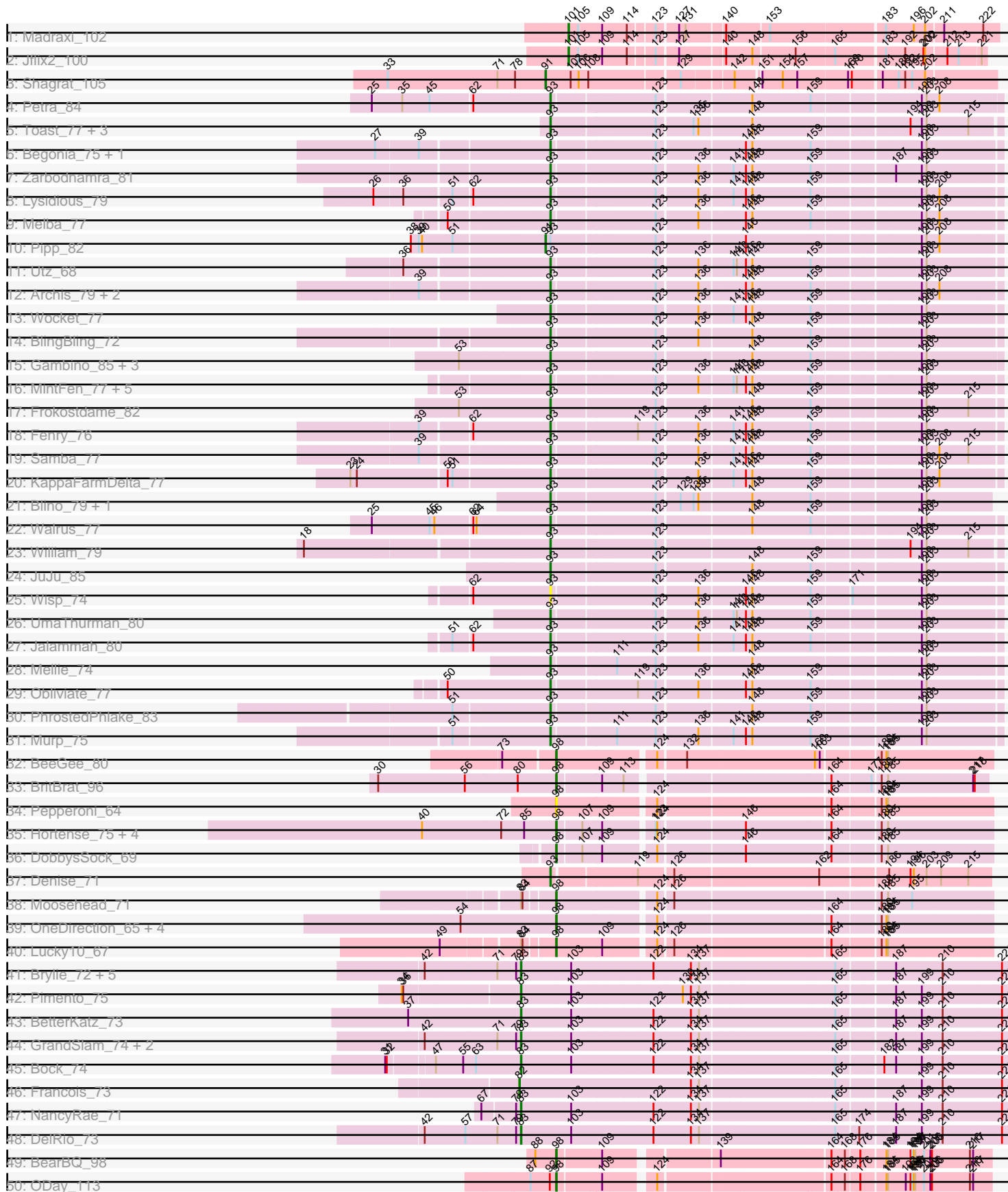
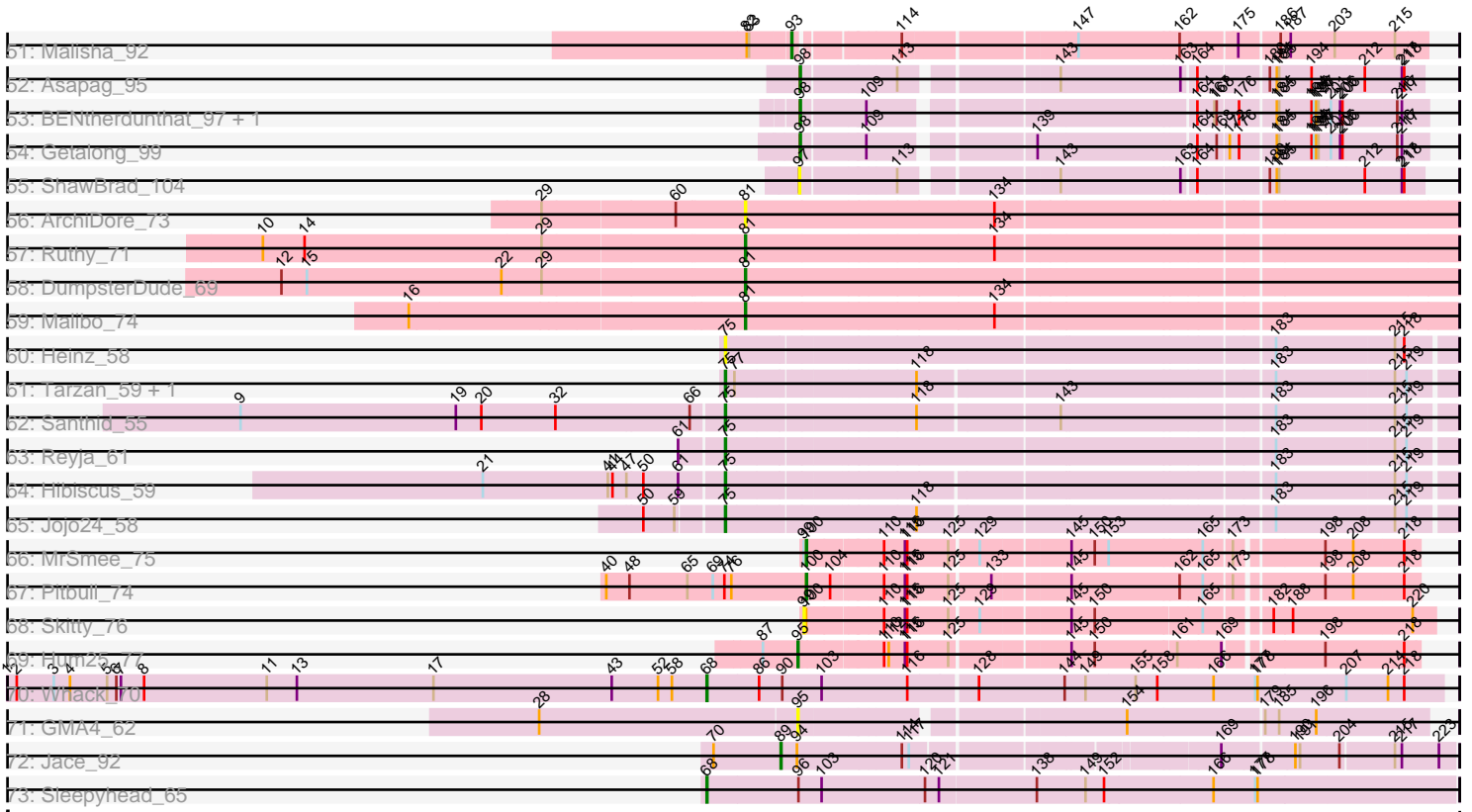


Pham 216018



Pham 216018



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 216018 Report

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

Pham number 216018 has 105 members, 8 are drafts.

Phages represented in each track:

- Track 1 : Madraxi_102
- Track 2 : Jflix2_100
- Track 3 : Shagrat_105
- Track 4 : Petra_84
- Track 5 : Toast_77, PrincePatrick_79, Fairfaxidum_80, PCoral7_76
- Track 6 : Begonia_75, Malachai_75
- Track 7 : Zarbodnamra_81
- Track 8 : Lysidious_79
- Track 9 : Melba_77
- Track 10 : Pipp_82
- Track 11 : Utz_68
- Track 12 : Archis_79, Hitter_75, ZiggyZoo_78
- Track 13 : Wocket_77
- Track 14 : BlingBling_72
- Track 15 : Gambino_85, Azula_83, MissRona_83, Blueberry_82
- Track 16 : MintFen_77, Guacamole_75, Barco_74, Delian_80, CaptainKirk2_77, JasperJr_75
- Track 17 : Frokostdame_82
- Track 18 : Fenry_76
- Track 19 : Samba_77
- Track 20 : KappaFarmDelta_77
- Track 21 : Blino_79, CarolAnn_78
- Track 22 : Walrus_77
- Track 23 : William_79
- Track 24 : JuJu_85
- Track 25 : Wisp_74
- Track 26 : UmaThurman_80
- Track 27 : Jalammah_80
- Track 28 : Mellie_74
- Track 29 : Obliviate_77
- Track 30 : PhrostedPhlake_83
- Track 31 : Murp_75
- Track 32 : BeeGee_80
- Track 33 : BritBrat_96
- Track 34 : Pepperoni_64
- Track 35 : Hortense_75, Twinkle_74, Adora_72, Howe_75, Shlim410_73
- Track 36 : DobbysSock_69

- Track 37 : Denise_71
- Track 38 : Moosehead_71
- Track 39 : OneDirection_65, PhorbesPhlower_69, Kuwabara_89, Morkie_71, Lton_68
- Track 40 : Lucky10_67
- Track 41 : Brylie_72, Ayotoya_73, Nadeem_72, WheatThin_72, Mulch_72, Parada_72
- Track 42 : Pimento_75
- Track 43 : BetterKatz_73
- Track 44 : GrandSlam_74, Hamood_74, Chop_74
- Track 45 : Bock_74
- Track 46 : Francois_73
- Track 47 : NancyRae_71
- Track 48 : DelRio_73
- Track 49 : BearBQ_98
- Track 50 : ODay_113
- Track 51 : Malisha_92
- Track 52 : Asapag_95
- Track 53 : BENtherdunthat_97, CheeseTouch_105
- Track 54 : Getalong_99
- Track 55 : ShawBrad_104
- Track 56 : ArchiDore_73
- Track 57 : Ruthy_71
- Track 58 : DumpsterDude_69
- Track 59 : Malibo_74
- Track 60 : Heinz_58
- Track 61 : Tarzan_59, DonkeyMan_57
- Track 62 : Santhid_55
- Track 63 : Reyja_61
- Track 64 : Hibiscus_59
- Track 65 : Jojo24_58
- Track 66 : MrSmee_75
- Track 67 : Pitbull_74
- Track 68 : Skitty_76
- Track 69 : Hum25_77
- Track 70 : Whack_70
- Track 71 : GMA4_62
- Track 72 : Jace_92
- Track 73 : Sleepyhead_65

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

The start number called the most often in the published annotations is 93, it was called in 43 of the 97 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Archis_79, Azula_83, Barco_74, Begonia_75, BlingBling_72, Blino_79, Blueberry_82, CaptainKirk2_77, CarolAnn_78, Delian_80, Denise_71, Fairfaxidum_80, Fenry_76, Frokostdame_82, Gambino_85, Guacamole_75, Hitter_75, Jalammah_80, JasperJr_75, JuJu_85, KappaFarmDelta_77, Lysidious_79,

Malachai_75, Malisha_92, Melba_77, Mellie_74, MintFen_77, MissRona_83, Murp_75, Obliviate_77, PCoral7_76, Petra_84, PhrostedPhlake_83, PrincePatrick_79, Samba_77, Toast_77, UmaThurman_80, Utz_68, Walrus_77, William_79, Wisp_74, Wocket_77, Zarbodnamra_81, ZiggyZoo_78,

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

- Pipp_82,

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

- Adora_72, ArchiDore_73, Asapag_95, Ayotoya_73, BENtherdunthat_97, BearBQ_98, BeeGee_80, BetterKatz_73, Bock_74, BritBrat_96, Brylie_72, CheeseTouch_105, Chop_74, DelRio_73, DobbysSock_69, DonkeyMan_57, DumpsterDude_69, Francois_73, GMA4_62, Getalong_99, GrandSlam_74, Hamood_74, Heinz_58, Hibiscus_59, Hortense_75, Howe_75, Hum25_77, Jace_92, Jflix2_100, Jojo24_58, Kuwabara_89, Lton_68, Lucky10_67, Madraxi_102, Malibo_74, Moosehead_71, Morkie_71, MrSmee_75, Mulch_72, Nadeem_72, NancyRae_71, ODay_113, OneDirection_65, Parada_72, Pepperoni_64, PhorbesPhlower_69, Pimento_75, Pitbull_74, Reyja_61, Ruthy_71, Santhid_55, Shagrat_105, ShawBrad_104, Shlim410_73, Skitty_76, Sleepyhead_65, Tarzan_59, Twinkle_74, Whack_70, WheatThin_72,

Summary by start number:

Start 68:

- Found in 2 of 105 (1.9%) of genes in pham
- Manual Annotations of this start: 2 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sleepyhead_65 (singleton), Whack_70 (singleton),

Start 75:

- Found in 7 of 105 (6.7%) of genes in pham
- Manual Annotations of this start: 5 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DonkeyMan_57 (DY), Heinz_58 (DY), Hibiscus_59 (DY), Jojo24_58 (DY), Reyja_61 (DY), Santhid_55 (DY), Tarzan_59 (DY),

Start 81:

- Found in 4 of 105 (3.8%) of genes in pham
- Manual Annotations of this start: 3 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ArchiDore_73 (DW), DumpsterDude_69 (DW), Malibo_74 (DW), Ruthy_71 (DW),

Start 82:

- Found in 2 of 105 (1.9%) of genes in pham
- Manual Annotations of this start: 1 of 97
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Francois_73 (DI),

Start 83:

- Found in 17 of 105 (16.2%) of genes in pham

- Manual Annotations of this start: 14 of 97
- Called 82.4% of time when present
- Phage (with cluster) where this start called: Ayotoya_73 (DI), BetterKatz_73 (DI), Bock_74 (DI), Brylie_72 (DI), Chop_74 (DI), DelRio_73 (DI), GrandSlam_74 (DI), Hamood_74 (DI), Mulch_72 (DI), Nadeem_72 (DI), NancyRae_71 (DI), Parada_72 (DI), Pimento_75 (DI), WheatThin_72 (DI),

Start 89:

- Found in 1 of 105 (1.0%) of genes in pham
- Manual Annotations of this start: 1 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jace_92 (singleton),

Start 91:

- Found in 2 of 105 (1.9%) of genes in pham
- Manual Annotations of this start: 2 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Pipp_82 (CV), Shagrat_105 (CF),

Start 93:

- Found in 45 of 105 (42.9%) of genes in pham
- Manual Annotations of this start: 43 of 97
- Called 97.8% of time when present
- Phage (with cluster) where this start called: Archis_79 (CV), Azula_83 (CV), Barco_74 (CV), Begonia_75 (CV), BlingBling_72 (CV), Blino_79 (CV), Blueberry_82 (CV), CaptainKirk2_77 (CV), CarolAnn_78 (CV), Delian_80 (CV), Denise_71 (CZ5), Fairfaxidum_80 (CV), Fenry_76 (CV), Frokostdame_82 (CV), Gambino_85 (CV), Guacamole_75 (CV), Hitter_75 (CV), Jalammah_80 (CV), JasperJr_75 (CV), JuJu_85 (CV), KappaFarmDelta_77 (CV), Lysidious_79 (CV), Malachai_75 (CV), Malisha_92 (DN), Melba_77 (CV), Mellie_74 (CV), MintFen_77 (CV), MissRona_83 (CV), Murp_75 (CV), Obliviate_77 (CV), PCoral7_76 (CV), Petra_84 (CV), PhrostedPhlake_83 (CV), PrincePatrick_79 (CV), Samba_77 (CV), Toast_77 (CV), UmaThurman_80 (CV), Utz_68 (CV), Walrus_77 (CV), William_79 (CV), Wisp_74 (CV), Wocket_77 (CV), Zarbodnamra_81 (CV), ZiggyZoo_78 (CV),

Start 95:

- Found in 2 of 105 (1.9%) of genes in pham
- Manual Annotations of this start: 1 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GMA4_62 (singleton), Hum25_77 (FQ),

Start 97:

- Found in 1 of 105 (1.0%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ShawBrad_104 (DN1),

Start 98:

- Found in 22 of 105 (21.0%) of genes in pham
- Manual Annotations of this start: 21 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Adora_72 (CZ4), Asapag_95 (DN1), BENtherdunthat_97 (DN1), BearBQ_98 (DN), BeeGee_80 (CY), BritBrat_96 (CY2),

CheeseTouch_105 (DN1), DobbysSock_69 (CZ4), Getalong_99 (DN1), Hortense_75 (CZ4), Howe_75 (CZ4), Kuwabara_89 (DN4), Lton_68 (CZ), Lucky10_67 (DH), Moosehead_71 (CZ6), Morkie_71 (DH), ODay_113 (DN), OneDirection_65 (CZ6), Pepperoni_64 (CZ), PhorbesPhlower_69 (DH), Shlim410_73 (CZ4), Twinkle_74 (CZ4),

Start 99:

- Found in 2 of 105 (1.9%) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Skitty_76 (FQ),

Start 100:

- Found in 3 of 105 (2.9%) of genes in pham
- Manual Annotations of this start: 2 of 97
- Called 66.7% of time when present
- Phage (with cluster) where this start called: MrSmee_75 (FQ), Pitbull_74 (FQ),

Start 101:

- Found in 2 of 105 (1.9%) of genes in pham
- Manual Annotations of this start: 2 of 97
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jflix2_100 (CF), Madraxi_102 (CF),

Summary by clusters:

There are 17 clusters represented in this pham: DN, CY2, singleton, DH, DI, CZ6, CF, CZ4, CZ5, DN4, CY, FQ, DN1, DY, CZ, DW, CV,

Info for manual annotations of cluster CF:

- Start number 91 was manually annotated 1 time for cluster CF.
- Start number 101 was manually annotated 2 times for cluster CF.

Info for manual annotations of cluster CV:

- Start number 91 was manually annotated 1 time for cluster CV.
- Start number 93 was manually annotated 41 times for cluster CV.

Info for manual annotations of cluster CY:

- Start number 98 was manually annotated 1 time for cluster CY.

Info for manual annotations of cluster CY2:

- Start number 98 was manually annotated 1 time for cluster CY2.

Info for manual annotations of cluster CZ:

- Start number 98 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ4:

- Start number 98 was manually annotated 6 times for cluster CZ4.

Info for manual annotations of cluster CZ5:

- Start number 93 was manually annotated 1 time for cluster CZ5.

Info for manual annotations of cluster CZ6:

- Start number 98 was manually annotated 2 times for cluster CZ6.

Info for manual annotations of cluster DH:

- Start number 98 was manually annotated 3 times for cluster DH.

Info for manual annotations of cluster DI:

- Start number 82 was manually annotated 1 time for cluster DI.
- Start number 83 was manually annotated 14 times for cluster DI.

Info for manual annotations of cluster DN:

- Start number 93 was manually annotated 1 time for cluster DN.
- Start number 98 was manually annotated 2 times for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 98 was manually annotated 4 times for cluster DN1.

Info for manual annotations of cluster DN4:

- Start number 98 was manually annotated 1 time for cluster DN4.

Info for manual annotations of cluster DW:

- Start number 81 was manually annotated 3 times for cluster DW.

Info for manual annotations of cluster DY:

- Start number 75 was manually annotated 5 times for cluster DY.

Info for manual annotations of cluster FQ:

- Start number 95 was manually annotated 1 time for cluster FQ.
- Start number 100 was manually annotated 2 times for cluster FQ.

Gene Information:

Gene: Adora_72 Start: 48969, Stop: 49706, Start Num: 98

Candidate Starts for Adora_72:

(40, 48723), (72, 48870), (85, 48912), (Start: 98 @48969 has 21 MA's), (107, 49011), (109, 49044), (123, 49125), (124, 49128), (146, 49275), (164, 49425), (180, 49506), (185, 49518),

Gene: ArchiDore_73 Start: 49910, Stop: 50791, Start Num: 81

Candidate Starts for ArchiDore_73:

(29, 49658), (60, 49826), (Start: 81 @49910 has 3 MA's), (134, 50222),

Gene: Archis_79 Start: 46629, Stop: 47405, Start Num: 93

Candidate Starts for Archis_79:

(39, 46410), (Start: 93 @46629 has 43 MA's), (123, 46806), (136, 46878), (146, 46956), (148, 46968), (159, 47076), (199, 47262), (203, 47271), (208, 47295),

Gene: Asapag_95 Start: 52545, Stop: 53270, Start Num: 98

Candidate Starts for Asapag_95:

(Start: 98 @52545 has 21 MA's), (113, 52656), (143, 52833), (163, 52983), (164, 52998), (180, 53079), (184, 53088), (185, 53091), (194, 53133), (212, 53199), (217, 53244), (218, 53247),

Gene: Ayotoya_73 Start: 49136, Stop: 50011, Start Num: 83

Candidate Starts for Ayotoya_73:

(42, 48965), (71, 49097), (79, 49130), (Start: 83 @49136 has 14 MA's), (103, 49229), (122, 49376), (134, 49445), (137, 49460), (165, 49700), (187, 49799), (210, 49886), (224, 49994),

Gene: Azula_83 Start: 51089, Stop: 51874, Start Num: 93

Candidate Starts for Azula_83:

(53, 50924), (Start: 93 @51089 has 43 MA's), (123, 51272), (148, 51434), (159, 51542), (199, 51728), (203, 51737),

Gene: BENtherdunthat_97 Start: 52077, Stop: 52805, Start Num: 98

Candidate Starts for BENtherdunthat_97:

(Start: 98 @52077 has 21 MA's), (109, 52152), (164, 52527), (167, 52548), (168, 52551), (176, 52575), (184, 52617), (185, 52620), (194, 52662), (195, 52665), (196, 52668), (197, 52671), (201, 52686), (205, 52698), (206, 52701), (216, 52767), (217, 52773),

Gene: Barco_74 Start: 46443, Stop: 47219, Start Num: 93

Candidate Starts for Barco_74:

(Start: 93 @46443 has 43 MA's), (123, 46620), (136, 46692), (141, 46749), (143, 46755), (146, 46770), (148, 46782), (159, 46890), (199, 47076), (203, 47085),

Gene: BearBQ_98 Start: 53192, Stop: 53920, Start Num: 98

Candidate Starts for BearBQ_98:

(88, 53159), (Start: 98 @53192 has 21 MA's), (109, 53267), (139, 53450), (164, 53642), (168, 53666), (176, 53690), (184, 53732), (185, 53735), (194, 53777), (195, 53780), (196, 53783), (197, 53786), (201, 53801), (205, 53813), (206, 53816), (216, 53882), (217, 53888),

Gene: BeeGee_80 Start: 50088, Stop: 50837, Start Num: 98

Candidate Starts for BeeGee_80:

(73, 49998), (Start: 98 @50088 has 21 MA's), (124, 50253), (132, 50301), (160, 50532), (163, 50541), (180, 50637), (184, 50646), (185, 50649),

Gene: Begonia_75 Start: 49240, Stop: 50016, Start Num: 93

Candidate Starts for Begonia_75:

(27, 48943), (39, 49021), (Start: 93 @49240 has 43 MA's), (123, 49417), (146, 49567), (148, 49579), (159, 49687), (199, 49873), (203, 49882),

Gene: BetterKatz_73 Start: 48918, Stop: 49793, Start Num: 83

Candidate Starts for BetterKatz_73:

(37, 48711), (Start: 83 @48918 has 14 MA's), (103, 49011), (122, 49158), (134, 49227), (137, 49242), (165, 49482), (187, 49581), (199, 49629), (210, 49668), (224, 49776),

Gene: BlingBling_72 Start: 46215, Stop: 46991, Start Num: 93

Candidate Starts for BlingBling_72:

(Start: 93 @46215 has 43 MA's), (123, 46392), (136, 46464), (148, 46554), (159, 46662), (199, 46848), (203, 46857),

Gene: Blino_79 Start: 52044, Stop: 52805, Start Num: 93

Candidate Starts for Blino_79:

(Start: 93 @52044 has 43 MA's), (123, 52221), (129, 52260), (135, 52284), (136, 52293), (148, 52383), (159, 52491), (199, 52677), (203, 52686),

Gene: Blueberry_82 Start: 51089, Stop: 51874, Start Num: 93

Candidate Starts for Blueberry_82:

(53, 50924), (Start: 93 @51089 has 43 MA's), (123, 51272), (148, 51434), (159, 51542), (199, 51728), (203, 51737),

Gene: Bock_74 Start: 48502, Stop: 49377, Start Num: 83

Candidate Starts for Bock_74:

(31, 48271), (32, 48274), (47, 48349), (55, 48400), (63, 48421), (Start: 83 @48502 has 14 MA's), (103, 48595), (122, 48742), (134, 48811), (137, 48826), (165, 49066), (182, 49144), (187, 49165), (199, 49213), (210, 49252), (224, 49360),

Gene: BritBrat_96 Start: 54041, Stop: 54766, Start Num: 98

Candidate Starts for BritBrat_96:

(30, 53711), (56, 53873), (80, 53969), (Start: 98 @54041 has 21 MA's), (109, 54116), (113, 54152), (164, 54494), (177, 54563), (180, 54575), (185, 54587), (217, 54740), (218, 54743),

Gene: Brylie_72 Start: 48152, Stop: 49027, Start Num: 83

Candidate Starts for Brylie_72:

(42, 47981), (71, 48113), (79, 48146), (Start: 83 @48152 has 14 MA's), (103, 48245), (122, 48392), (134, 48461), (137, 48476), (165, 48716), (187, 48815), (210, 48902), (224, 49010),

Gene: CaptainKirk2_77 Start: 46000, Stop: 46776, Start Num: 93

Candidate Starts for CaptainKirk2_77:

(Start: 93 @46000 has 43 MA's), (123, 46177), (136, 46249), (141, 46306), (143, 46312), (146, 46327), (148, 46339), (159, 46447), (199, 46633), (203, 46642),

Gene: CarolAnn_78 Start: 52043, Stop: 52804, Start Num: 93

Candidate Starts for CarolAnn_78:

(Start: 93 @52043 has 43 MA's), (123, 52220), (129, 52259), (135, 52283), (136, 52292), (148, 52382), (159, 52490), (199, 52676), (203, 52685),

Gene: CheeseTouch_105 Start: 51190, Stop: 51918, Start Num: 98

Candidate Starts for CheeseTouch_105:

(Start: 98 @51190 has 21 MA's), (109, 51265), (164, 51640), (167, 51661), (168, 51664), (176, 51688), (184, 51730), (185, 51733), (194, 51775), (195, 51778), (196, 51781), (197, 51784), (201, 51799), (205, 51811), (206, 51814), (216, 51880), (217, 51886),

Gene: Chop_74 Start: 49201, Stop: 50076, Start Num: 83

Candidate Starts for Chop_74:

(42, 49030), (71, 49162), (79, 49195), (Start: 83 @49201 has 14 MA's), (103, 49294), (122, 49441), (134, 49510), (137, 49525), (165, 49765), (187, 49864), (199, 49912), (210, 49951), (224, 50059),

Gene: DelRio_73 Start: 49243, Stop: 50118, Start Num: 83

Candidate Starts for DelRio_73:

(42, 49072), (57, 49147), (71, 49204), (79, 49237), (Start: 83 @49243 has 14 MA's), (103, 49336), (122, 49483), (134, 49552), (137, 49567), (165, 49807), (174, 49846), (187, 49906), (199, 49954), (210, 49993), (224, 50101),

Gene: Delian_80 Start: 45998, Stop: 46774, Start Num: 93

Candidate Starts for Delian_80:

(Start: 93 @45998 has 43 MA's), (123, 46175), (136, 46247), (141, 46304), (143, 46310), (146, 46325), (148, 46337), (159, 46445), (199, 46631), (203, 46640),

Gene: Denise_71 Start: 41520, Stop: 42272, Start Num: 93

Candidate Starts for Denise_71:

(Start: 93 @41520 has 43 MA's), (119, 41658), (126, 41715), (162, 41973), (186, 42087), (194, 42126), (196, 42132), (203, 42156), (209, 42183), (215, 42234),

Gene: DobbysSock_69 Start: 45937, Stop: 46674, Start Num: 98

Candidate Starts for DobbysSock_69:

(Start: 98 @45937 has 21 MA's), (107, 45979), (109, 46012), (124, 46096), (146, 46243), (164, 46393), (180, 46474), (185, 46486),

Gene: DonkeyMan_57 Start: 38622, Stop: 39494, Start Num: 75

Candidate Starts for DonkeyMan_57:

(Start: 75 @38622 has 5 MA's), (77, 38634), (118, 38847), (183, 39276), (215, 39426), (219, 39441),

Gene: DumpsterDude_69 Start: 50376, Stop: 51257, Start Num: 81

Candidate Starts for DumpsterDude_69:

(12, 49788), (15, 49821), (22, 50073), (29, 50124), (Start: 81 @50376 has 3 MA's),

Gene: Fairfaxidum_80 Start: 48694, Stop: 49470, Start Num: 93

Candidate Starts for Fairfaxidum_80:

(Start: 93 @48694 has 43 MA's), (123, 48874), (135, 48937), (136, 48946), (148, 49036), (194, 49309), (199, 49330), (203, 49339), (215, 49417),

Gene: Fenry_76 Start: 48068, Stop: 48844, Start Num: 93

Candidate Starts for Fenry_76:

(39, 47849), (62, 47936), (Start: 93 @48068 has 43 MA's), (119, 48212), (123, 48245), (136, 48317), (141, 48374), (146, 48395), (148, 48407), (159, 48515), (199, 48701), (203, 48710),

Gene: Francois_73 Start: 48813, Stop: 49691, Start Num: 82

Candidate Starts for Francois_73:

(Start: 82 @48813 has 1 MA's), (134, 49125), (137, 49140), (165, 49380), (199, 49527), (210, 49566), (224, 49674),

Gene: Frokostdame_82 Start: 50554, Stop: 51336, Start Num: 93

Candidate Starts for Frokostdame_82:

(53, 50389), (Start: 93 @50554 has 43 MA's), (123, 50737), (148, 50899), (159, 51007), (199, 51193), (203, 51202), (215, 51280),

Gene: GMA4_62 Start: 40731, Stop: 41486, Start Num: 95

Candidate Starts for GMA4_62:

(28, 40401), (Start: 95 @40731 has 1 MA's), (154, 41109), (179, 41280), (185, 41298), (196, 41346),

Gene: Gambino_85 Start: 51089, Stop: 51874, Start Num: 93

Candidate Starts for Gambino_85:

(53, 50924), (Start: 93 @51089 has 43 MA's), (123, 51272), (148, 51434), (159, 51542), (199, 51728), (203, 51737),

Gene: Getalong_99 Start: 53422, Stop: 54150, Start Num: 98

Candidate Starts for Getalong_99:

(Start: 98 @53422 has 21 MA's), (109, 53497), (139, 53680), (164, 53872), (168, 53896), (172, 53908), (176, 53920), (184, 53962), (185, 53965), (194, 54007), (195, 54010), (196, 54013), (197, 54016), (201, 54031), (205, 54043), (206, 54046), (216, 54112), (217, 54118),

Gene: GrandSlam_74 Start: 49201, Stop: 50076, Start Num: 83

Candidate Starts for GrandSlam_74:

(42, 49030), (71, 49162), (79, 49195), (Start: 83 @49201 has 14 MA's), (103, 49294), (122, 49441), (134, 49510), (137, 49525), (165, 49765), (187, 49864), (199, 49912), (210, 49951), (224, 50059),

Gene: Guacamole_75 Start: 47418, Stop: 48194, Start Num: 93

Candidate Starts for Guacamole_75:

(Start: 93 @47418 has 43 MA's), (123, 47595), (136, 47667), (141, 47724), (143, 47730), (146, 47745), (148, 47757), (159, 47865), (199, 48051), (203, 48060),

Gene: Hamood_74 Start: 49201, Stop: 50076, Start Num: 83

Candidate Starts for Hamood_74:

(42, 49030), (71, 49162), (79, 49195), (Start: 83 @49201 has 14 MA's), (103, 49294), (122, 49441), (134, 49510), (137, 49525), (165, 49765), (187, 49864), (199, 49912), (210, 49951), (224, 50059),

Gene: Heinz_58 Start: 37588, Stop: 38469, Start Num: 75

Candidate Starts for Heinz_58:

(Start: 75 @37588 has 5 MA's), (183, 38251), (215, 38401), (218, 38413),

Gene: Hibiscus_59 Start: 37479, Stop: 38351, Start Num: 75

Candidate Starts for Hibiscus_59:

(21, 37173), (41, 37335), (44, 37341), (47, 37359), (50, 37380), (61, 37425), (Start: 75 @37479 has 5 MA's), (183, 38133), (215, 38283), (219, 38298),

Gene: Hitter_75 Start: 45674, Stop: 46450, Start Num: 93

Candidate Starts for Hitter_75:

(39, 45455), (Start: 93 @45674 has 43 MA's), (123, 45851), (136, 45923), (146, 46001), (148, 46013), (159, 46121), (199, 46307), (203, 46316), (208, 46340),

Gene: Hortense_75 Start: 50324, Stop: 51061, Start Num: 98

Candidate Starts for Hortense_75:

(40, 50078), (72, 50225), (85, 50267), (Start: 98 @50324 has 21 MA's), (107, 50366), (109, 50399), (123, 50480), (124, 50483), (146, 50630), (164, 50780), (180, 50861), (185, 50873),

Gene: Howe_75 Start: 50324, Stop: 51061, Start Num: 98

Candidate Starts for Howe_75:

(40, 50078), (72, 50225), (85, 50267), (Start: 98 @50324 has 21 MA's), (107, 50366), (109, 50399), (123, 50480), (124, 50483), (146, 50630), (164, 50780), (180, 50861), (185, 50873),

Gene: Hum25_77 Start: 39455, Stop: 40183, Start Num: 95

Candidate Starts for Hum25_77:

(87, 39410), (Start: 95 @39455 has 1 MA's), (110, 39554), (112, 39560), (115, 39581), (116, 39584), (125, 39635), (145, 39773), (150, 39803), (161, 39905), (169, 39959), (198, 40070), (218, 40166),

Gene: Jace_92 Start: 51606, Stop: 52397, Start Num: 89

Candidate Starts for Jace_92:

(70, 51519), (Start: 89 @51606 has 1 MA's), (94, 51627), (114, 51756), (117, 51765), (169, 52119), (190, 52203), (191, 52206), (204, 52257), (215, 52320), (217, 52329), (223, 52377),

Gene: Jalammah_80 Start: 49580, Stop: 50356, Start Num: 93

Candidate Starts for Jalammah_80:

(51, 49415), (62, 49448), (Start: 93 @49580 has 43 MA's), (123, 49757), (136, 49829), (141, 49886), (146, 49907), (148, 49919), (159, 50027), (199, 50213), (203, 50222),

Gene: JasperJr_75 Start: 47418, Stop: 48194, Start Num: 93

Candidate Starts for JasperJr_75:

(Start: 93 @47418 has 43 MA's), (123, 47595), (136, 47667), (141, 47724), (143, 47730), (146, 47745), (148, 47757), (159, 47865), (199, 48051), (203, 48060),

Gene: Jflix2_100 Start: 57187, Stop: 57882, Start Num: 101

Candidate Starts for Jflix2_100:

(Start: 101 @57187 has 2 MA's), (105, 57205), (109, 57244), (114, 57286), (123, 57328), (127, 57364), (140, 57436), (148, 57484), (156, 57559), (165, 57625), (183, 57706), (192, 57742), (200, 57775), (202, 57778), (212, 57814), (213, 57835), (221, 57874),

Gene: Jojo24_58 Start: 37912, Stop: 38784, Start Num: 75

Candidate Starts for Jojo24_58:

(50, 37819), (59, 37858), (Start: 75 @37912 has 5 MA's), (118, 38137), (183, 38566), (215, 38716), (219, 38731),

Gene: JuJu_85 Start: 51321, Stop: 52103, Start Num: 93

Candidate Starts for JuJu_85:

(Start: 93 @51321 has 43 MA's), (123, 51504), (148, 51666), (159, 51774), (199, 51960), (203, 51969),

Gene: KappaFarmDelta_77 Start: 47260, Stop: 48036, Start Num: 93

Candidate Starts for KappaFarmDelta_77:

(23, 46912), (24, 46924), (50, 47086), (51, 47095), (Start: 93 @47260 has 43 MA's), (123, 47437), (136, 47509), (141, 47566), (146, 47587), (148, 47599), (159, 47707), (199, 47893), (203, 47902), (208, 47926),

Gene: Kuwabara_89 Start: 52072, Stop: 52815, Start Num: 98

Candidate Starts for Kuwabara_89:

(54, 51901), (Start: 98 @52072 has 21 MA's), (124, 52237), (164, 52534), (180, 52615), (184, 52624), (185, 52627),

Gene: Lton_68 Start: 39225, Stop: 39968, Start Num: 98

Candidate Starts for Lton_68:

(54, 39054), (Start: 98 @39225 has 21 MA's), (124, 39390), (164, 39687), (180, 39768), (184, 39777), (185, 39780),

Gene: Lucky10_67 Start: 41325, Stop: 42068, Start Num: 98

Candidate Starts for Lucky10_67:

(49, 41145), (Start: 83 @41274 has 14 MA's), (84, 41277), (Start: 98 @41325 has 21 MA's), (109, 41406), (124, 41490), (126, 41514), (164, 41787), (180, 41868), (184, 41877), (185, 41880),

Gene: Lysidious_79 Start: 48328, Stop: 49104, Start Num: 93

Candidate Starts for Lysidious_79:

(26, 48028), (36, 48079), (51, 48163), (62, 48196), (Start: 93 @48328 has 43 MA's), (123, 48505), (136, 48577), (141, 48634), (146, 48655), (148, 48667), (159, 48775), (199, 48961), (203, 48970), (208, 48994),

Gene: Madraxi_102 Start: 59347, Stop: 60069, Start Num: 101

Candidate Starts for Madraxi_102:

(Start: 101 @59347 has 2 MA's), (105, 59365), (109, 59404), (114, 59446), (123, 59488), (127, 59524), (131, 59536), (140, 59596), (153, 59671), (183, 59866), (196, 59917), (202, 59938), (211, 59968), (222, 60040),

Gene: Malachai_75 Start: 49240, Stop: 50016, Start Num: 93

Candidate Starts for Malachai_75:

(27, 48943), (39, 49021), (Start: 93 @49240 has 43 MA's), (123, 49417), (146, 49567), (148, 49579), (159, 49687), (199, 49873), (203, 49882),

Gene: Malibo_74 Start: 48036, Stop: 48914, Start Num: 81

Candidate Starts for Malibo_74:

(16, 47619), (Start: 81 @48036 has 3 MA's), (134, 48348),

Gene: Malisha_92 Start: 53316, Stop: 54062, Start Num: 93

Candidate Starts for Malisha_92:

(Start: 82 @53265 has 1 MA's), (Start: 83 @53268 has 14 MA's), (Start: 93 @53316 has 43 MA's), (114, 53430), (147, 53634), (162, 53763), (175, 53829), (186, 53877), (187, 53889), (203, 53946), (215, 54024),

Gene: Melba_77 Start: 46375, Stop: 47151, Start Num: 93

Candidate Starts for Melba_77:

(50, 46201), (Start: 93 @46375 has 43 MA's), (123, 46552), (136, 46624), (146, 46702), (148, 46714), (159, 46822), (199, 47008), (203, 47017), (208, 47041),

Gene: Mellie_74 Start: 46392, Stop: 47168, Start Num: 93

Candidate Starts for Mellie_74:

(Start: 93 @46392 has 43 MA's), (111, 46497), (123, 46569), (148, 46731), (199, 47025), (203, 47034),

Gene: MintFen_77 Start: 46614, Stop: 47390, Start Num: 93

Candidate Starts for MintFen_77:

(Start: 93 @46614 has 43 MA's), (123, 46791), (136, 46863), (141, 46920), (143, 46926), (146, 46941), (148, 46953), (159, 47061), (199, 47247), (203, 47256),

Gene: MissRona_83 Start: 51090, Stop: 51875, Start Num: 93

Candidate Starts for MissRona_83:

(53, 50925), (Start: 93 @51090 has 43 MA's), (123, 51273), (148, 51435), (159, 51543), (199, 51729), (203, 51738),

Gene: Moosehead_71 Start: 39747, Stop: 40490, Start Num: 98

Candidate Starts for Moosehead_71:

(Start: 83 @39696 has 14 MA's), (84, 39699), (Start: 98 @39747 has 21 MA's), (124, 39912), (126, 39936), (180, 40290), (185, 40302), (195, 40347),

Gene: Morkie_71 Start: 40373, Stop: 41116, Start Num: 98

Candidate Starts for Morkie_71:

(54, 40202), (Start: 98 @40373 has 21 MA's), (124, 40538), (164, 40835), (180, 40916), (184, 40925), (185, 40928),

Gene: MrSmee_75 Start: 39017, Stop: 39739, Start Num: 100

Candidate Starts for MrSmee_75:

(99, 39014), (Start: 100 @39017 has 2 MA's), (110, 39107), (115, 39134), (116, 39137), (125, 39188), (129, 39221), (145, 39326), (150, 39356), (153, 39374), (165, 39491), (173, 39524), (198, 39626), (208, 39659), (218, 39722),

Gene: Mulch_72 Start: 48191, Stop: 49066, Start Num: 83

Candidate Starts for Mulch_72:

(42, 48020), (71, 48152), (79, 48185), (Start: 83 @48191 has 14 MA's), (103, 48284), (122, 48431), (134, 48500), (137, 48515), (165, 48755), (187, 48854), (210, 48941), (224, 49049),

Gene: Murp_75 Start: 49491, Stop: 50267, Start Num: 93

Candidate Starts for Murp_75:

(51, 49326), (Start: 93 @49491 has 43 MA's), (111, 49596), (123, 49668), (136, 49740), (141, 49797), (146, 49818), (148, 49830), (159, 49938), (199, 50124), (203, 50133),

Gene: Nadeem_72 Start: 48179, Stop: 49054, Start Num: 83

Candidate Starts for Nadeem_72:

(42, 48008), (71, 48140), (79, 48173), (Start: 83 @48179 has 14 MA's), (103, 48272), (122, 48419), (134, 48488), (137, 48503), (165, 48743), (187, 48842), (210, 48929), (224, 49037),

Gene: NancyRae_71 Start: 48057, Stop: 48932, Start Num: 83

Candidate Starts for NancyRae_71:

(67, 47997), (79, 48051), (Start: 83 @48057 has 14 MA's), (103, 48150), (122, 48297), (134, 48366), (137, 48381), (165, 48621), (187, 48720), (199, 48768), (210, 48807), (224, 48915),

Gene: ODay_113 Start: 56624, Stop: 57352, Start Num: 98

Candidate Starts for ODay_113:

(87, 56576), (92, 56612), (Start: 98 @56624 has 21 MA's), (109, 56699), (124, 56777), (164, 57074), (168, 57098), (176, 57122), (184, 57164), (185, 57167), (193, 57200), (194, 57209), (195, 57212), (196, 57215), (197, 57218), (201, 57233), (205, 57245), (206, 57248), (216, 57314), (217, 57320),

Gene: Obliviate_77 Start: 46932, Stop: 47708, Start Num: 93

Candidate Starts for Obliviate_77:

(50, 46752), (Start: 93 @46932 has 43 MA's), (119, 47076), (123, 47109), (136, 47181), (146, 47259), (148, 47271), (159, 47379), (199, 47565), (203, 47574),

Gene: OneDirection_65 Start: 37787, Stop: 38530, Start Num: 98

Candidate Starts for OneDirection_65:

(54, 37616), (Start: 98 @37787 has 21 MA's), (124, 37952), (164, 38249), (180, 38330), (184, 38339), (185, 38342),

Gene: PCoral7_76 Start: 47524, Stop: 48300, Start Num: 93

Candidate Starts for PCoral7_76:

(Start: 93 @47524 has 43 MA's), (123, 47704), (135, 47767), (136, 47776), (148, 47866), (194, 48139), (199, 48160), (203, 48169), (215, 48247),

Gene: Parada_72 Start: 48191, Stop: 49066, Start Num: 83

Candidate Starts for Parada_72:

(42, 48020), (71, 48152), (79, 48185), (Start: 83 @48191 has 14 MA's), (103, 48284), (122, 48431), (134, 48500), (137, 48515), (165, 48755), (187, 48854), (210, 48941), (224, 49049),

Gene: Pepperoni_64 Start: 38913, Stop: 39656, Start Num: 98

Candidate Starts for Pepperoni_64:

(Start: 98 @38913 has 21 MA's), (124, 39078), (164, 39375), (180, 39456), (184, 39465), (185, 39468),

Gene: Petra_84 Start: 49488, Stop: 50267, Start Num: 93

Candidate Starts for Petra_84:

(25, 49173), (35, 49230), (45, 49281), (62, 49356), (Start: 93 @49488 has 43 MA's), (123, 49665), (148, 49827), (159, 49935), (199, 50121), (203, 50130), (208, 50154),

Gene: PhorbesPhlower_69 Start: 39768, Stop: 40511, Start Num: 98

Candidate Starts for PhorbesPhlower_69:

(54, 39597), (Start: 98 @39768 has 21 MA's), (124, 39933), (164, 40230), (180, 40311), (184, 40320), (185, 40323),

Gene: PhrostedPhlake_83 Start: 49071, Stop: 49847, Start Num: 93

Candidate Starts for PhrostedPhlake_83:

(51, 48906), (Start: 93 @49071 has 43 MA's), (123, 49248), (148, 49410), (159, 49518), (199, 49704), (203, 49713),

Gene: Pimento_75 Start: 48276, Stop: 49151, Start Num: 83

Candidate Starts for Pimento_75:

(34, 48075), (36, 48078), (Start: 83 @48276 has 14 MA's), (103, 48369), (130, 48570), (134, 48585), (137, 48600), (165, 48840), (187, 48939), (199, 48987), (210, 49026), (224, 49134),

Gene: Pipp_82 Start: 48884, Stop: 49675, Start Num: 91

Candidate Starts for Pipp_82:

(38, 48650), (39, 48665), (40, 48671), (51, 48728), (Start: 91 @48884 has 2 MA's), (Start: 93 @48893 has 43 MA's), (123, 49076), (146, 49226), (199, 49532), (203, 49541), (208, 49565),

Gene: Pitbull_74 Start: 38878, Stop: 39600, Start Num: 100

Candidate Starts for Pitbull_74:

(40, 38620), (48, 38650), (65, 38725), (69, 38758), (74, 38773), (76, 38782), (Start: 100 @38878 has 2 MA's), (104, 38908), (110, 38968), (115, 38995), (116, 38998), (125, 39049), (133, 39097), (145, 39187), (162, 39325), (165, 39352), (173, 39385), (198, 39487), (208, 39520), (218, 39583),

Gene: PrincePatrick_79 Start: 47344, Stop: 48120, Start Num: 93

Candidate Starts for PrincePatrick_79:

(Start: 93 @47344 has 43 MA's), (123, 47524), (135, 47587), (136, 47596), (148, 47686), (194, 47959), (199, 47980), (203, 47989), (215, 48067),

Gene: Reyja_61 Start: 39095, Stop: 39976, Start Num: 75

Candidate Starts for Reyja_61:

(61, 39041), (Start: 75 @39095 has 5 MA's), (183, 39758), (215, 39908), (219, 39923),

Gene: Ruthy_71 Start: 49474, Stop: 50355, Start Num: 81

Candidate Starts for Ruthy_71:

(10, 48862), (14, 48916), (29, 49222), (Start: 81 @49474 has 3 MA's), (134, 49786),

Gene: Samba_77 Start: 49525, Stop: 50301, Start Num: 93

Candidate Starts for Samba_77:

(39, 49306), (Start: 93 @49525 has 43 MA's), (123, 49702), (136, 49774), (141, 49831), (146, 49852), (148, 49864), (159, 49972), (199, 50158), (203, 50167), (208, 50191), (215, 50245),

Gene: Santhid_55 Start: 36515, Stop: 37387, Start Num: 75

Candidate Starts for Santhid_55:

(9, 35897), (19, 36176), (20, 36209), (32, 36305), (66, 36476), (Start: 75 @36515 has 5 MA's), (118, 36740), (143, 36911), (183, 37169), (215, 37319), (219, 37334),

Gene: Shagrat_105 Start: 54894, Stop: 55640, Start Num: 91

Candidate Starts for Shagrat_105:

(33, 54600), (71, 54804), (78, 54837), (Start: 91 @54894 has 2 MA's), (102, 54939), (106, 54954), (108, 54969), (129, 55119), (142, 55200), (151, 55236), (154, 55272), (157, 55299), (169, 55386), (170, 55389), (181, 55437), (189, 55467), (192, 55479), (195, 55491), (202, 55515),

Gene: ShawBrad_104 Start: 52546, Stop: 53271, Start Num: 97

Candidate Starts for ShawBrad_104:

(97, 52546), (113, 52657), (143, 52834), (163, 52984), (164, 52999), (180, 53080), (184, 53089), (185, 53092), (212, 53200), (217, 53245), (218, 53248),

Gene: Shlim410_73 Start: 50324, Stop: 51061, Start Num: 98

Candidate Starts for Shlim410_73:

(40, 50078), (72, 50225), (85, 50267), (Start: 98 @50324 has 21 MA's), (107, 50366), (109, 50399), (123, 50480), (124, 50483), (146, 50630), (164, 50780), (180, 50861), (185, 50873),

Gene: Skitty_76 Start: 37265, Stop: 38008, Start Num: 99

Candidate Starts for Skitty_76:

(99, 37265), (Start: 100 @37268 has 2 MA's), (110, 37358), (115, 37385), (116, 37388), (125, 37439), (129, 37472), (145, 37577), (150, 37607), (165, 37739), (182, 37808), (188, 37832), (220, 37979),

Gene: Sleepyhead_65 Start: 41971, Stop: 42924, Start Num: 68

Candidate Starts for Sleepyhead_65:

(Start: 68 @41971 has 2 MA's), (96, 42088), (103, 42118), (120, 42250), (121, 42268), (138, 42391), (149, 42454), (152, 42478), (166, 42616), (177, 42670), (178, 42673),

Gene: Tarzan_59 Start: 37877, Stop: 38749, Start Num: 75

Candidate Starts for Tarzan_59:

(Start: 75 @37877 has 5 MA's), (77, 37889), (118, 38102), (183, 38531), (215, 38681), (219, 38696),

Gene: Toast_77 Start: 47524, Stop: 48300, Start Num: 93

Candidate Starts for Toast_77:

(Start: 93 @47524 has 43 MA's), (123, 47704), (135, 47767), (136, 47776), (148, 47866), (194, 48139), (199, 48160), (203, 48169), (215, 48247),

Gene: Twinkle_74 Start: 51383, Stop: 52120, Start Num: 98

Candidate Starts for Twinkle_74:

(40, 51137), (72, 51284), (85, 51326), (Start: 98 @51383 has 21 MA's), (107, 51425), (109, 51458), (123, 51539), (124, 51542), (146, 51689), (164, 51839), (180, 51920), (185, 51932),

Gene: UmaThurman_80 Start: 47661, Stop: 48437, Start Num: 93

Candidate Starts for UmaThurman_80:

(Start: 93 @47661 has 43 MA's), (123, 47838), (136, 47910), (141, 47967), (143, 47973), (146, 47988), (148, 48000), (159, 48108), (199, 48294), (203, 48303),

Gene: Utz_68 Start: 47303, Stop: 48079, Start Num: 93

Candidate Starts for Utz_68:

(36, 47054), (Start: 93 @47303 has 43 MA's), (123, 47480), (136, 47552), (141, 47609), (143, 47615), (146, 47630), (148, 47642), (159, 47750), (199, 47936), (203, 47945),

Gene: Walrus_77 Start: 48349, Stop: 49125, Start Num: 93

Candidate Starts for Walrus_77:

(25, 48034), (45, 48142), (46, 48151), (62, 48217), (64, 48223), (Start: 93 @48349 has 43 MA's), (123, 48526), (148, 48688), (159, 48796), (199, 48982), (203, 48991),

Gene: Whack_70 Start: 45809, Stop: 46741, Start Num: 68

Candidate Starts for Whack_70:

(1, 44903), (2, 44915), (3, 44963), (4, 44984), (5, 45032), (6, 45044), (7, 45050), (8, 45080), (11, 45239), (13, 45278), (17, 45455), (43, 45686), (52, 45746), (58, 45764), (Start: 68 @45809 has 2

MA's), (86, 45875), (90, 45905), (103, 45956), (116, 46067), (128, 46148), (144, 46259), (149, 46286), (155, 46349), (158, 46376), (166, 46448), (177, 46502), (178, 46505), (207, 46616), (214, 46670), (218, 46691),

Gene: WheatThin_72 Start: 48179, Stop: 49054, Start Num: 83

Candidate Starts for WheatThin_72:

(42, 48008), (71, 48140), (79, 48173), (Start: 83 @48179 has 14 MA's), (103, 48272), (122, 48419), (134, 48488), (137, 48503), (165, 48743), (187, 48842), (210, 48929), (224, 49037),

Gene: William_79 Start: 48596, Stop: 49372, Start Num: 93

Candidate Starts for William_79:

(18, 48164), (Start: 93 @48596 has 43 MA's), (123, 48776), (194, 49211), (199, 49232), (203, 49241), (215, 49319),

Gene: Wisp_74 Start: 47248, Stop: 48024, Start Num: 93

Candidate Starts for Wisp_74:

(62, 47116), (Start: 93 @47248 has 43 MA's), (123, 47425), (136, 47497), (146, 47575), (148, 47587), (159, 47695), (171, 47761), (199, 47881), (203, 47890),

Gene: Wocket_77 Start: 47897, Stop: 48673, Start Num: 93

Candidate Starts for Wocket_77:

(Start: 93 @47897 has 43 MA's), (123, 48074), (136, 48146), (141, 48203), (146, 48224), (148, 48236), (159, 48344), (199, 48530), (203, 48539),

Gene: Zarbodnamra_81 Start: 47607, Stop: 48383, Start Num: 93

Candidate Starts for Zarbodnamra_81:

(Start: 93 @47607 has 43 MA's), (123, 47784), (136, 47856), (141, 47913), (146, 47934), (148, 47946), (159, 48054), (187, 48192), (199, 48240), (203, 48249),

Gene: ZiggyZoo_78 Start: 49093, Stop: 49869, Start Num: 93

Candidate Starts for ZiggyZoo_78:

(39, 48874), (Start: 93 @49093 has 43 MA's), (123, 49270), (136, 49342), (146, 49420), (148, 49432), (159, 49540), (199, 49726), (203, 49735), (208, 49759),