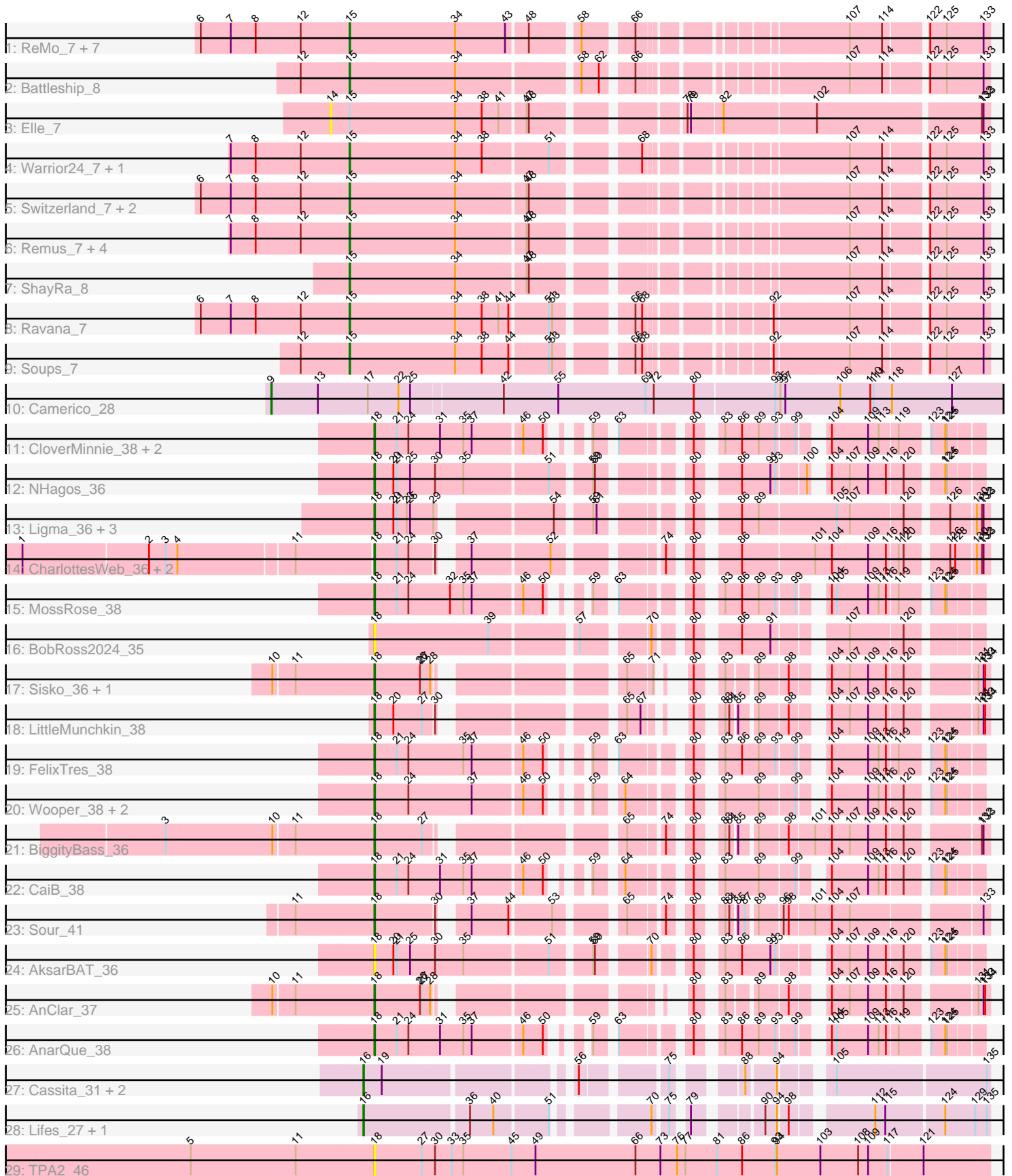


Pham 311646



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 311646 Report

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

Pham number 311646 has 56 members, 8 are drafts.

Phages represented in each track:

- Track 1 : ReMo_7, Looper_7, Boohoo_7, Nebulosus_7, Anaysia_7, JSwag_7, Epsocamisio_7, LastResort_7
- Track 2 : Battleship_8
- Track 3 : Elle_7
- Track 4 : Warrior24_7, Oofda_7
- Track 5 : Switzerland_7, Rosalind_7, MinecraftSteve_8
- Track 6 : Remus_7, DekHockey33_7, Waits_7, KatherineG_7, Strosahl_7
- Track 7 : ShayRa_8
- Track 8 : Ravana_7
- Track 9 : Soups_7
- Track 10 : Camerico_28
- Track 11 : CloverMinnie_38, Blackpen_38, MakoManhole_38
- Track 12 : NHagos_36
- Track 13 : Ligma_36, Fresco_36, Axumite_36, Shatter_36
- Track 14 : CharlottesWeb_36, JellyBelly_36, Mariokart_36
- Track 15 : MossRose_38
- Track 16 : BobRoss2024_35
- Track 17 : Sisko_36, Yago84_36
- Track 18 : LittleMunchkin_38
- Track 19 : FelixTres_38
- Track 20 : Wooper_38, TraderJ_38, Yeshua_38
- Track 21 : BiggityBass_36
- Track 22 : CaiB_38
- Track 23 : Sour_41
- Track 24 : AksarBAT_36
- Track 25 : AnClar_37
- Track 26 : AnarQue_38
- Track 27 : Cassita_31, WaterT_30, LeeroyJenkins_31
- Track 28 : Lifes_27, BarnCat_25
- Track 29 : TPA2_46

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

The start number called the most often in the published annotations is 15, it was called in 22 of the 48 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Anaysia_7, Battleship_8, Boohoo_7, DekHockey33_7, Epsocamisio_7, JSwag_7, KatherineG_7, LastResort_7, Looper_7, MinecraftSteve_8, Nebulosus_7, Oofda_7, Ravana_7, ReMo_7, Remus_7, Rosalind_7, ShayRa_8, Soups_7, Strosahl_7, Switzerland_7, Waits_7, Warrior24_7,

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

- Elle_7,

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

- AksarBAT_36, AnClar_37, AnarQue_38, Axumite_36, BarnCat_25, BiggityBass_36, Blackpen_38, BobRoss2024_35, CaiB_38, Camerico_28, Cassita_31, CharlottesWeb_36, CloverMinnie_38, FelixTres_38, Fresco_36, JellyBelly_36, LeeroyJenkins_31, Lifes_27, Ligma_36, LittleMunchkin_38, MakoManhole_38, Mariokart_36, MossRose_38, NHagos_36, Shatter_36, Sisko_36, Sour_41, TPA2_46, TraderJ_38, WaterT_30, Wooper_38, Yago84_36, Yeshua_38,

Summary by start number:

Start 9:

- Found in 1 of 56 (1.8%) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Camerico_28 (DF4),

Start 14:

- Found in 1 of 56 (1.8%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Elle_7 (A15),

Start 15:

- Found in 23 of 56 (41.1%) of genes in pham
- Manual Annotations of this start: 22 of 48
- Called 95.7% of time when present
- Phage (with cluster) where this start called: Anaysia_7 (A15), Battleship_8 (A15), Boohoo_7 (A15), DekHockey33_7 (A15), Epsocamisio_7 (A15), JSwag_7 (A15), KatherineG_7 (A15), LastResort_7 (A15), Looper_7 (A15), MinecraftSteve_8 (A15), Nebulosus_7 (A15), Oofda_7 (A15), Ravana_7 (A15), ReMo_7 (A15), Remus_7 (A15), Rosalind_7 (A15), ShayRa_8 (A15), Soups_7 (A15), Strosahl_7 (A15), Switzerland_7 (A15), Waits_7 (A15), Warrior24_7 (A15),

Start 16:

- Found in 5 of 56 (8.9%) of genes in pham
- Manual Annotations of this start: 5 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BarnCat_25 (GB), Cassita_31 (GB), LeeroyJenkins_31 (GB), Lifes_27 (GB), WaterT_30 (GB),

Start 18:

- Found in 27 of 56 (48.2%) of genes in pham
- Manual Annotations of this start: 20 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AksarBAT_36 (DR), AnClar_37 (DR), AnarQue_38 (DR), Axumite_36 (DR), BiggityBass_36 (DR), Blackpen_38 (DR), BobRoss2024_35 (DR), CaiB_38 (DR), CharlottesWeb_36 (DR), CloverMinnie_38 (DR), FelixTres_38 (DR), Fresco_36 (DR), JellyBelly_36 (DR), Ligma_36 (DR), LittleMunchkin_38 (DR), MakoManhole_38 (DR), Mariokart_36 (DR), MossRose_38 (DR), NHagos_36 (DR), Shatter_36 (DR), Sisko_36 (DR), Sour_41 (DR), TPA2_46 (singleton), TraderJ_38 (DR), Wooper_38 (DR), Yago84_36 (DR), Yeshua_38 (DR),

Summary by clusters:

There are 5 clusters represented in this pham: A15, DF4, singleton, DR, GB,

Info for manual annotations of cluster A15:

- Start number 15 was manually annotated 22 times for cluster A15.

Info for manual annotations of cluster DF4:

- Start number 9 was manually annotated 1 time for cluster DF4.

Info for manual annotations of cluster DR:

- Start number 18 was manually annotated 20 times for cluster DR.

Info for manual annotations of cluster GB:

- Start number 16 was manually annotated 5 times for cluster GB.

Gene Information:

Gene: AksarBAT_36 Start: 31643, Stop: 32539, Start Num: 18

Candidate Starts for AksarBAT_36:

(Start: 18 @31643 has 20 MA's), (20, 31676), (21, 31682), (25, 31706), (30, 31748), (35, 31799), (51, 31940), (59, 32000), (60, 32003), (70, 32078), (80, 32123), (83, 32153), (86, 32183), (91, 32234), (93, 32243), (104, 32303), (107, 32333), (109, 32363), (116, 32393), (120, 32420), (123, 32453), (124, 32477), (125, 32480),

Gene: AnClar_37 Start: 33997, Stop: 34812, Start Num: 18

Candidate Starts for AnClar_37:

(10, 33820), (11, 33856), (Start: 18 @33997 has 20 MA's), (26, 34078), (27, 34081), (28, 34093), (80, 34408), (83, 34438), (89, 34477), (98, 34522), (104, 34564), (107, 34594), (109, 34624), (116, 34654), (120, 34681), (131, 34792), (133, 34801), (134, 34804),

Gene: AnarQue_38 Start: 33101, Stop: 33943, Start Num: 18

Candidate Starts for AnarQue_38:

(Start: 18 @33101 has 20 MA's), (21, 33140), (24, 33161), (31, 33215), (35, 33257), (37, 33272), (46, 33353), (50, 33380), (59, 33407), (63, 33428), (80, 33527), (83, 33557), (86, 33587), (89, 33617), (93, 33647), (99, 33677), (104, 33707), (105, 33716), (109, 33767), (113, 33785), (116, 33797), (119, 33815), (123, 33857), (124, 33881), (125, 33884),

Gene: Anaysia_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for Anaysia_7:

(6, 3147), (7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (43, 3690), (48, 3723), (58, 3795), (66, 3870), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: Axumite_36 Start: 31148, Stop: 32053, Start Num: 18

Candidate Starts for Axumite_36:

(Start: 18 @31148 has 20 MA's), (20, 31181), (21, 31187), (23, 31205), (25, 31211), (29, 31250), (54, 31418), (59, 31472), (61, 31478), (80, 31595), (86, 31655), (89, 31685), (105, 31817), (107, 31838), (120, 31925), (126, 31988), (130, 32030), (132, 32039), (133, 32042),

Gene: BarnCat_25 Start: 12489, Stop: 13412, Start Num: 16

Candidate Starts for BarnCat_25:

(Start: 16 @12489 has 5 MA's), (36, 12669), (40, 12711), (51, 12801), (70, 12933), (75, 12954), (79, 12972), (90, 13065), (94, 13086), (98, 13101), (112, 13221), (115, 13239), (124, 13335), (129, 13386), (135, 13407),

Gene: Battleship_8 Start: 3561, Stop: 4553, Start Num: 15

Candidate Starts for Battleship_8:

(12, 3474), (Start: 15 @3561 has 22 MA's), (34, 3747), (58, 3942), (62, 3972), (66, 4017), (107, 4326), (114, 4383), (122, 4449), (125, 4479), (133, 4542),

Gene: BiggityBass_36 Start: 33404, Stop: 34276, Start Num: 18

Candidate Starts for BiggityBass_36:

(3, 33038), (10, 33227), (11, 33263), (Start: 18 @33404 has 20 MA's), (27, 33488), (65, 33758), (74, 33812), (80, 33842), (83, 33872), (84, 33878), (85, 33887), (89, 33911), (98, 33956), (101, 33998), (104, 34028), (107, 34058), (109, 34088), (116, 34118), (120, 34145), (132, 34262), (133, 34265),

Gene: Blackpen_38 Start: 32519, Stop: 33361, Start Num: 18

Candidate Starts for Blackpen_38:

(Start: 18 @32519 has 20 MA's), (21, 32558), (24, 32579), (31, 32633), (35, 32675), (37, 32690), (46, 32771), (50, 32798), (59, 32825), (63, 32846), (80, 32945), (83, 32975), (86, 33005), (89, 33035), (93, 33065), (99, 33095), (104, 33125), (109, 33185), (113, 33203), (119, 33233), (123, 33275), (124, 33299), (125, 33302),

Gene: BobRoss2024_35 Start: 31155, Stop: 32051, Start Num: 18

Candidate Starts for BobRoss2024_35:

(Start: 18 @31155 has 20 MA's), (39, 31356), (57, 31488), (70, 31590), (80, 31635), (86, 31695), (91, 31746), (107, 31845), (120, 31932),

Gene: Boohoo_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for Boohoo_7:

(6, 3147), (7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (43, 3690), (48, 3723), (58, 3795), (66, 3870), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: CaiB_38 Start: 33087, Stop: 33929, Start Num: 18

Candidate Starts for CaiB_38:

(Start: 18 @33087 has 20 MA's), (21, 33126), (24, 33147), (31, 33201), (35, 33243), (37, 33258), (46, 33339), (50, 33366), (59, 33393), (64, 33426), (80, 33513), (83, 33543), (89, 33603), (99, 33663), (104, 33693), (109, 33753), (113, 33771), (116, 33783), (120, 33810), (123, 33843), (124, 33867), (125, 33870),

Gene: Camerico_28 Start: 33627, Stop: 34943, Start Num: 9

Candidate Starts for Camerico_28:

(Start: 9 @33627 has 1 MA's), (13, 33711), (17, 33798), (22, 33852), (25, 33873), (42, 34029), (55, 34125), (69, 34278), (72, 34293), (80, 34362), (93, 34503), (95, 34512), (97, 34521), (106, 34620), (110, 34674), (111, 34680), (118, 34713), (127, 34821),

Gene: Cassita_31 Start: 14880, Stop: 15788, Start Num: 16

Candidate Starts for Cassita_31:

(Start: 16 @14880 has 5 MA's), (19, 14913), (56, 15207), (75, 15330), (88, 15414), (94, 15462), (105, 15531), (135, 15783),

Gene: CharlottesWeb_36 Start: 31078, Stop: 31977, Start Num: 18

Candidate Starts for CharlottesWeb_36:

(1, 30472), (2, 30694), (3, 30724), (4, 30745), (11, 30943), (Start: 18 @31078 has 20 MA's), (21, 31117), (24, 31138), (30, 31177), (37, 31207), (52, 31336), (74, 31486), (80, 31516), (86, 31576), (101, 31699), (104, 31729), (109, 31789), (116, 31819), (119, 31837), (120, 31846), (126, 31912), (128, 31921), (130, 31954), (132, 31963), (133, 31966),

Gene: CloverMinnie_38 Start: 33027, Stop: 33869, Start Num: 18

Candidate Starts for CloverMinnie_38:

(Start: 18 @33027 has 20 MA's), (21, 33066), (24, 33087), (31, 33141), (35, 33183), (37, 33198), (46, 33279), (50, 33306), (59, 33333), (63, 33354), (80, 33453), (83, 33483), (86, 33513), (89, 33543), (93, 33573), (99, 33603), (104, 33633), (109, 33693), (113, 33711), (119, 33741), (123, 33783), (124, 33807), (125, 33810),

Gene: DekHockey33_7 Start: 3561, Stop: 4553, Start Num: 15

Candidate Starts for DekHockey33_7:

(7, 3348), (8, 3393), (12, 3474), (Start: 15 @3561 has 22 MA's), (34, 3747), (47, 3867), (48, 3870), (107, 4326), (114, 4383), (122, 4449), (125, 4479), (133, 4542),

Gene: Elle_7 Start: 3244, Stop: 4311, Start Num: 14

Candidate Starts for Elle_7:

(14, 3244), (Start: 15 @3277 has 22 MA's), (34, 3460), (38, 3508), (41, 3538), (47, 3580), (48, 3583), (78, 3802), (79, 3808), (82, 3862), (102, 4021), (132, 4297), (133, 4300),

Gene: Epsocamisio_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for Epsocamisio_7:

(6, 3147), (7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (43, 3690), (48, 3723), (58, 3795), (66, 3870), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: FelixTres_38 Start: 33090, Stop: 33932, Start Num: 18

Candidate Starts for FelixTres_38:

(Start: 18 @33090 has 20 MA's), (21, 33129), (24, 33150), (35, 33246), (37, 33261), (46, 33342), (50, 33369), (59, 33396), (63, 33417), (80, 33516), (83, 33546), (86, 33576), (89, 33606), (93, 33636), (99, 33666), (104, 33696), (109, 33756), (113, 33774), (116, 33786), (119, 33804), (123, 33846), (124, 33870), (125, 33873),

Gene: Fresco_36 Start: 31148, Stop: 32053, Start Num: 18

Candidate Starts for Fresco_36:

(Start: 18 @31148 has 20 MA's), (20, 31181), (21, 31187), (23, 31205), (25, 31211), (29, 31250), (54, 31418), (59, 31472), (61, 31478), (80, 31595), (86, 31655), (89, 31685), (105, 31817), (107, 31838), (120, 31925), (126, 31988), (130, 32030), (132, 32039), (133, 32042),

Gene: JSwag_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for JSwag_7:

(6, 3147), (7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (43, 3690), (48, 3723), (58, 3795), (66, 3870), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: JellyBelly_36 Start: 31081, Stop: 31980, Start Num: 18

Candidate Starts for JellyBelly_36:

(1, 30475), (2, 30697), (3, 30727), (4, 30748), (11, 30946), (Start: 18 @31081 has 20 MA's), (21, 31120), (24, 31141), (30, 31180), (37, 31210), (52, 31339), (74, 31489), (80, 31519), (86, 31579), (101, 31702), (104, 31732), (109, 31792), (116, 31822), (119, 31840), (120, 31849), (126, 31915), (128, 31924), (130, 31957), (132, 31966), (133, 31969),

Gene: KatherineG_7 Start: 3561, Stop: 4553, Start Num: 15

Candidate Starts for KatherineG_7:

(7, 3348), (8, 3393), (12, 3474), (Start: 15 @3561 has 22 MA's), (34, 3747), (47, 3867), (48, 3870), (107, 4326), (114, 4383), (122, 4449), (125, 4479), (133, 4542),

Gene: LastResort_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for LastResort_7:

(6, 3147), (7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (43, 3690), (48, 3723), (58, 3795), (66, 3870), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: LeeroyJenkins_31 Start: 14811, Stop: 15719, Start Num: 16

Candidate Starts for LeeroyJenkins_31:

(Start: 16 @14811 has 5 MA's), (19, 14844), (56, 15138), (75, 15261), (88, 15345), (94, 15393), (105, 15462), (135, 15714),

Gene: Lifes_27 Start: 12520, Stop: 13443, Start Num: 16

Candidate Starts for Lifes_27:

(Start: 16 @12520 has 5 MA's), (36, 12700), (40, 12742), (51, 12832), (70, 12964), (75, 12985), (79, 13003), (90, 13096), (94, 13117), (98, 13132), (112, 13252), (115, 13270), (124, 13366), (129, 13417), (135, 13438),

Gene: Ligma_36 Start: 31148, Stop: 32053, Start Num: 18

Candidate Starts for Ligma_36:

(Start: 18 @31148 has 20 MA's), (20, 31181), (21, 31187), (23, 31205), (25, 31211), (29, 31250), (54, 31418), (59, 31472), (61, 31478), (80, 31595), (86, 31655), (89, 31685), (105, 31817), (107, 31838), (120, 31925), (126, 31988), (130, 32030), (132, 32039), (133, 32042),

Gene: LittleMunchkin_38 Start: 34566, Stop: 35381, Start Num: 18

Candidate Starts for LittleMunchkin_38:

(Start: 18 @34566 has 20 MA's), (20, 34599), (27, 34650), (30, 34665), (65, 34920), (67, 34944), (80, 34977), (83, 35007), (84, 35013), (85, 35022), (89, 35046), (98, 35091), (104, 35133), (107, 35163), (109, 35193), (116, 35223), (120, 35250), (131, 35361), (133, 35370), (134, 35373),

Gene: Looper_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for Looper_7:

(6, 3147), (7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (43, 3690), (48, 3723), (58, 3795), (66, 3870), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: MakoManhole_38 Start: 33105, Stop: 33947, Start Num: 18

Candidate Starts for MakoManhole_38:

(Start: 18 @33105 has 20 MA's), (21, 33144), (24, 33165), (31, 33219), (35, 33261), (37, 33276), (46, 33357), (50, 33384), (59, 33411), (63, 33432), (80, 33531), (83, 33561), (86, 33591), (89, 33621), (93, 33651), (99, 33681), (104, 33711), (109, 33771), (113, 33789), (119, 33819), (123, 33861), (124,

33885), (125, 33888),

Gene: Mariokart_36 Start: 31077, Stop: 31976, Start Num: 18

Candidate Starts for Mariokart_36:

(1, 30471), (2, 30693), (3, 30723), (4, 30744), (11, 30942), (Start: 18 @31077 has 20 MA's), (21, 31116), (24, 31137), (30, 31176), (37, 31206), (52, 31335), (74, 31485), (80, 31515), (86, 31575), (101, 31698), (104, 31728), (109, 31788), (116, 31818), (119, 31836), (120, 31845), (126, 31911), (128, 31920), (130, 31953), (132, 31962), (133, 31965),

Gene: MinecraftSteve_8 Start: 3561, Stop: 4553, Start Num: 15

Candidate Starts for MinecraftSteve_8:

(6, 3294), (7, 3348), (8, 3393), (12, 3474), (Start: 15 @3561 has 22 MA's), (34, 3747), (47, 3867), (48, 3870), (107, 4326), (114, 4383), (122, 4449), (125, 4479), (133, 4542),

Gene: MossRose_38 Start: 33084, Stop: 33926, Start Num: 18

Candidate Starts for MossRose_38:

(Start: 18 @33084 has 20 MA's), (21, 33123), (24, 33144), (32, 33216), (35, 33240), (37, 33255), (46, 33336), (50, 33363), (59, 33390), (63, 33411), (80, 33510), (83, 33540), (86, 33570), (89, 33600), (93, 33630), (99, 33660), (104, 33690), (105, 33699), (109, 33750), (113, 33768), (116, 33780), (119, 33798), (123, 33840), (124, 33864), (125, 33867),

Gene: NHagos_36 Start: 31646, Stop: 32542, Start Num: 18

Candidate Starts for NHagos_36:

(Start: 18 @31646 has 20 MA's), (20, 31679), (21, 31685), (25, 31709), (30, 31751), (35, 31802), (51, 31943), (59, 32003), (60, 32006), (80, 32126), (86, 32186), (91, 32237), (93, 32246), (100, 32291), (104, 32306), (107, 32336), (109, 32366), (116, 32396), (120, 32423), (124, 32480), (125, 32483),

Gene: Nebulosus_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for Nebulosus_7:

(6, 3147), (7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (43, 3690), (48, 3723), (58, 3795), (66, 3870), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: Oofda_7 Start: 3417, Stop: 4409, Start Num: 15

Candidate Starts for Oofda_7:

(7, 3204), (8, 3249), (12, 3330), (Start: 15 @3417 has 22 MA's), (34, 3603), (38, 3651), (51, 3759), (68, 3885), (107, 4182), (114, 4239), (122, 4305), (125, 4335), (133, 4398),

Gene: Ravana_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for Ravana_7:

(6, 3147), (7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (38, 3648), (41, 3678), (44, 3696), (51, 3756), (53, 3762), (66, 3870), (68, 3882), (92, 4053), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: ReMo_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for ReMo_7:

(6, 3147), (7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (43, 3690), (48, 3723), (58, 3795), (66, 3870), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: Remus_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for Remus_7:

(7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (47, 3720), (48, 3723), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: Rosalind_7 Start: 3561, Stop: 4553, Start Num: 15

Candidate Starts for Rosalind_7:

(6, 3294), (7, 3348), (8, 3393), (12, 3474), (Start: 15 @3561 has 22 MA's), (34, 3747), (47, 3867), (48, 3870), (107, 4326), (114, 4383), (122, 4449), (125, 4479), (133, 4542),

Gene: Shatter_36 Start: 31148, Stop: 32053, Start Num: 18

Candidate Starts for Shatter_36:

(Start: 18 @31148 has 20 MA's), (20, 31181), (21, 31187), (23, 31205), (25, 31211), (29, 31250), (54, 31418), (59, 31472), (61, 31478), (80, 31595), (86, 31655), (89, 31685), (105, 31817), (107, 31838), (120, 31925), (126, 31988), (130, 32030), (132, 32039), (133, 32042),

Gene: ShayRa_8 Start: 3561, Stop: 4553, Start Num: 15

Candidate Starts for ShayRa_8:

(Start: 15 @3561 has 22 MA's), (34, 3747), (47, 3867), (48, 3870), (107, 4326), (114, 4383), (122, 4449), (125, 4479), (133, 4542),

Gene: Sisko_36 Start: 32004, Stop: 32819, Start Num: 18

Candidate Starts for Sisko_36:

(10, 31827), (11, 31863), (Start: 18 @32004 has 20 MA's), (26, 32085), (27, 32088), (28, 32100), (65, 32358), (71, 32400), (80, 32415), (83, 32445), (89, 32484), (98, 32529), (104, 32571), (107, 32601), (109, 32631), (116, 32661), (120, 32688), (131, 32799), (133, 32808), (134, 32811),

Gene: Soups_7 Start: 3561, Stop: 4553, Start Num: 15

Candidate Starts for Soups_7:

(12, 3474), (Start: 15 @3561 has 22 MA's), (34, 3747), (38, 3795), (44, 3843), (51, 3903), (53, 3909), (66, 4017), (68, 4029), (92, 4200), (107, 4326), (114, 4383), (122, 4449), (125, 4479), (133, 4542),

Gene: Sour_41 Start: 35889, Stop: 36761, Start Num: 18

Candidate Starts for Sour_41:

(11, 35748), (Start: 18 @35889 has 20 MA's), (30, 35988), (37, 36018), (44, 36084), (53, 36147), (65, 36243), (74, 36297), (80, 36327), (83, 36357), (84, 36363), (85, 36372), (87, 36384), (89, 36396), (96, 36432), (98, 36441), (101, 36483), (104, 36513), (107, 36543), (133, 36750),

Gene: Strosahl_7 Start: 3414, Stop: 4406, Start Num: 15

Candidate Starts for Strosahl_7:

(7, 3201), (8, 3246), (12, 3327), (Start: 15 @3414 has 22 MA's), (34, 3600), (47, 3720), (48, 3723), (107, 4179), (114, 4236), (122, 4302), (125, 4332), (133, 4395),

Gene: Switzerland_7 Start: 3561, Stop: 4553, Start Num: 15

Candidate Starts for Switzerland_7:

(6, 3294), (7, 3348), (8, 3393), (12, 3474), (Start: 15 @3561 has 22 MA's), (34, 3747), (47, 3867), (48, 3870), (107, 4326), (114, 4383), (122, 4449), (125, 4479), (133, 4542),

Gene: TPA2_46 Start: 35834, Stop: 36925, Start Num: 18

Candidate Starts for TPA2_46:

(5, 35516), (11, 35705), (Start: 18 @35834 has 20 MA's), (27, 35918), (30, 35939), (33, 35969), (35, 35990), (45, 36077), (49, 36119), (66, 36299), (73, 36344), (76, 36374), (77, 36389), (81, 36446), (86, 36491), (93, 36551), (94, 36554), (103, 36632), (108, 36698), (109, 36716), (117, 36749), (121, 36809),

Gene: TraderJ_38 Start: 33087, Stop: 33929, Start Num: 18

Candidate Starts for TraderJ_38:

(Start: 18 @33087 has 20 MA's), (24, 33147), (37, 33258), (46, 33339), (50, 33366), (59, 33393), (64, 33426), (80, 33513), (83, 33543), (89, 33603), (99, 33663), (104, 33693), (109, 33753), (113, 33771), (116, 33783), (120, 33810), (123, 33843), (124, 33867), (125, 33870),

Gene: Waits_7 Start: 3413, Stop: 4405, Start Num: 15

Candidate Starts for Waits_7:

(7, 3200), (8, 3245), (12, 3326), (Start: 15 @3413 has 22 MA's), (34, 3599), (47, 3719), (48, 3722), (107, 4178), (114, 4235), (122, 4301), (125, 4331), (133, 4394),

Gene: Warrior24_7 Start: 3417, Stop: 4409, Start Num: 15

Candidate Starts for Warrior24_7:

(7, 3204), (8, 3249), (12, 3330), (Start: 15 @3417 has 22 MA's), (34, 3603), (38, 3651), (51, 3759), (68, 3885), (107, 4182), (114, 4239), (122, 4305), (125, 4335), (133, 4398),

Gene: WaterT_30 Start: 14624, Stop: 15532, Start Num: 16

Candidate Starts for WaterT_30:

(Start: 16 @14624 has 5 MA's), (19, 14657), (56, 14951), (75, 15074), (88, 15158), (94, 15206), (105, 15275), (135, 15527),

Gene: Wooper_38 Start: 33093, Stop: 33935, Start Num: 18

Candidate Starts for Wooper_38:

(Start: 18 @33093 has 20 MA's), (24, 33153), (37, 33264), (46, 33345), (50, 33372), (59, 33399), (64, 33432), (80, 33519), (83, 33549), (89, 33609), (99, 33669), (104, 33699), (109, 33759), (113, 33777), (116, 33789), (120, 33816), (123, 33849), (124, 33873), (125, 33876),

Gene: Yago84_36 Start: 32078, Stop: 32893, Start Num: 18

Candidate Starts for Yago84_36:

(10, 31901), (11, 31937), (Start: 18 @32078 has 20 MA's), (26, 32159), (27, 32162), (28, 32174), (65, 32432), (71, 32474), (80, 32489), (83, 32519), (89, 32558), (98, 32603), (104, 32645), (107, 32675), (109, 32705), (116, 32735), (120, 32762), (131, 32873), (133, 32882), (134, 32885),

Gene: Yeshua_38 Start: 33070, Stop: 33912, Start Num: 18

Candidate Starts for Yeshua_38:

(Start: 18 @33070 has 20 MA's), (24, 33130), (37, 33241), (46, 33322), (50, 33349), (59, 33376), (64, 33409), (80, 33496), (83, 33526), (89, 33586), (99, 33646), (104, 33676), (109, 33736), (113, 33754), (116, 33766), (120, 33793), (123, 33826), (124, 33850), (125, 33853),