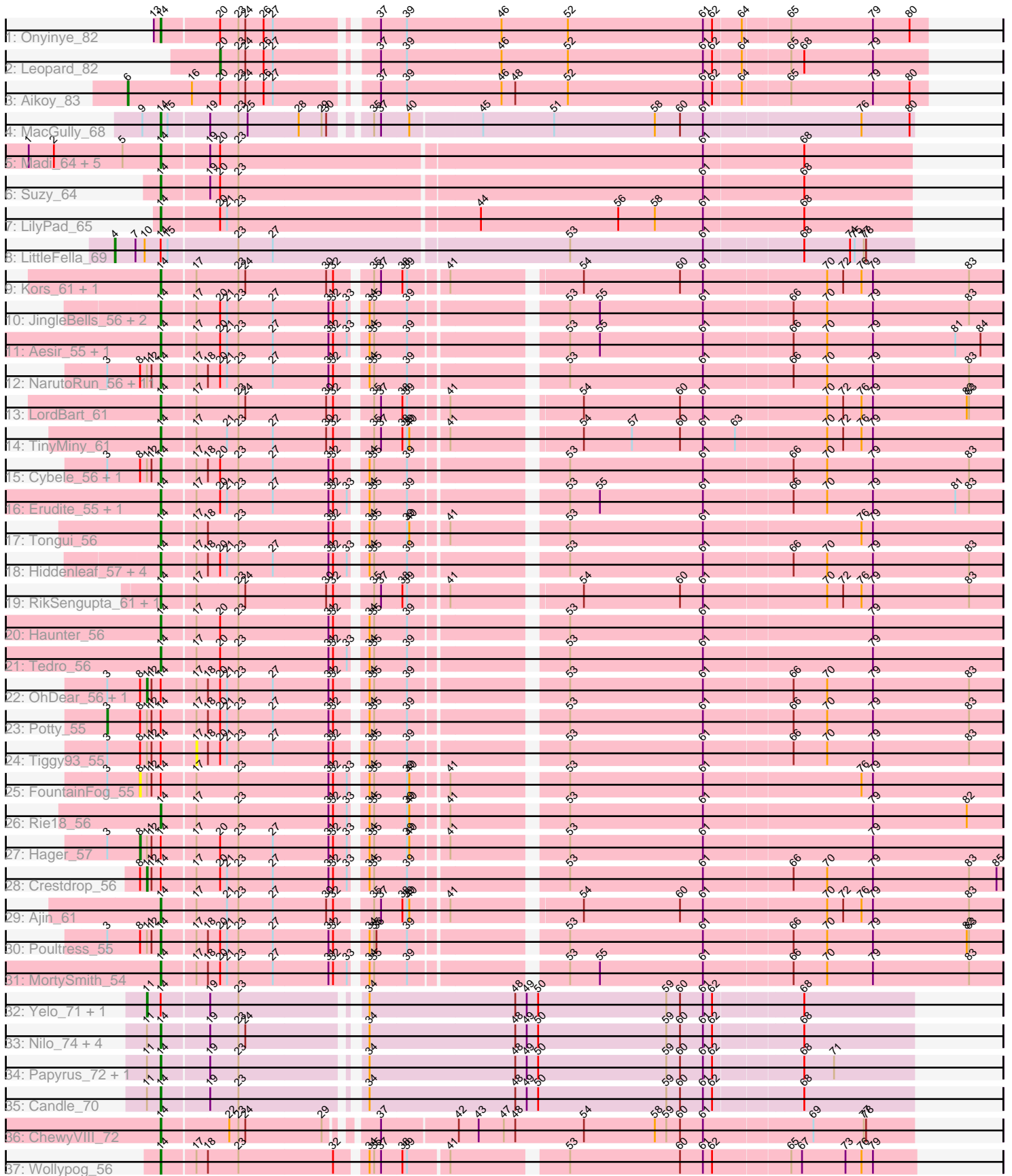


Pham 311553



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 311553 Report

This analysis was run 06/27/26 on database version 652.

Pham number 311553 has 71 members, 4 are drafts.

Phages represented in each track:

- Track 1 : Onyinye\_82
- Track 2 : Leopard\_82
- Track 3 : Aikoy\_83
- Track 4 : MacGully\_68
- Track 5 : Madi\_64, BiteSize\_64, Terapin\_65, Beyoncage\_64, Sienna\_64, Djokovic\_64
- Track 6 : Suzy\_64
- Track 7 : LilyPad\_65
- Track 8 : LittleFella\_69
- Track 9 : Kors\_61, Bramble\_61
- Track 10 : JingleBells\_56, FreddieHg\_57, DannyDe\_57
- Track 11 : Aesir\_55, JDawG\_55
- Track 12 : NarutoRun\_56, Anakin\_56, PhunaPhoke\_56, Pharpay\_55, Kate\_56, AnnaSerena\_56, Artiphact\_56, Gilda\_56, Karate\_55, Krampus\_56, OverHedge\_55, Rachella\_56
- Track 13 : LordBart\_61
- Track 14 : TinyMiny\_61
- Track 15 : Cybele\_56, Neptune\_56
- Track 16 : Erudite\_55, Dauntless\_55
- Track 17 : Tongui\_56
- Track 18 : Hiddenleaf\_57, Chivey\_57, SilentWarrior\_57, Annapurna\_57, Snakehole\_57
- Track 19 : RikSengupta\_61, Sparcetus\_61
- Track 20 : Haunter\_56
- Track 21 : Tedro\_56
- Track 22 : OhDear\_56, CoolCookie\_55
- Track 23 : Potty\_55
- Track 24 : Tiggy93\_55
- Track 25 : FountainFog\_55
- Track 26 : Rie18\_56
- Track 27 : Hager\_57
- Track 28 : Crestdrop\_56
- Track 29 : Ajin\_61
- Track 30 : Poultruss\_55
- Track 31 : MortySmith\_54
- Track 32 : Yelo\_71, MontyDev\_74
- Track 33 : Nilo\_74, Send513\_72, Weiss13\_72, Zenon\_74, Riparian\_74

- Track 34 : Papyrus\_72, Rope\_72
- Track 35 : Candle\_70
- Track 36 : ChewyVIII\_72
- Track 37 : Wollypog\_56

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

The start number called the most often in the published annotations is 14, it was called in 58 of the 67 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aesir\_55, Ajin\_61, Anakin\_56, AnnaSerena\_56, Annapurna\_57, Artiphact\_56, Beyoncage\_64, BiteSize\_64, Bramble\_61, Candle\_70, ChewyVIII\_72, Chivey\_57, Cybele\_56, DannyDe\_57, Dauntless\_55, Djokovic\_64, Erudite\_55, FreddieHg\_57, Gilda\_56, Haunter\_56, Hiddenleaf\_57, JDawG\_55, JingleBells\_56, Karate\_55, Kate\_56, Kors\_61, Krampus\_56, LilyPad\_65, LordBart\_61, MacGully\_68, Madi\_64, MortySmith\_54, NarutoRun\_56, Neptune\_56, Nilo\_74, Onyinye\_82, OverHedge\_55, Papyrus\_72, Pharpay\_55, PhunaPhoke\_56, Poultruss\_55, Rachella\_56, Rie18\_56, RikSengupta\_61, Riparian\_74, Rope\_72, Send513\_72, Sienna\_64, SilentWarrior\_57, Snakehole\_57, Sparcetus\_61, Suzy\_64, Tedro\_56, Terapin\_65, TinyMiny\_61, Tongui\_56, Weiss13\_72, Wollypog\_56, Zenon\_74,

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

- CoolCookie\_55, Crestdrop\_56, FountainFog\_55, Hager\_57, LittleFella\_69, MontyDev\_74, OhDear\_56, Potty\_55, Tiggy93\_55, Yelo\_71,

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

- Aikoy\_83, Leopard\_82,

**Summary by start number:**

Start 3:

- Found in 21 of 71 ( 29.6% ) of genes in pham
- Manual Annotations of this start: 1 of 67
- Called 4.8% of time when present
- Phage (with cluster) where this start called: Potty\_55 (EF),

Start 4:

- Found in 1 of 71 ( 1.4% ) 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: LittleFella\_69 (DG2),

Start 6:

- Found in 1 of 71 ( 1.4% ) 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: Aikoy\_83 (AE),

Start 8:

- Found in 22 of 71 ( 31.0% ) of genes in pham
- Manual Annotations of this start: 1 of 67
- Called 9.1% of time when present
- Phage (with cluster) where this start called: FountainFog\_55 (EF), Hager\_57 (EF),

Start 11:

- Found in 32 of 71 ( 45.1% ) of genes in pham
- Manual Annotations of this start: 4 of 67
- Called 15.6% of time when present
- Phage (with cluster) where this start called: CoolCookie\_55 (EF), Crestdrop\_56 (EF), MontyDev\_74 (R), OhDear\_56 (EF), Yelo\_71 (R),

Start 14:

- Found in 69 of 71 ( 97.2% ) of genes in pham
- Manual Annotations of this start: 58 of 67
- Called 85.5% of time when present
- Phage (with cluster) where this start called: Aesir\_55 (EF), Ajin\_61 (EF), Anakin\_56 (EF), AnnaSerena\_56 (EF), Annapurna\_57 (EF), Artiphact\_56 (EF), Beyonccage\_64 (DG1), BiteSize\_64 (DG1), Bramble\_61 (EF), Candle\_70 (R), ChewyVIII\_72 (singleton), Chivey\_57 (EF), Cybele\_56 (EF), DannyDe\_57 (EF), Dauntless\_55 (EF), Djokovic\_64 (DG1), Erudite\_55 (EF), FreddieHg\_57 (EF), Gilda\_56 (EF), Haunter\_56 (EF), Hiddenleaf\_57 (EF), JDawG\_55 (EF), JingleBells\_56 (EF), Karate\_55 (EF), Kate\_56 (EF), Kors\_61 (EF), Krampus\_56 (EF), LilyPad\_65 (DG1), LordBart\_61 (EF), MacGully\_68 (CR7), Madi\_64 (DG1), MortySmith\_54 (EF), NarutoRun\_56 (EF), Neptune\_56 (EF), Nilo\_74 (R), Onyinye\_82 (AE), OverHedge\_55 (EF), Papyrus\_72 (R), Pharpay\_55 (EF), PhunaPhoke\_56 (EF), Poultruss\_55 (EF), Rachella\_56 (EF), Rie18\_56 (EF), RikSengupta\_61 (EF), Riparian\_74 (R), Rope\_72 (R), Send513\_72 (R), Sienna\_64 (DG1), SilentWarrior\_57 (EF), Snakehole\_57 (EF), Sparcetus\_61 (EF), Suzy\_64 (DG1), Tedro\_56 (EF), Terapin\_65 (DG1), TinyMiny\_61 (EF), Tongui\_56 (EF), Weiss13\_72 (R), Wollypog\_56 (singleton), Zenon\_74 (R),

Start 17:

- Found in 47 of 71 ( 66.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.1% of time when present
- Phage (with cluster) where this start called: Tiggy93\_55 (EF),

Start 20:

- Found in 47 of 71 ( 66.2% ) of genes in pham
- Manual Annotations of this start: 1 of 67
- Called 2.1% of time when present
- Phage (with cluster) where this start called: Leopard\_82 (AE),

### Summary by clusters:

There are 7 clusters represented in this pham: singleton, AE, CR7, EF, DG2, DG1, R,

Info for manual annotations of cluster AE:

- Start number 6 was manually annotated 1 time for cluster AE.
- Start number 14 was manually annotated 1 time for cluster AE.
- Start number 20 was manually annotated 1 time for cluster AE.

Info for manual annotations of cluster CR7:

- Start number 14 was manually annotated 1 time for cluster CR7.

Info for manual annotations of cluster DG1:

- Start number 14 was manually annotated 8 times for cluster DG1.

Info for manual annotations of cluster DG2:

- Start number 4 was manually annotated 1 time for cluster DG2.

Info for manual annotations of cluster EF:

- Start number 3 was manually annotated 1 time for cluster EF.
- Start number 8 was manually annotated 1 time for cluster EF.
- Start number 11 was manually annotated 2 times for cluster EF.
- Start number 14 was manually annotated 38 times for cluster EF.

Info for manual annotations of cluster R:

- Start number 11 was manually annotated 2 times for cluster R.
- Start number 14 was manually annotated 8 times for cluster R.

### **Gene Information:**

Gene: Aesir\_55 Start: 39851, Stop: 40888, Start Num: 14

Candidate Starts for Aesir\_55:

(Start: 14 @39851 has 58 MA's), (17, 39893), (Start: 20 @39923 has 1 MA's), (21, 39932), (23, 39947), (27, 39992), (31, 40064), (32, 40070), (33, 40088), (34, 40103), (35, 40109), (39, 40151), (53, 40331), (55, 40370), (61, 40505), (66, 40616), (70, 40658), (79, 40718), (81, 40826), (84, 40859),

Gene: Aikoy\_83 Start: 56542, Stop: 57543, Start Num: 6

Candidate Starts for Aikoy\_83:

(Start: 6 @56542 has 1 MA's), (16, 56626), (Start: 20 @56662 has 1 MA's), (23, 56686), (24, 56695), (26, 56719), (27, 56731), (37, 56842), (39, 56875), (46, 56998), (48, 57016), (52, 57085), (61, 57262), (62, 57274), (64, 57310), (65, 57367), (79, 57472), (80, 57520),

Gene: Ajin\_61 Start: 41302, Stop: 42336, Start Num: 14

Candidate Starts for Ajin\_61:

(Start: 14 @41302 has 58 MA's), (17, 41344), (21, 41383), (23, 41398), (27, 41443), (30, 41512), (32, 41521), (35, 41560), (37, 41569), (38, 41596), (39, 41602), (40, 41605), (41, 41647), (54, 41797), (60, 41923), (61, 41953), (70, 42106), (72, 42127), (76, 42151), (79, 42166), (83, 42292),

Gene: Anakin\_56 Start: 40186, Stop: 41223, Start Num: 14

Candidate Starts for Anakin\_56:

(Start: 3 @40120 has 1 MA's), (Start: 8 @40159 has 1 MA's), (Start: 11 @40168 has 4 MA's), (12, 40174), (Start: 14 @40186 has 58 MA's), (17, 40228), (18, 40243), (Start: 20 @40258 has 1 MA's), (21, 40267), (23, 40282), (27, 40327), (31, 40399), (32, 40405), (34, 40438), (35, 40444), (39, 40486), (53, 40666), (61, 40840), (66, 40951), (70, 40993), (79, 41053), (83, 41179),

Gene: AnnaSerena\_56 Start: 40220, Stop: 41257, Start Num: 14

Candidate Starts for AnnaSerena\_56:

(Start: 3 @40154 has 1 MA's), (Start: 8 @40193 has 1 MA's), (Start: 11 @40202 has 4 MA's), (12, 40208), (Start: 14 @40220 has 58 MA's), (17, 40262), (18, 40277), (Start: 20 @40292 has 1 MA's), (21, 40301), (23, 40316), (27, 40361), (31, 40433), (32, 40439), (34, 40472), (35, 40478), (39, 40520), (53, 40700), (61, 40874), (66, 40985), (70, 41027), (79, 41087), (83, 41213),

Gene: Annapurna\_57 Start: 39697, Stop: 40734, Start Num: 14

Candidate Starts for Annapurna\_57:

(Start: 14 @39697 has 58 MA's), (17, 39739), (18, 39754), (Start: 20 @39769 has 1 MA's), (21, 39778), (23, 39793), (27, 39838), (31, 39910), (32, 39916), (33, 39934), (34, 39949), (35, 39955), (39, 39997), (53, 40177), (61, 40351), (66, 40462), (70, 40504), (79, 40564), (83, 40690),

Gene: Artiphact\_56 Start: 40210, Stop: 41247, Start Num: 14

Candidate Starts for Artiphact\_56:

(Start: 3 @40144 has 1 MA's), (Start: 8 @40183 has 1 MA's), (Start: 11 @40192 has 4 MA's), (12, 40198), (Start: 14 @40210 has 58 MA's), (17, 40252), (18, 40267), (Start: 20 @40282 has 1 MA's), (21, 40291), (23, 40306), (27, 40351), (31, 40423), (32, 40429), (34, 40462), (35, 40468), (39, 40510), (53, 40690), (61, 40864), (66, 40975), (70, 41017), (79, 41077), (83, 41203),

Gene: Beyoncage\_64 Start: 46519, Stop: 47475, Start Num: 14

Candidate Starts for Beyoncage\_64:

(1, 46348), (2, 46381), (5, 46471), (Start: 14 @46519 has 58 MA's), (19, 46579), (Start: 20 @46591 has 1 MA's), (23, 46615), (61, 47209), (68, 47335),

Gene: BiteSize\_64 Start: 46605, Stop: 47561, Start Num: 14

Candidate Starts for BiteSize\_64:

(1, 46434), (2, 46467), (5, 46557), (Start: 14 @46605 has 58 MA's), (19, 46665), (Start: 20 @46677 has 1 MA's), (23, 46701), (61, 47295), (68, 47421),

Gene: Bramble\_61 Start: 41314, Stop: 42348, Start Num: 14

Candidate Starts for Bramble\_61:

(Start: 14 @41314 has 58 MA's), (17, 41356), (23, 41410), (24, 41419), (30, 41524), (32, 41533), (35, 41572), (37, 41581), (38, 41608), (39, 41614), (41, 41659), (54, 41809), (60, 41935), (61, 41965), (70, 42118), (72, 42139), (76, 42163), (79, 42178), (83, 42304),

Gene: Candle\_70 Start: 54612, Stop: 55547, Start Num: 14

Candidate Starts for Candle\_70:

(Start: 11 @54594 has 4 MA's), (Start: 14 @54612 has 58 MA's), (19, 54672), (23, 54708), (34, 54849), (48, 55038), (49, 55053), (50, 55068), (59, 55236), (60, 55254), (61, 55284), (62, 55296), (68, 55404),

Gene: ChewyVIII\_72 Start: 53378, Stop: 52446, Start Num: 14

Candidate Starts for ChewyVIII\_72:

(Start: 14 @53378 has 58 MA's), (22, 53294), (23, 53282), (24, 53273), (29, 53174), (37, 53126), (42, 53030), (43, 53006), (47, 52973), (48, 52958), (54, 52868), (58, 52775), (59, 52760), (60, 52742), (61, 52712), (69, 52577), (77, 52511), (78, 52508),

Gene: Chivey\_57 Start: 39651, Stop: 40688, Start Num: 14

Candidate Starts for Chivey\_57:

(Start: 14 @39651 has 58 MA's), (17, 39693), (18, 39708), (Start: 20 @39723 has 1 MA's), (21, 39732), (23, 39747), (27, 39792), (31, 39864), (32, 39870), (33, 39888), (34, 39903), (35, 39909), (39, 39951), (53, 40131), (61, 40305), (66, 40416), (70, 40458), (79, 40518), (83, 40644),

Gene: CoolCookie\_55 Start: 40213, Stop: 41268, Start Num: 11

Candidate Starts for CoolCookie\_55:

(Start: 3 @40165 has 1 MA's), (Start: 8 @40204 has 1 MA's), (Start: 11 @40213 has 4 MA's), (12, 40219), (Start: 14 @40231 has 58 MA's), (17, 40273), (18, 40288), (Start: 20 @40303 has 1 MA's), (21, 40312), (23, 40327), (27, 40372), (31, 40444), (32, 40450), (34, 40483), (35, 40489), (39, 40531), (53, 40711), (61, 40885), (66, 40996), (70, 41038), (79, 41098), (83, 41224),

Gene: Crestdrop\_56 Start: 39910, Stop: 40962, Start Num: 11

Candidate Starts for Crestdrop\_56:

(Start: 8 @39901 has 1 MA's), (Start: 11 @39910 has 4 MA's), (12, 39916), (Start: 14 @39925 has 58 MA's), (17, 39967), (Start: 20 @39997 has 1 MA's), (21, 40006), (23, 40021), (27, 40066), (31, 40138), (32, 40144), (33, 40162), (34, 40177), (35, 40183), (39, 40225), (53, 40405), (61, 40579), (66, 40690), (70, 40732), (79, 40792), (83, 40918), (85, 40954),

Gene: Cybele\_56 Start: 40204, Stop: 41241, Start Num: 14

Candidate Starts for Cybele\_56:

(Start: 3 @40138 has 1 MA's), (Start: 8 @40177 has 1 MA's), (Start: 11 @40186 has 4 MA's), (12, 40192), (Start: 14 @40204 has 58 MA's), (17, 40246), (18, 40261), (Start: 20 @40276 has 1 MA's), (23, 40300), (27, 40345), (31, 40417), (32, 40423), (34, 40456), (35, 40462), (39, 40504), (53, 40684), (61, 40858), (66, 40969), (70, 41011), (79, 41071), (83, 41197),

Gene: DannyDe\_57 Start: 39652, Stop: 40689, Start Num: 14

Candidate Starts for DannyDe\_57:

(Start: 14 @39652 has 58 MA's), (17, 39694), (Start: 20 @39724 has 1 MA's), (21, 39733), (23, 39748), (27, 39793), (31, 39865), (32, 39871), (33, 39889), (34, 39904), (35, 39910), (39, 39952), (53, 40132), (55, 40171), (61, 40306), (66, 40417), (70, 40459), (79, 40519), (83, 40645),

Gene: Dauntless\_55 Start: 39786, Stop: 40823, Start Num: 14

Candidate Starts for Dauntless\_55:

(Start: 14 @39786 has 58 MA's), (17, 39828), (Start: 20 @39858 has 1 MA's), (21, 39867), (23, 39882), (27, 39927), (31, 39999), (32, 40005), (33, 40023), (34, 40038), (35, 40044), (39, 40086), (53, 40266), (55, 40305), (61, 40440), (66, 40551), (70, 40593), (79, 40653), (81, 40761), (83, 40779),

Gene: Djokovic\_64 Start: 46518, Stop: 47474, Start Num: 14

Candidate Starts for Djokovic\_64:

(1, 46347), (2, 46380), (5, 46470), (Start: 14 @46518 has 58 MA's), (19, 46578), (Start: 20 @46590 has 1 MA's), (23, 46614), (61, 47208), (68, 47334),

Gene: Erudite\_55 Start: 39786, Stop: 40823, Start Num: 14

Candidate Starts for Erudite\_55:

(Start: 14 @39786 has 58 MA's), (17, 39828), (Start: 20 @39858 has 1 MA's), (21, 39867), (23, 39882), (27, 39927), (31, 39999), (32, 40005), (33, 40023), (34, 40038), (35, 40044), (39, 40086), (53, 40266), (55, 40305), (61, 40440), (66, 40551), (70, 40593), (79, 40653), (81, 40761), (83, 40779),

Gene: FountainFog\_55 Start: 39409, Stop: 40470, Start Num: 8

Candidate Starts for FountainFog\_55:

(Start: 3 @39370 has 1 MA's), (Start: 8 @39409 has 1 MA's), (Start: 11 @39418 has 4 MA's), (12, 39424), (Start: 14 @39433 has 58 MA's), (17, 39475), (23, 39529), (31, 39646), (32, 39652), (33, 39670), (34, 39685), (35, 39691), (39, 39733), (40, 39736), (41, 39778), (53, 39913), (61, 40087), (76, 40285), (79, 40300),

Gene: FreddieHg\_57 Start: 39668, Stop: 40705, Start Num: 14

Candidate Starts for FreddieHg\_57:

(Start: 14 @39668 has 58 MA's), (17, 39710), (Start: 20 @39740 has 1 MA's), (21, 39749), (23, 39764), (27, 39809), (31, 39881), (32, 39887), (33, 39905), (34, 39920), (35, 39926), (39, 39968), (53, 40148), (55, 40187), (61, 40322), (66, 40433), (70, 40475), (79, 40535), (83, 40661),

Gene: Gilda\_56 Start: 40207, Stop: 41244, Start Num: 14

Candidate Starts for Gilda\_56:

(Start: 3 @40141 has 1 MA's), (Start: 8 @40180 has 1 MA's), (Start: 11 @40189 has 4 MA's), (12, 40195), (Start: 14 @40207 has 58 MA's), (17, 40249), (18, 40264), (Start: 20 @40279 has 1 MA's), (21, 40288), (23, 40303), (27, 40348), (31, 40420), (32, 40426), (34, 40459), (35, 40465), (39, 40507), (53, 40687), (61, 40861), (66, 40972), (70, 41014), (79, 41074), (83, 41200),

Gene: Hager\_57 Start: 39575, Stop: 40636, Start Num: 8

Candidate Starts for Hager\_57:

(Start: 3 @39536 has 1 MA's), (Start: 8 @39575 has 1 MA's), (Start: 11 @39584 has 4 MA's), (12, 39590), (Start: 14 @39599 has 58 MA's), (17, 39641), (Start: 20 @39671 has 1 MA's), (23, 39695), (27, 39740), (31, 39812), (32, 39818), (33, 39836), (34, 39851), (35, 39857), (39, 39899), (40, 39902), (41, 39944), (53, 40079), (61, 40253), (79, 40466),

Gene: Haunter\_56 Start: 39424, Stop: 40461, Start Num: 14

Candidate Starts for Haunter\_56:

(Start: 14 @39424 has 58 MA's), (17, 39466), (Start: 20 @39496 has 1 MA's), (23, 39520), (31, 39637), (32, 39643), (34, 39676), (35, 39682), (39, 39724), (53, 39904), (61, 40078), (79, 40291),

Gene: Hiddenleaf\_57 Start: 39651, Stop: 40688, Start Num: 14

Candidate Starts for Hiddenleaf\_57:

(Start: 14 @39651 has 58 MA's), (17, 39693), (18, 39708), (Start: 20 @39723 has 1 MA's), (21, 39732), (23, 39747), (27, 39792), (31, 39864), (32, 39870), (33, 39888), (34, 39903), (35, 39909), (39, 39951), (53, 40131), (61, 40305), (66, 40416), (70, 40458), (79, 40518), (83, 40644),

Gene: JDawG\_55 Start: 39846, Stop: 40883, Start Num: 14

Candidate Starts for JDawG\_55:

(Start: 14 @39846 has 58 MA's), (17, 39888), (Start: 20 @39918 has 1 MA's), (21, 39927), (23, 39942), (27, 39987), (31, 40059), (32, 40065), (33, 40083), (34, 40098), (35, 40104), (39, 40146), (53, 40326), (55, 40365), (61, 40500), (66, 40611), (70, 40653), (79, 40713), (81, 40821), (84, 40854),

Gene: JingleBells\_56 Start: 39760, Stop: 40797, Start Num: 14

Candidate Starts for JingleBells\_56:

(Start: 14 @39760 has 58 MA's), (17, 39802), (Start: 20 @39832 has 1 MA's), (21, 39841), (23, 39856), (27, 39901), (31, 39973), (32, 39979), (33, 39997), (34, 40012), (35, 40018), (39, 40060), (53, 40240), (55, 40279), (61, 40414), (66, 40525), (70, 40567), (79, 40627), (83, 40753),

Gene: Karate\_55 Start: 40024, Stop: 41061, Start Num: 14

Candidate Starts for Karate\_55:

(Start: 3 @39958 has 1 MA's), (Start: 8 @39997 has 1 MA's), (Start: 11 @40006 has 4 MA's), (12, 40012), (Start: 14 @40024 has 58 MA's), (17, 40066), (18, 40081), (Start: 20 @40096 has 1 MA's), (21, 40105), (23, 40120), (27, 40165), (31, 40237), (32, 40243), (34, 40276), (35, 40282), (39, 40324), (53, 40504), (61, 40678), (66, 40789), (70, 40831), (79, 40891), (83, 41017),

Gene: Kate\_56 Start: 40125, Stop: 41162, Start Num: 14

Candidate Starts for Kate\_56:

(Start: 3 @40059 has 1 MA's), (Start: 8 @40098 has 1 MA's), (Start: 11 @40107 has 4 MA's), (12, 40113), (Start: 14 @40125 has 58 MA's), (17, 40167), (18, 40182), (Start: 20 @40197 has 1 MA's), (21, 40206), (23, 40221), (27, 40266), (31, 40338), (32, 40344), (34, 40377), (35, 40383), (39, 40425), (53, 40605), (61, 40779), (66, 40890), (70, 40932), (79, 40992), (83, 41118),

Gene: Kors\_61 Start: 41387, Stop: 42421, Start Num: 14

Candidate Starts for Kors\_61:

(Start: 14 @41387 has 58 MA's), (17, 41429), (23, 41483), (24, 41492), (30, 41597), (32, 41606), (35, 41645), (37, 41654), (38, 41681), (39, 41687), (41, 41732), (54, 41882), (60, 42008), (61, 42038), (70,

42191), (72, 42212), (76, 42236), (79, 42251), (83, 42377),

Gene: Krampus\_56 Start: 40221, Stop: 41258, Start Num: 14

Candidate Starts for Krampus\_56:

(Start: 3 @40155 has 1 MA's), (Start: 8 @40194 has 1 MA's), (Start: 11 @40203 has 4 MA's), (12, 40209), (Start: 14 @40221 has 58 MA's), (17, 40263), (18, 40278), (Start: 20 @40293 has 1 MA's), (21, 40302), (23, 40317), (27, 40362), (31, 40434), (32, 40440), (34, 40473), (35, 40479), (39, 40521), (53, 40701), (61, 40875), (66, 40986), (70, 41028), (79, 41088), (83, 41214),

Gene: Leopard\_82 Start: 56960, Stop: 57841, Start Num: 20

Candidate Starts for Leopard\_82:

(Start: 20 @56960 has 1 MA's), (23, 56984), (24, 56993), (26, 57017), (27, 57029), (37, 57140), (39, 57173), (46, 57296), (52, 57383), (61, 57560), (62, 57572), (64, 57608), (65, 57665), (68, 57680), (79, 57770),

Gene: LilyPad\_65 Start: 47373, Stop: 48329, Start Num: 14

Candidate Starts for LilyPad\_65:

(Start: 14 @47373 has 58 MA's), (Start: 20 @47445 has 1 MA's), (21, 47454), (23, 47469), (44, 47772), (56, 47952), (58, 48000), (61, 48063), (68, 48189),

Gene: LittleFella\_69 Start: 48061, Stop: 49074, Start Num: 4

Candidate Starts for LittleFella\_69:

(Start: 4 @48061 has 1 MA's), (7, 48088), (10, 48100), (Start: 14 @48121 has 58 MA's), (15, 48130), (23, 48217), (27, 48262), (53, 48637), (61, 48811), (68, 48931), (74, 48991), (75, 48997), (77, 49009), (78, 49012),

Gene: LordBart\_61 Start: 41284, Stop: 42318, Start Num: 14

Candidate Starts for LordBart\_61:

(Start: 14 @41284 has 58 MA's), (17, 41326), (23, 41380), (24, 41389), (30, 41494), (32, 41503), (35, 41542), (37, 41551), (38, 41578), (39, 41584), (41, 41629), (54, 41779), (60, 41905), (61, 41935), (70, 42088), (72, 42109), (76, 42133), (79, 42148), (82, 42271), (83, 42274),

Gene: MacGully\_68 Start: 48910, Stop: 47978, Start Num: 14

Candidate Starts for MacGully\_68:

(9, 48934), (Start: 14 @48910 has 58 MA's), (15, 48901), (19, 48850), (23, 48814), (25, 48802), (28, 48736), (29, 48706), (30, 48700), (35, 48661), (37, 48652), (40, 48616), (45, 48529), (51, 48436), (58, 48304), (60, 48271), (61, 48241), (76, 48046), (80, 47983),

Gene: Madi\_64 Start: 46596, Stop: 47552, Start Num: 14

Candidate Starts for Madi\_64:

(1, 46425), (2, 46458), (5, 46548), (Start: 14 @46596 has 58 MA's), (19, 46656), (Start: 20 @46668 has 1 MA's), (23, 46692), (61, 47286), (68, 47412),

Gene: MontyDev\_74 Start: 54234, Stop: 55187, Start Num: 11

Candidate Starts for MontyDev\_74:

(Start: 11 @54234 has 4 MA's), (Start: 14 @54252 has 58 MA's), (19, 54312), (23, 54348), (34, 54489), (48, 54678), (49, 54693), (50, 54708), (59, 54876), (60, 54894), (61, 54924), (62, 54936), (68, 55044),

Gene: MortySmith\_54 Start: 39260, Stop: 40297, Start Num: 14

Candidate Starts for MortySmith\_54:

(Start: 14 @39260 has 58 MA's), (17, 39302), (18, 39317), (Start: 20 @39332 has 1 MA's), (21, 39341), (23, 39356), (27, 39401), (31, 39473), (32, 39479), (33, 39497), (34, 39512), (35, 39518), (39, 39560), (53, 39740), (55, 39779), (61, 39914), (66, 40025), (70, 40067), (79, 40127), (83, 40253),

Gene: NarutoRun\_56 Start: 40186, Stop: 41223, Start Num: 14

Candidate Starts for NarutoRun\_56:

(Start: 3 @40120 has 1 MA's), (Start: 8 @40159 has 1 MA's), (Start: 11 @40168 has 4 MA's), (12, 40174), (Start: 14 @40186 has 58 MA's), (17, 40228), (18, 40243), (Start: 20 @40258 has 1 MA's), (21, 40267), (23, 40282), (27, 40327), (31, 40399), (32, 40405), (34, 40438), (35, 40444), (39, 40486), (53, 40666), (61, 40840), (66, 40951), (70, 40993), (79, 41053), (83, 41179),

Gene: Neptune\_56 Start: 40204, Stop: 41241, Start Num: 14

Candidate Starts for Neptune\_56:

(Start: 3 @40138 has 1 MA's), (Start: 8 @40177 has 1 MA's), (Start: 11 @40186 has 4 MA's), (12, 40192), (Start: 14 @40204 has 58 MA's), (17, 40246), (18, 40261), (Start: 20 @40276 has 1 MA's), (23, 40300), (27, 40345), (31, 40417), (32, 40423), (34, 40456), (35, 40462), (39, 40504), (53, 40684), (61, 40858), (66, 40969), (70, 41011), (79, 41071), (83, 41197),

Gene: Nilo\_74 Start: 54609, Stop: 55544, Start Num: 14

Candidate Starts for Nilo\_74:

(Start: 11 @54591 has 4 MA's), (Start: 14 @54609 has 58 MA's), (19, 54669), (23, 54705), (24, 54714), (34, 54846), (48, 55035), (49, 55050), (50, 55065), (59, 55233), (60, 55251), (61, 55281), (62, 55293), (68, 55401),

Gene: OhDear\_56 Start: 40166, Stop: 41221, Start Num: 11

Candidate Starts for OhDear\_56:

(Start: 3 @40118 has 1 MA's), (Start: 8 @40157 has 1 MA's), (Start: 11 @40166 has 4 MA's), (12, 40172), (Start: 14 @40184 has 58 MA's), (17, 40226), (18, 40241), (Start: 20 @40256 has 1 MA's), (21, 40265), (23, 40280), (27, 40325), (31, 40397), (32, 40403), (34, 40436), (35, 40442), (39, 40484), (53, 40664), (61, 40838), (66, 40949), (70, 40991), (79, 41051), (83, 41177),

Gene: Onyinye\_82 Start: 56383, Stop: 57336, Start Num: 14

Candidate Starts for Onyinye\_82:

(13, 56374), (Start: 14 @56383 has 58 MA's), (Start: 20 @56455 has 1 MA's), (23, 56479), (24, 56488), (26, 56512), (27, 56524), (37, 56635), (39, 56668), (46, 56791), (52, 56878), (61, 57055), (62, 57067), (64, 57103), (65, 57160), (79, 57265), (80, 57313),

Gene: OverHedge\_55 Start: 40083, Stop: 41120, Start Num: 14

Candidate Starts for OverHedge\_55:

(Start: 3 @40017 has 1 MA's), (Start: 8 @40056 has 1 MA's), (Start: 11 @40065 has 4 MA's), (12, 40071), (Start: 14 @40083 has 58 MA's), (17, 40125), (18, 40140), (Start: 20 @40155 has 1 MA's), (21, 40164), (23, 40179), (27, 40224), (31, 40296), (32, 40302), (34, 40335), (35, 40341), (39, 40383), (53, 40563), (61, 40737), (66, 40848), (70, 40890), (79, 40950), (83, 41076),

Gene: Papyrus\_72 Start: 54220, Stop: 55155, Start Num: 14

Candidate Starts for Papyrus\_72:

(Start: 11 @54202 has 4 MA's), (Start: 14 @54220 has 58 MA's), (19, 54280), (23, 54316), (34, 54457), (48, 54646), (49, 54661), (50, 54676), (59, 54844), (60, 54862), (61, 54892), (62, 54904), (68, 55012), (71, 55051),

Gene: Pharpay\_55 Start: 40231, Stop: 41268, Start Num: 14

Candidate Starts for Pharpay\_55:

(Start: 3 @40165 has 1 MA's), (Start: 8 @40204 has 1 MA's), (Start: 11 @40213 has 4 MA's), (12, 40219), (Start: 14 @40231 has 58 MA's), (17, 40273), (18, 40288), (Start: 20 @40303 has 1 MA's), (21, 40312), (23, 40327), (27, 40372), (31, 40444), (32, 40450), (34, 40483), (35, 40489), (39, 40531), (53, 40711), (61, 40885), (66, 40996), (70, 41038), (79, 41098), (83, 41224),

Gene: PhunaPhoke\_56 Start: 40201, Stop: 41238, Start Num: 14

Candidate Starts for PhunaPhoke\_56:

(Start: 3 @40135 has 1 MA's), (Start: 8 @40174 has 1 MA's), (Start: 11 @40183 has 4 MA's), (12, 40189), (Start: 14 @40201 has 58 MA's), (17, 40243), (18, 40258), (Start: 20 @40273 has 1 MA's), (21, 40282), (23, 40297), (27, 40342), (31, 40414), (32, 40420), (34, 40453), (35, 40459), (39, 40501), (53, 40681), (61, 40855), (66, 40966), (70, 41008), (79, 41068), (83, 41194),

Gene: Potty\_55 Start: 40065, Stop: 41168, Start Num: 3

Candidate Starts for Potty\_55:

(Start: 3 @40065 has 1 MA's), (Start: 8 @40104 has 1 MA's), (Start: 11 @40113 has 4 MA's), (12, 40119), (Start: 14 @40131 has 58 MA's), (17, 40173), (18, 40188), (Start: 20 @40203 has 1 MA's), (21, 40212), (23, 40227), (27, 40272), (31, 40344), (32, 40350), (34, 40383), (35, 40389), (39, 40431), (53, 40611), (61, 40785), (66, 40896), (70, 40938), (79, 40998), (83, 41124),

Gene: Poultruss\_55 Start: 40428, Stop: 41465, Start Num: 14

Candidate Starts for Poultruss\_55:

(Start: 3 @40362 has 1 MA's), (Start: 8 @40401 has 1 MA's), (Start: 11 @40410 has 4 MA's), (12, 40416), (Start: 14 @40428 has 58 MA's), (17, 40470), (18, 40485), (Start: 20 @40500 has 1 MA's), (21, 40509), (23, 40524), (27, 40569), (31, 40641), (32, 40647), (34, 40680), (35, 40686), (36, 40689), (39, 40728), (53, 40908), (61, 41082), (66, 41193), (70, 41235), (79, 41295), (82, 41418), (83, 41421),

Gene: Rachella\_56 Start: 40212, Stop: 41249, Start Num: 14

Candidate Starts for Rachella\_56:

(Start: 3 @40146 has 1 MA's), (Start: 8 @40185 has 1 MA's), (Start: 11 @40194 has 4 MA's), (12, 40200), (Start: 14 @40212 has 58 MA's), (17, 40254), (18, 40269), (Start: 20 @40284 has 1 MA's), (21, 40293), (23, 40308), (27, 40353), (31, 40425), (32, 40431), (34, 40464), (35, 40470), (39, 40512), (53, 40692), (61, 40866), (66, 40977), (70, 41019), (79, 41079), (83, 41205),

Gene: Rie18\_56 Start: 40001, Stop: 41038, Start Num: 14

Candidate Starts for Rie18\_56:

(Start: 14 @40001 has 58 MA's), (17, 40043), (23, 40097), (31, 40214), (32, 40220), (33, 40238), (34, 40253), (35, 40259), (39, 40301), (40, 40304), (41, 40346), (53, 40481), (61, 40655), (79, 40868), (82, 40991),

Gene: RikSengupta\_61 Start: 41415, Stop: 42449, Start Num: 14

Candidate Starts for RikSengupta\_61:

(Start: 14 @41415 has 58 MA's), (17, 41457), (23, 41511), (24, 41520), (30, 41625), (32, 41634), (35, 41673), (37, 41682), (38, 41709), (39, 41715), (41, 41760), (54, 41910), (60, 42036), (61, 42066), (70, 42219), (72, 42240), (76, 42264), (79, 42279), (83, 42405),

Gene: Riparian\_74 Start: 54056, Stop: 54991, Start Num: 14

Candidate Starts for Riparian\_74:

(Start: 11 @54038 has 4 MA's), (Start: 14 @54056 has 58 MA's), (19, 54116), (23, 54152), (24, 54161), (34, 54293), (48, 54482), (49, 54497), (50, 54512), (59, 54680), (60, 54698), (61, 54728), (62, 54740), (68, 54848),

Gene: Rope\_72 Start: 54212, Stop: 55147, Start Num: 14

Candidate Starts for Rope\_72:

(Start: 11 @54194 has 4 MA's), (Start: 14 @54212 has 58 MA's), (19, 54272), (23, 54308), (34, 54449), (48, 54638), (49, 54653), (50, 54668), (59, 54836), (60, 54854), (61, 54884), (62, 54896), (68, 55004), (71, 55043),

Gene: Send513\_72 Start: 54590, Stop: 55525, Start Num: 14

Candidate Starts for Send513\_72:

(Start: 11 @54572 has 4 MA's), (Start: 14 @54590 has 58 MA's), (19, 54650), (23, 54686), (24, 54695), (34, 54827), (48, 55016), (49, 55031), (50, 55046), (59, 55214), (60, 55232), (61, 55262), (62, 55274), (68, 55382),

Gene: Sienna\_64 Start: 46596, Stop: 47552, Start Num: 14

Candidate Starts for Sienna\_64:

(1, 46425), (2, 46458), (5, 46548), (Start: 14 @46596 has 58 MA's), (19, 46656), (Start: 20 @46668 has 1 MA's), (23, 46692), (61, 47286), (68, 47412),

Gene: SilentWarrior\_57 Start: 39621, Stop: 40658, Start Num: 14

Candidate Starts for SilentWarrior\_57:

(Start: 14 @39621 has 58 MA's), (17, 39663), (18, 39678), (Start: 20 @39693 has 1 MA's), (21, 39702), (23, 39717), (27, 39762), (31, 39834), (32, 39840), (33, 39858), (34, 39873), (35, 39879), (39, 39921), (53, 40101), (61, 40275), (66, 40386), (70, 40428), (79, 40488), (83, 40614),

Gene: Snakehole\_57 Start: 39629, Stop: 40666, Start Num: 14

Candidate Starts for Snakehole\_57:

(Start: 14 @39629 has 58 MA's), (17, 39671), (18, 39686), (Start: 20 @39701 has 1 MA's), (21, 39710), (23, 39725), (27, 39770), (31, 39842), (32, 39848), (33, 39866), (34, 39881), (35, 39887), (39, 39929), (53, 40109), (61, 40283), (66, 40394), (70, 40436), (79, 40496), (83, 40622),

Gene: Sparcetus\_61 Start: 41292, Stop: 42326, Start Num: 14

Candidate Starts for Sparcetus\_61:

(Start: 14 @41292 has 58 MA's), (17, 41334), (23, 41388), (24, 41397), (30, 41502), (32, 41511), (35, 41550), (37, 41559), (38, 41586), (39, 41592), (41, 41637), (54, 41787), (60, 41913), (61, 41943), (70, 42096), (72, 42117), (76, 42141), (79, 42156), (83, 42282),

Gene: Suzy\_64 Start: 47789, Stop: 48745, Start Num: 14

Candidate Starts for Suzy\_64:

(Start: 14 @47789 has 58 MA's), (19, 47849), (Start: 20 @47861 has 1 MA's), (23, 47885), (61, 48479), (68, 48605),

Gene: Tedro\_56 Start: 39642, Stop: 40679, Start Num: 14

Candidate Starts for Tedro\_56:

(Start: 14 @39642 has 58 MA's), (17, 39684), (Start: 20 @39714 has 1 MA's), (23, 39738), (31, 39855), (32, 39861), (33, 39879), (34, 39894), (35, 39900), (39, 39942), (53, 40122), (61, 40296), (79, 40509),

Gene: Terapin\_65 Start: 46520, Stop: 47476, Start Num: 14

Candidate Starts for Terapin\_65:

(1, 46349), (2, 46382), (5, 46472), (Start: 14 @46520 has 58 MA's), (19, 46580), (Start: 20 @46592 has 1 MA's), (23, 46616), (61, 47210), (68, 47336),

Gene: Tiggy93\_55 Start: 40272, Stop: 41267, Start Num: 17

Candidate Starts for Tiggy93\_55:

(Start: 3 @40164 has 1 MA's), (Start: 8 @40203 has 1 MA's), (Start: 11 @40212 has 4 MA's), (12, 40218), (Start: 14 @40230 has 58 MA's), (17, 40272), (18, 40287), (Start: 20 @40302 has 1 MA's), (21, 40311), (23, 40326), (27, 40371), (31, 40443), (32, 40449), (34, 40482), (35, 40488), (39, 40530), (53, 40710), (61, 40884), (66, 40995), (70, 41037), (79, 41097), (83, 41223),

Gene: TinyMiny\_61 Start: 41314, Stop: 42348, Start Num: 14

Candidate Starts for TinyMiny\_61:

(Start: 14 @41314 has 58 MA's), (17, 41356), (21, 41395), (23, 41410), (27, 41455), (30, 41524), (32, 41533), (35, 41572), (37, 41581), (38, 41608), (39, 41614), (40, 41617), (41, 41659), (54, 41809), (57, 41872), (60, 41935), (61, 41965), (63, 42007), (70, 42118), (72, 42139), (76, 42163), (79, 42178),

Gene: Tongui\_56 Start: 39916, Stop: 40953, Start Num: 14

Candidate Starts for Tongui\_56:

(Start: 14 @39916 has 58 MA's), (17, 39958), (18, 39973), (23, 40012), (31, 40129), (32, 40135), (34, 40168), (35, 40174), (39, 40216), (40, 40219), (41, 40261), (53, 40396), (61, 40570), (76, 40768), (79, 40783),

Gene: Weiss13\_72 Start: 54293, Stop: 55228, Start Num: 14

Candidate Starts for Weiss13\_72:

(Start: 11 @54275 has 4 MA's), (Start: 14 @54293 has 58 MA's), (19, 54353), (23, 54389), (24, 54398), (34, 54530), (48, 54719), (49, 54734), (50, 54749), (59, 54917), (60, 54935), (61, 54965), (62, 54977), (68, 55085),

Gene: Wollypog\_56 Start: 42579, Stop: 43505, Start Num: 14

Candidate Starts for Wollypog\_56:

(Start: 14 @42579 has 58 MA's), (17, 42621), (18, 42636), (23, 42675), (32, 42798), (34, 42831), (35, 42837), (37, 42846), (38, 42873), (39, 42879), (41, 42927), (53, 43062), (60, 43206), (61, 43236), (62, 43248), (65, 43344), (67, 43356), (73, 43413), (76, 43434), (79, 43449),

Gene: Yelo\_71 Start: 54654, Stop: 55607, Start Num: 11

Candidate Starts for Yelo\_71:

(Start: 11 @54654 has 4 MA's), (Start: 14 @54672 has 58 MA's), (19, 54732), (23, 54768), (34, 54909), (48, 55098), (49, 55113), (50, 55128), (59, 55296), (60, 55314), (61, 55344), (62, 55356), (68, 55464),

Gene: Zenon\_74 Start: 54616, Stop: 55551, Start Num: 14

Candidate Starts for Zenon\_74:

(Start: 11 @54598 has 4 MA's), (Start: 14 @54616 has 58 MA's), (19, 54676), (23, 54712), (24, 54721), (34, 54853), (48, 55042), (49, 55057), (50, 55072), (59, 55240), (60, 55258), (61, 55288), (62, 55300), (68, 55408),