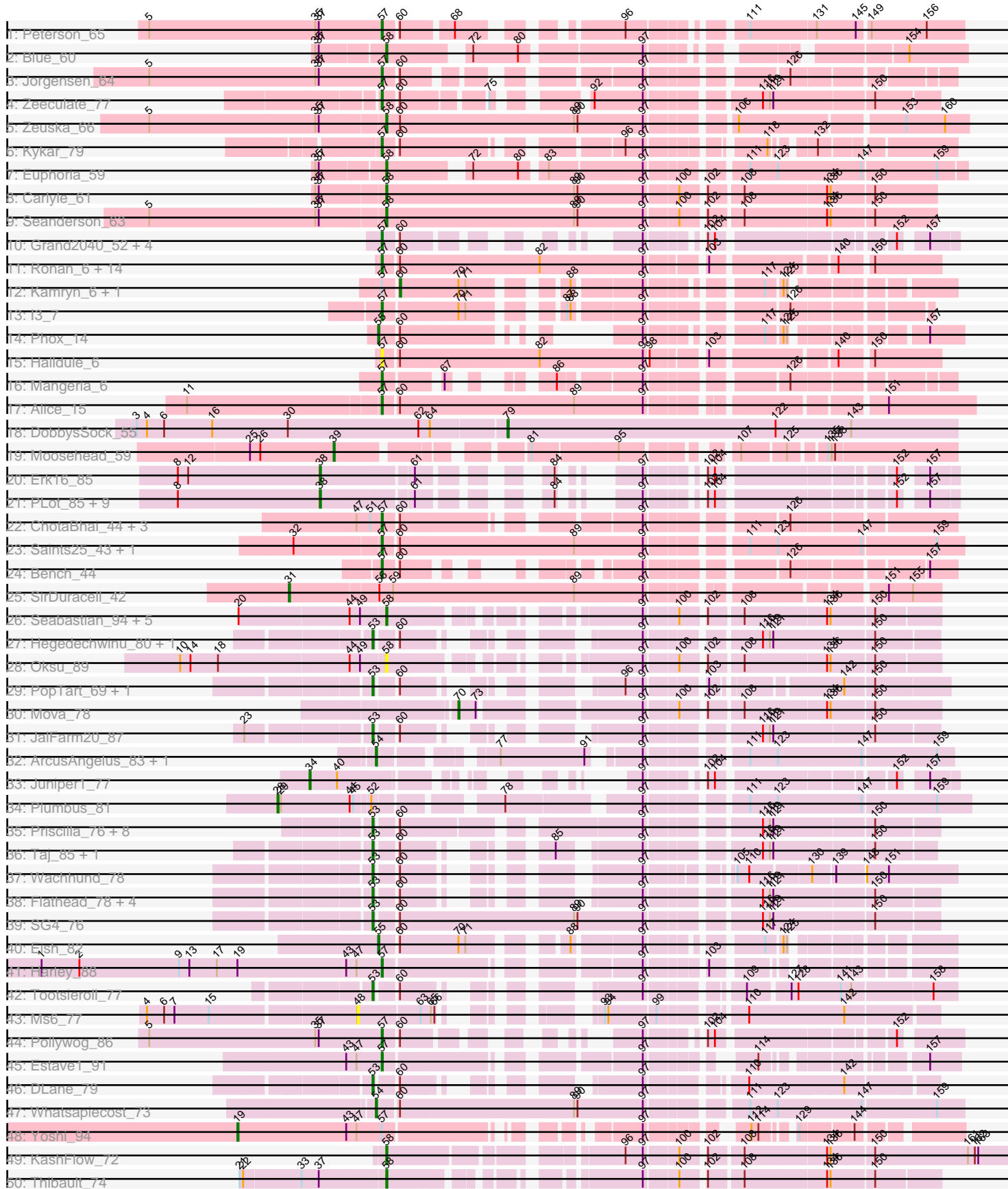


Pham 193867



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 193867 Report

This analysis was run 11/02/24 on database version 579.

Pham number 193867 has 109 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Peterson_65
- Track 2 : Blue_60
- Track 3 : Jorgensen_64
- Track 4 : Zeeculate_77
- Track 5 : Zeuska_66
- Track 6 : Kykar_79
- Track 7 : Euphoria_59
- Track 8 : Carlyle_61
- Track 9 : Seanderson_63
- Track 10 : Grand2040_52, LeiMonet_54, Maru_52, Cosmolli16_53, Giraffe_53
- Track 11 : Ronan_6, CharlieB_5, LRRHood_6, Koguma_6, Sprinklers_6, Yassified_6, IkeLoa_6, ET08_5, Grungle_6, Blackdragon_5, Phox_6, Lukilu_6, Cali_6, BeanWater_5, Shaqnato_6
- Track 12 : Kamryn_6, RoMag_5
- Track 13 : l3_7
- Track 14 : Phox_14
- Track 15 : Halldule_6
- Track 16 : Mangeria_6
- Track 17 : Alice_15
- Track 18 : DobbysSock_55
- Track 19 : Moosehead_59
- Track 20 : Erk16_85
- Track 21 : PLOT_85, Adjutor_82, Visconti_85, Thoth_84, WaldoWhy_85, Butterscotch_82, Mopey_86, Giuseppe_86, Chill_85, Penelope2018_84
- Track 22 : ChotaBhai_44, DoctorDiddles_44, Pat3_42, BaboJay_42
- Track 23 : Saints25_43, Highbury_43
- Track 24 : Bench_44
- Track 25 : SirDuracell_42
- Track 26 : Seabastian_94, Modragons_91, OfUltron_94, Jinglebell_93, Llama_93, Ochi17_92
- Track 27 : Hegedechwinu_80, Crumble_76
- Track 28 : Oksu_89
- Track 29 : PopTart_69, SassyB_69
- Track 30 : Mova_78
- Track 31 : JalFarm20_87
- Track 32 : ArcusAngelus_83, Chevrolet_86
- Track 33 : Juniper1_77

- Track 34 : Plumbus_81
- Track 35 : Priscilla_76, FreddyB_88, Koella_70, LastJedi_70, NormanBulbieJr_75, SwagPigglett_82, Brocalys_71, Cabrinians_78, BobaPhett_81
- Track 36 : Taj_85, Wee_84
- Track 37 : Wachhund_78
- Track 38 : Flathead_78, Saal_78, Donkeykong_83, Lizziana_83, Gorge_80
- Track 39 : SG4_76
- Track 40 : Eish_82
- Track 41 : Harley_88
- Track 42 : Tootsieroll_77
- Track 43 : Ms6_77
- Track 44 : Pollywog_86
- Track 45 : Estave1_91
- Track 46 : DLane_79
- Track 47 : Whatsapiecost_73
- Track 48 : Yoshi_94
- Track 49 : KashFlow_72
- Track 50 : Thibault_74
- Track 51 : Bobby_76
- Track 52 : Bobby_75
- Track 53 : Lucky2013_71
- Track 54 : Omega_81
- Track 55 : Hughesyang_72
- Track 56 : Smooch_23

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

The start number called the most often in the published annotations is 57, it was called in 35 of the 104 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alice_15, BaboJay_42, BeanWater_5, Bench_44, Blackdragon_5, Cali_6, CharlieB_5, ChotaBhai_44, Cosmolli16_53, DoctorDiddles_44, ET08_5, Estave1_91, Giraffe_53, Grand2040_52, Grungle_6, Halldule_6, Harley_88, Highbury_43, I3_7, IkeLoa_6, Jorgensen_64, Koguma_6, Kykar_79, LRRHood_6, LeiMonet_54, Lukilu_6, Mangeria_6, Maru_52, Pat3_42, Peterson_65, Phox_6, Pollywog_86, Ronan_6, Saints25_43, Shaqnato_6, Sprinklers_6, Yassified_6, Zeeculate_77,

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

- Kamryn_6, RoMag_5, Smooch_23, Yoshi_94,

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

- Adjutor_82, ArcusAngelus_83, Blue_60, BobaPhett_81, Bobby_75, Bobby_76, Brocalys_71, Butterscotch_82, Cabrinians_78, Carlyle_61, Chevrolet_86, Chill_85, Crumble_76, DLane_79, DobbysSock_55, Donkeykong_83, Eish_82, Erk16_85, Euphoria_59, Flathead_78, FreddyB_88, Giuseppe_86, Gorge_80, Hegedechwinu_80, Hughesyang_72, JalFarm20_87, Jinglebell_93, Juniper1_77, KashFlow_72, Koella_70, LastJedi_70, Lizziana_83, Llama_93, Lucky2013_71, Modragons_91, Moosehead_59, Mopey_86, Mova_78, Ms6_77, NormanBulbieJr_75, Ochi17_92, OfUltron_94, Oksu_89, Omega_81, PLOT_85, Penelope2018_84,

Phox_14, Plumbus_81, PopTart_69, Priscilla_76, SG4_76, Saal_78, SassyB_69, Sebastian_94, Seanderson_63, SirDuracell_42, SwagPiggett_82, Taj_85, Thibault_74, Thoth_84, Tootsieroll_77, Visconti_85, Wachhund_78, WaldoWhy_85, Wee_84, Whatsapiecost_73, Zeuska_66,

Summary by start number:

Start 19:

- Found in 2 of 109 (1.8%) of genes in pham
- Manual Annotations of this start: 1 of 104
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Yoshi_94 (F2),

Start 27:

- Found in 1 of 109 (0.9%) of genes in pham
- Manual Annotations of this start: 1 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Omega_81 (J),

Start 28:

- Found in 1 of 109 (0.9%) of genes in pham
- Manual Annotations of this start: 1 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Plumbus_81 (F1),

Start 31:

- Found in 1 of 109 (0.9%) of genes in pham
- Manual Annotations of this start: 1 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SirDuracell_42 (E),

Start 34:

- Found in 1 of 109 (0.9%) of genes in pham
- Manual Annotations of this start: 1 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Juniper1_77 (F1),

Start 38:

- Found in 11 of 109 (10.1%) of genes in pham
- Manual Annotations of this start: 11 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Adjutor_82 (D1), Butterscotch_82 (D1), Chill_85 (D1), Erk16_85 (D1), Giuseppe_86 (D1), Mopey_86 (D1), PLOT_85 (D1), Penelope2018_84 (D1), Thoth_84 (D1), Visconti_85 (D1), WaldoWhy_85 (D1),

Start 39:

- Found in 1 of 109 (0.9%) of genes in pham
- Manual Annotations of this start: 1 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Moosehead_59 (CZ6),

Start 46:

- Found in 1 of 109 (0.9%) of genes in pham

- Manual Annotations of this start: 1 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Smooch_23 (O),

Start 48:

- Found in 2 of 109 (1.8%) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Ms6_77 (F1),

Start 53:

- Found in 25 of 109 (22.9%) of genes in pham
- Manual Annotations of this start: 25 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BobaPhett_81 (F1), Brocalys_71 (F1), Cabrinians_78 (F1), Crumble_76 (F1), DLane_79 (F1), Donkeykong_83 (F1), Flathead_78 (F1), FreddyB_88 (F1), Gorge_80 (F1), Hegedechwinu_80 (F1), JalFarm20_87 (F1), Koella_70 (F1), LastJedi_70 (F1), Lizziana_83 (F1), NormanBulbieJr_75 (F1), PopTart_69 (F1), Priscilla_76 (F1), SG4_76 (F1), Saal_78 (F1), SassyB_69 (F1), SwagPigglett_82 (F1), Taj_85 (F1), Tootsieroll_77 (F1), Wachhund_78 (F1), Wee_84 (F1),

Start 54:

- Found in 3 of 109 (2.8%) of genes in pham
- Manual Annotations of this start: 3 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ArcusAngelus_83 (F1), Chevrolet_86 (F1), Whatsapiecost_73 (F1),

Start 55:

- Found in 2 of 109 (1.8%) of genes in pham
- Manual Annotations of this start: 2 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Eish_82 (F1), Phox_14 (C1),

Start 57:

- Found in 42 of 109 (38.5%) of genes in pham
- Manual Annotations of this start: 35 of 104
- Called 90.5% of time when present
- Phage (with cluster) where this start called: Alice_15 (C1), BaboJay_42 (E), BeanWater_5 (C1), Bench_44 (E), Blackdragon_5 (C1), Cali_6 (C1), CharlieB_5 (C1), ChotaBhai_44 (E), Cosmolli16_53 (B1), DoctorDiddles_44 (E), ET08_5 (C1), Estave1_91 (F1), Giraffe_53 (B1), Grand2040_52 (B1), Grungle_6 (C1), Halldule_6 (C1), Harley_88 (F1), Highbury_43 (E), I3_7 (C1), IkeLoa_6 (C1), Jorgensen_64 (A1), Koguma_6 (C1), Kykar_79 (A1), LRRHood_6 (C1), LeiMonet_54 (B1), Lukilu_6 (C1), Mangeria_6 (C1), Maru_52 (B1), Pat3_42 (E), Peterson_65 (A1), Phox_6 (C1), Pollywog_86 (F1), Ronan_6 (C1), Saints25_43 (E), Shaqnato_6 (C1), Sprinklers_6 (C1), Yassified_6 (C1), Zeeculate_77 (A1),

Start 58:

- Found in 18 of 109 (16.5%) of genes in pham
- Manual Annotations of this start: 16 of 104
- Called 94.4% of time when present

- Phage (with cluster) where this start called: Blue_60 (A1), Bobby_75 (J), Bobby_76 (J), Carlyle_61 (A1), Euphoria_59 (A1), Hughesyang_72 (J), Jinglebell_93 (F1), KashFlow_72 (J), Llama_93 (F1), Modragons_91 (F1), Ochi17_92 (F1), OfUltron_94 (F1), Oksu_89 (F1), Seabastian_94 (F1), Seanderson_63 (A1), Thibault_74 (J), Zeuska_66 (A1),

Start 60:

- Found in 70 of 109 (64.2%) of genes in pham
- Manual Annotations of this start: 3 of 104
- Called 4.3% of time when present
- Phage (with cluster) where this start called: Kamryn_6 (C1), Lucky2013_71 (J), RoMag_5 (C1),

Start 70:

- Found in 5 of 109 (4.6%) of genes in pham
- Manual Annotations of this start: 1 of 104
- Called 20.0% of time when present
- Phage (with cluster) where this start called: Mova_78 (F1),

Start 79:

- Found in 1 of 109 (0.9%) of genes in pham
- Manual Annotations of this start: 1 of 104
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DobbysSock_55 (CZ4),

Summary by clusters:

There are 11 clusters represented in this pham: O, F1, F2, E, J, CZ6, CZ4, A1, B1, C1, D1,

Info for manual annotations of cluster A1:

- Start number 57 was manually annotated 4 times for cluster A1.
- Start number 58 was manually annotated 5 times for cluster A1.

Info for manual annotations of cluster B1:

- Start number 57 was manually annotated 4 times for cluster B1.

Info for manual annotations of cluster C1:

- Start number 55 was manually annotated 1 time for cluster C1.
- Start number 57 was manually annotated 17 times for cluster C1.
- Start number 60 was manually annotated 2 times for cluster C1.

Info for manual annotations of cluster CZ4:

- Start number 79 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster CZ6:

- Start number 39 was manually annotated 1 time for cluster CZ6.

Info for manual annotations of cluster D1:

- Start number 38 was manually annotated 11 times for cluster D1.

Info for manual annotations of cluster E:

- Start number 31 was manually annotated 1 time for cluster E.

- Start number 57 was manually annotated 7 times for cluster E.

Info for manual annotations of cluster F1:

- Start number 28 was manually annotated 1 time for cluster F1.
- Start number 34 was manually annotated 1 time for cluster F1.
- Start number 53 was manually annotated 25 times for cluster F1.
- Start number 54 was manually annotated 3 times for cluster F1.
- Start number 55 was manually annotated 1 time for cluster F1.
- Start number 57 was manually annotated 3 times for cluster F1.
- Start number 58 was manually annotated 6 times for cluster F1.
- Start number 70 was manually annotated 1 time for cluster F1.

Info for manual annotations of cluster F2:

- Start number 19 was manually annotated 1 time for cluster F2.

Info for manual annotations of cluster J:

- Start number 27 was manually annotated 1 time for cluster J.
- Start number 58 was manually annotated 5 times for cluster J.
- Start number 60 was manually annotated 1 time for cluster J.

Info for manual annotations of cluster O:

- Start number 46 was manually annotated 1 time for cluster O.

Gene Information:

Gene: Adjutor_82 Start: 59655, Stop: 60050, Start Num: 38

Candidate Starts for Adjutor_82:

(8, 59532), (Start: 38 @59655 has 11 MA's), (61, 59730), (84, 59802), (97, 59835), (102, 59871), (104, 59877), (152, 60009), (157, 60027),

Gene: Alice_15 Start: 5418, Stop: 5885, Start Num: 57

Candidate Starts for Alice_15:

(11, 5256), (Start: 57 @5418 has 35 MA's), (Start: 60 @5430 has 3 MA's), (89, 5580), (97, 5640), (151, 5811),

Gene: ArcusAngelus_83 Start: 49676, Stop: 50101, Start Num: 54

Candidate Starts for ArcusAngelus_83:

(Start: 54 @49676 has 3 MA's), (77, 49751), (91, 49823), (97, 49856), (111, 49928), (123, 49952), (147, 50024), (159, 50087),

Gene: BaboJay_42 Start: 35493, Stop: 35068, Start Num: 57

Candidate Starts for BaboJay_42:

(47, 35514), (51, 35502), (Start: 57 @35493 has 35 MA's), (Start: 60 @35481 has 3 MA's), (97, 35307), (126, 35205),

Gene: BeanWater_5 Start: 2594, Stop: 3034, Start Num: 57

Candidate Starts for BeanWater_5:

(Start: 57 @2594 has 35 MA's), (Start: 60 @2606 has 3 MA's), (82, 2726), (97, 2816), (103, 2858), (140, 2954), (150, 2978),

Gene: Bench_44 Start: 35114, Stop: 34752, Start Num: 57

Candidate Starts for Bench_44:

(Start: 57 @35114 has 35 MA's), (Start: 60 @35102 has 3 MA's), (97, 34982), (126, 34880), (157, 34775),

Gene: Blackdragon_5 Start: 1616, Stop: 2056, Start Num: 57

Candidate Starts for Blackdragon_5:

(Start: 57 @1616 has 35 MA's), (Start: 60 @1628 has 3 MA's), (82, 1748), (97, 1838), (103, 1880), (140, 1976), (150, 2000),

Gene: Blue_60 Start: 41591, Stop: 41178, Start Num: 58

Candidate Starts for Blue_60:

(35, 41648), (37, 41645), (Start: 58 @41591 has 16 MA's), (72, 41534), (80, 41495), (97, 41399), (154, 41228),

Gene: BobaPhett_81 Start: 50730, Stop: 51155, Start Num: 53

Candidate Starts for BobaPhett_81:

(Start: 53 @50730 has 25 MA's), (Start: 60 @50745 has 3 MA's), (97, 50925), (116, 51009), (119, 51015), (121, 51018), (150, 51102),

Gene: Bobby_76 Start: 51549, Stop: 51166, Start Num: 58

Candidate Starts for Bobby_76:

(32, 51630), (41, 51588), (42, 51585), (Start: 58 @51549 has 16 MA's), (Start: 60 @51537 has 3 MA's), (76, 51477), (93, 51405), (97, 51372), (113, 51312), (120, 51297), (133, 51273), (146, 51240),

Gene: Bobby_75 Start: 51169, Stop: 50789, Start Num: 58

Candidate Starts for Bobby_75:

(Start: 58 @51169 has 16 MA's), (Start: 60 @51157 has 3 MA's), (97, 51022), (100, 50995), (102, 50977), (108, 50950), (134, 50881), (136, 50878), (150, 50842),

Gene: Brocalys_71 Start: 46210, Stop: 46635, Start Num: 53

Candidate Starts for Brocalys_71:

(Start: 53 @46210 has 25 MA's), (Start: 60 @46225 has 3 MA's), (97, 46405), (116, 46489), (119, 46495), (121, 46498), (150, 46582),

Gene: Butterscotch_82 Start: 59706, Stop: 60101, Start Num: 38

Candidate Starts for Butterscotch_82:

(8, 59583), (Start: 38 @59706 has 11 MA's), (61, 59781), (84, 59853), (97, 59886), (102, 59922), (104, 59928), (152, 60060), (157, 60078),

Gene: Cabrinians_78 Start: 48130, Stop: 48555, Start Num: 53

Candidate Starts for Cabrinians_78:

(Start: 53 @48130 has 25 MA's), (Start: 60 @48145 has 3 MA's), (97, 48325), (116, 48409), (119, 48415), (121, 48418), (150, 48502),

Gene: Cali_6 Start: 2751, Stop: 3191, Start Num: 57

Candidate Starts for Cali_6:

(Start: 57 @2751 has 35 MA's), (Start: 60 @2763 has 3 MA's), (82, 2883), (97, 2973), (103, 3015), (140, 3111), (150, 3135),

Gene: Carlyle_61 Start: 39697, Stop: 39242, Start Num: 58

Candidate Starts for Carlyle_61:

(35, 39754), (37, 39751), (Start: 58 @39697 has 16 MA's), (89, 39535), (90, 39532), (97, 39475), (100, 39448), (102, 39430), (108, 39403), (134, 39334), (136, 39331), (150, 39295),

Gene: CharlieB_5 Start: 1612, Stop: 2052, Start Num: 57

Candidate Starts for CharlieB_5:

(Start: 57 @1612 has 35 MA's), (Start: 60 @1624 has 3 MA's), (82, 1744), (97, 1834), (103, 1876), (140, 1972), (150, 1996),

Gene: Chevrolet_86 Start: 49677, Stop: 50102, Start Num: 54

Candidate Starts for Chevrolet_86:

(Start: 54 @49677 has 3 MA's), (77, 49752), (91, 49824), (97, 49857), (111, 49929), (123, 49953), (147, 50025), (159, 50088),

Gene: Chill_85 Start: 59683, Stop: 60078, Start Num: 38

Candidate Starts for Chill_85:

(8, 59560), (Start: 38 @59683 has 11 MA's), (61, 59758), (84, 59830), (97, 59863), (102, 59899), (104, 59905), (152, 60037), (157, 60055),

Gene: ChotaBhai_44 Start: 35156, Stop: 34737, Start Num: 57

Candidate Starts for ChotaBhai_44:

(47, 35177), (51, 35165), (Start: 57 @35156 has 35 MA's), (Start: 60 @35144 has 3 MA's), (97, 34970), (126, 34868),

Gene: Cosmolli16_53 Start: 47545, Stop: 47198, Start Num: 57

Candidate Starts for Cosmolli16_53:

(Start: 57 @47545 has 35 MA's), (Start: 60 @47533 has 3 MA's), (97, 47413), (102, 47377), (104, 47371), (152, 47239), (157, 47221),

Gene: Crumble_76 Start: 44855, Stop: 45280, Start Num: 53

Candidate Starts for Crumble_76:

(Start: 53 @44855 has 25 MA's), (Start: 60 @44870 has 3 MA's), (97, 45050), (116, 45134), (119, 45140), (121, 45143), (150, 45227),

Gene: DLane_79 Start: 49141, Stop: 49515, Start Num: 53

Candidate Starts for DLane_79:

(Start: 53 @49141 has 25 MA's), (Start: 60 @49156 has 3 MA's), (97, 49291), (110, 49360), (142, 49441),

Gene: DobbysSock_55 Start: 39516, Stop: 39908, Start Num: 79

Candidate Starts for DobbysSock_55:

(3, 39198), (4, 39207), (6, 39222), (16, 39264), (30, 39330), (62, 39444), (64, 39453), (Start: 79 @39516 has 1 MA's), (122, 39750), (143, 39816),

Gene: DoctorDiddles_44 Start: 35192, Stop: 34773, Start Num: 57

Candidate Starts for DoctorDiddles_44:

(47, 35213), (51, 35201), (Start: 57 @35192 has 35 MA's), (Start: 60 @35180 has 3 MA's), (97, 35006), (126, 34904),

Gene: Donkeykong_83 Start: 49734, Stop: 50111, Start Num: 53

Candidate Starts for Donkeykong_83:

(Start: 53 @49734 has 25 MA's), (Start: 60 @49749 has 3 MA's), (97, 49884), (116, 49968), (119, 49974), (121, 49977), (150, 50061),

Gene: ET08_5 Start: 2600, Stop: 3040, Start Num: 57

Candidate Starts for ET08_5:

(Start: 57 @2600 has 35 MA's), (Start: 60 @2612 has 3 MA's), (82, 2732), (97, 2822), (103, 2864), (140, 2960), (150, 2984),

Gene: Eish_82 Start: 49234, Stop: 49629, Start Num: 55

Candidate Starts for Eish_82:

(Start: 55 @49234 has 2 MA's), (Start: 60 @49249 has 3 MA's), (Start: 70 @49297 has 1 MA's), (71, 49303), (88, 49366), (97, 49420), (117, 49498), (124, 49510), (125, 49513),

Gene: Erk16_85 Start: 60039, Stop: 60434, Start Num: 38

Candidate Starts for Erk16_85:

(8, 59916), (12, 59925), (Start: 38 @60039 has 11 MA's), (61, 60114), (84, 60186), (97, 60219), (102, 60255), (104, 60261), (152, 60393), (157, 60411),

Gene: Estave1_91 Start: 53006, Stop: 53392, Start Num: 57

Candidate Starts for Estave1_91:

(43, 52976), (47, 52985), (Start: 57 @53006 has 35 MA's), (97, 53192), (114, 53258), (157, 53366),

Gene: Euphoria_59 Start: 40555, Stop: 40109, Start Num: 58

Candidate Starts for Euphoria_59:

(35, 40612), (37, 40609), (Start: 58 @40555 has 16 MA's), (72, 40498), (80, 40459), (83, 40441), (97, 40363), (111, 40291), (123, 40267), (147, 40195), (159, 40132),

Gene: Flathead_78 Start: 47777, Stop: 48157, Start Num: 53

Candidate Starts for Flathead_78:

(Start: 53 @47777 has 25 MA's), (Start: 60 @47792 has 3 MA's), (97, 47927), (116, 48011), (119, 48017), (121, 48020), (150, 48104),

Gene: FreddyB_88 Start: 49777, Stop: 50202, Start Num: 53

Candidate Starts for FreddyB_88:

(Start: 53 @49777 has 25 MA's), (Start: 60 @49792 has 3 MA's), (97, 49972), (116, 50056), (119, 50062), (121, 50065), (150, 50149),

Gene: Giraffe_53 Start: 47326, Stop: 46979, Start Num: 57

Candidate Starts for Giraffe_53:

(Start: 57 @47326 has 35 MA's), (Start: 60 @47314 has 3 MA's), (97, 47194), (102, 47158), (104, 47152), (152, 47020), (157, 47002),

Gene: Giuseppe_86 Start: 59752, Stop: 60147, Start Num: 38

Candidate Starts for Giuseppe_86:

(8, 59629), (Start: 38 @59752 has 11 MA's), (61, 59827), (84, 59899), (97, 59932), (102, 59968), (104, 59974), (152, 60106), (157, 60124),

Gene: Gorge_80 Start: 49405, Stop: 49830, Start Num: 53

Candidate Starts for Gorge_80:

(Start: 53 @49405 has 25 MA's), (Start: 60 @49420 has 3 MA's), (97, 49600), (116, 49684), (119, 49690), (121, 49693), (150, 49777),

Gene: Grand2040_52 Start: 47320, Stop: 46973, Start Num: 57

Candidate Starts for Grand2040_52:

(Start: 57 @47320 has 35 MA's), (Start: 60 @47308 has 3 MA's), (97, 47188), (102, 47152), (104, 47146), (152, 47014), (157, 46996),

Gene: Grungle_6 Start: 1770, Stop: 2210, Start Num: 57

Candidate Starts for Grungle_6:

(Start: 57 @1770 has 35 MA's), (Start: 60 @1782 has 3 MA's), (82, 1902), (97, 1992), (103, 2034), (140, 2130), (150, 2154),

Gene: Halldule_6 Start: 1766, Stop: 2206, Start Num: 57

Candidate Starts for Halldule_6:

(Start: 57 @1766 has 35 MA's), (Start: 60 @1778 has 3 MA's), (82, 1898), (97, 1988), (98, 1991), (103, 2030), (140, 2126), (150, 2150),

Gene: Harley_88 Start: 50437, Stop: 50829, Start Num: 57

Candidate Starts for Harley_88:

(1, 50143), (2, 50176), (9, 50263), (13, 50272), (17, 50296), (Start: 19 @50314 has 1 MA's), (43, 50407), (47, 50416), (Start: 57 @50437 has 35 MA's), (97, 50623), (103, 50665),

Gene: Hegedechwinu_80 Start: 46978, Stop: 47358, Start Num: 53

Candidate Starts for Hegedechwinu_80:

(Start: 53 @46978 has 25 MA's), (Start: 60 @46993 has 3 MA's), (97, 47128), (116, 47212), (119, 47218), (121, 47221), (150, 47305),

Gene: Highbury_43 Start: 34897, Stop: 34421, Start Num: 57

Candidate Starts for Highbury_43:

(32, 34969), (Start: 57 @34897 has 35 MA's), (Start: 60 @34885 has 3 MA's), (89, 34735), (97, 34675), (111, 34603), (123, 34579), (147, 34507), (159, 34444),

Gene: Hughesyang_72 Start: 50943, Stop: 50497, Start Num: 58

Candidate Starts for Hughesyang_72:

(Start: 58 @50943 has 16 MA's), (Start: 60 @50931 has 3 MA's), (80, 50847), (83, 50829), (97, 50751), (111, 50679), (123, 50655), (147, 50583),

Gene: I3_7 Start: 2438, Stop: 2830, Start Num: 57

Candidate Starts for I3_7:

(Start: 57 @2438 has 35 MA's), (Start: 70 @2498 has 1 MA's), (71, 2504), (87, 2564), (88, 2567), (97, 2621), (126, 2723),

Gene: IkeLoa_6 Start: 2612, Stop: 3052, Start Num: 57

Candidate Starts for IkeLoa_6:

(Start: 57 @2612 has 35 MA's), (Start: 60 @2624 has 3 MA's), (82, 2744), (97, 2834), (103, 2876), (140, 2972), (150, 2996),

Gene: JalFarm20_87 Start: 48995, Stop: 49375, Start Num: 53

Candidate Starts for JalFarm20_87:

(23, 48899), (Start: 53 @48995 has 25 MA's), (Start: 60 @49010 has 3 MA's), (97, 49145), (116, 49229), (119, 49235), (121, 49238), (150, 49322),

Gene: Jinglebell_93 Start: 50985, Stop: 51386, Start Num: 58

Candidate Starts for Jinglebell_93:

(20, 50862), (44, 50955), (49, 50964), (Start: 58 @50985 has 16 MA's), (97, 51153), (100, 51180), (102, 51198), (108, 51225), (134, 51294), (136, 51297), (150, 51333),

Gene: Jorgensen_64 Start: 41112, Stop: 40717, Start Num: 57

Candidate Starts for Jorgensen_64:

(5, 41313), (35, 41169), (37, 41166), (Start: 57 @41112 has 35 MA's), (Start: 60 @41100 has 3 MA's), (97, 40944), (126, 40842),

Gene: Juniper1_77 Start: 47775, Stop: 48149, Start Num: 34

Candidate Starts for Juniper1_77:

(Start: 34 @47775 has 1 MA's), (40, 47799), (97, 47934), (102, 47970), (104, 47976), (152, 48108), (157, 48126),

Gene: Kamryn_6 Start: 1771, Stop: 2151, Start Num: 60

Candidate Starts for Kamryn_6:

(Start: 57 @1759 has 35 MA's), (Start: 60 @1771 has 3 MA's), (Start: 70 @1819 has 1 MA's), (71, 1825), (88, 1888), (97, 1942), (117, 2020), (124, 2032), (125, 2035),

Gene: KashFlow_72 Start: 47258, Stop: 46752, Start Num: 58

Candidate Starts for KashFlow_72:

(Start: 58 @47258 has 16 MA's), (96, 47087), (97, 47072), (100, 47045), (102, 47027), (108, 47000), (134, 46931), (136, 46928), (150, 46892), (161, 46811), (162, 46805), (163, 46802),

Gene: Koella_70 Start: 44029, Stop: 44454, Start Num: 53

Candidate Starts for Koella_70:

(Start: 53 @44029 has 25 MA's), (Start: 60 @44044 has 3 MA's), (97, 44224), (116, 44308), (119, 44314), (121, 44317), (150, 44401),

Gene: Koguma_6 Start: 1766, Stop: 2206, Start Num: 57

Candidate Starts for Koguma_6:

(Start: 57 @1766 has 35 MA's), (Start: 60 @1778 has 3 MA's), (82, 1898), (97, 1988), (103, 2030), (140, 2126), (150, 2150),

Gene: Kykar_79 Start: 47679, Stop: 47278, Start Num: 57

Candidate Starts for Kykar_79:

(Start: 57 @47679 has 35 MA's), (Start: 60 @47667 has 3 MA's), (96, 47508), (97, 47493), (118, 47412), (132, 47385),

Gene: LRRHood_6 Start: 2751, Stop: 3191, Start Num: 57

Candidate Starts for LRRHood_6:

(Start: 57 @2751 has 35 MA's), (Start: 60 @2763 has 3 MA's), (82, 2883), (97, 2973), (103, 3015), (140, 3111), (150, 3135),

Gene: LastJedi_70 Start: 46604, Stop: 47029, Start Num: 53

Candidate Starts for LastJedi_70:

(Start: 53 @46604 has 25 MA's), (Start: 60 @46619 has 3 MA's), (97, 46799), (116, 46883), (119, 46889), (121, 46892), (150, 46976),

Gene: LeiMonet_54 Start: 47306, Stop: 46959, Start Num: 57

Candidate Starts for LeiMonet_54:

(Start: 57 @47306 has 35 MA's), (Start: 60 @47294 has 3 MA's), (97, 47174), (102, 47138), (104, 47132), (152, 47000), (157, 46982),

Gene: Lizziana_83 Start: 49853, Stop: 50278, Start Num: 53

Candidate Starts for Lizziana_83:

(Start: 53 @49853 has 25 MA's), (Start: 60 @49868 has 3 MA's), (97, 50048), (116, 50132), (119, 50138), (121, 50141), (150, 50225),

Gene: Llama_93 Start: 50841, Stop: 51242, Start Num: 58

Candidate Starts for Llama_93:

(20, 50718), (44, 50811), (49, 50820), (Start: 58 @50841 has 16 MA's), (97, 51009), (100, 51036), (102, 51054), (108, 51081), (134, 51150), (136, 51153), (150, 51189),

Gene: Lucky2013_71 Start: 46711, Stop: 46307, Start Num: 60

Candidate Starts for Lucky2013_71:

(Start: 58 @46723 has 16 MA's), (Start: 60 @46711 has 3 MA's), (80, 46627), (83, 46609), (97, 46531), (101, 46501), (113, 46462), (115, 46459),

Gene: Lukilu_6 Start: 2765, Stop: 3205, Start Num: 57

Candidate Starts for Lukilu_6:

(Start: 57 @2765 has 35 MA's), (Start: 60 @2777 has 3 MA's), (82, 2897), (97, 2987), (103, 3029), (140, 3125), (150, 3149),

Gene: Mangeria_6 Start: 1759, Stop: 2133, Start Num: 57

Candidate Starts for Mangeria_6:

(Start: 57 @1759 has 35 MA's), (67, 1798), (86, 1843), (97, 1906), (126, 2008),

Gene: Maru_52 Start: 47257, Stop: 46910, Start Num: 57

Candidate Starts for Maru_52:

(Start: 57 @47257 has 35 MA's), (Start: 60 @47245 has 3 MA's), (97, 47125), (102, 47089), (104, 47083), (152, 46951), (157, 46933),

Gene: Modragons_91 Start: 50829, Stop: 51230, Start Num: 58

Candidate Starts for Modragons_91:

(20, 50706), (44, 50799), (49, 50808), (Start: 58 @50829 has 16 MA's), (97, 50997), (100, 51024), (102, 51042), (108, 51069), (134, 51138), (136, 51141), (150, 51177),

Gene: Moosehead_59 Start: 34924, Stop: 35379, Start Num: 39

Candidate Starts for Moosehead_59:

(25, 34852), (26, 34861), (Start: 39 @34924 has 1 MA's), (81, 35059), (95, 35131), (107, 35206), (125, 35242), (135, 35269), (137, 35272), (138, 35275),

Gene: Mopey_86 Start: 59779, Stop: 60174, Start Num: 38

Candidate Starts for Mopey_86:

(8, 59656), (Start: 38 @59779 has 11 MA's), (61, 59854), (84, 59926), (97, 59959), (102, 59995), (104, 60001), (152, 60133), (157, 60151),

Gene: Mova_78 Start: 47116, Stop: 47487, Start Num: 70

Candidate Starts for Mova_78:

(Start: 70 @47116 has 1 MA's), (73, 47131), (97, 47251), (100, 47278), (102, 47296), (108, 47323), (134, 47392), (136, 47395), (150, 47431),

Gene: Ms6_77 Start: 44192, Stop: 44584, Start Num: 48

Candidate Starts for Ms6_77:

(4, 44018), (6, 44033), (7, 44042), (15, 44072), (48, 44192), (63, 44243), (65, 44252), (66, 44255), (93, 44327), (94, 44330), (99, 44369), (110, 44429), (142, 44510),

Gene: NormanBulbieJr_75 Start: 48043, Stop: 48468, Start Num: 53

Candidate Starts for NormanBulbieJr_75:

(Start: 53 @48043 has 25 MA's), (Start: 60 @48058 has 3 MA's), (97, 48238), (116, 48322), (119, 48328), (121, 48331), (150, 48415),

Gene: Ochi17_92 Start: 50436, Stop: 50837, Start Num: 58

Candidate Starts for Ochi17_92:

(20, 50313), (44, 50406), (49, 50415), (Start: 58 @50436 has 16 MA's), (97, 50604), (100, 50631), (102, 50649), (108, 50676), (134, 50745), (136, 50748), (150, 50784),

Gene: OfUltron_94 Start: 50985, Stop: 51386, Start Num: 58

Candidate Starts for OfUltron_94:

(20, 50862), (44, 50955), (49, 50964), (Start: 58 @50985 has 16 MA's), (97, 51153), (100, 51180), (102, 51198), (108, 51225), (134, 51294), (136, 51297), (150, 51333),

Gene: Oksu_89 Start: 51566, Stop: 51967, Start Num: 58

Candidate Starts for Oksu_89:

(10, 51392), (14, 51401), (18, 51425), (44, 51536), (49, 51545), (Start: 58 @51566 has 16 MA's), (97, 51734), (100, 51761), (102, 51779), (108, 51806), (134, 51875), (136, 51878), (150, 51914),

Gene: Omega_81 Start: 52384, Stop: 51857, Start Num: 27

Candidate Starts for Omega_81:

(Start: 27 @52384 has 1 MA's), (48, 52312), (50, 52309), (69, 52243), (74, 52231), (97, 52111), (111, 52039), (123, 52015), (147, 51943),

Gene: PLOT_85 Start: 59930, Stop: 60325, Start Num: 38

Candidate Starts for PLOT_85:

(8, 59807), (Start: 38 @59930 has 11 MA's), (61, 60005), (84, 60077), (97, 60110), (102, 60146), (104, 60152), (152, 60284), (157, 60302),

Gene: Pat3_42 Start: 34357, Stop: 33938, Start Num: 57

Candidate Starts for Pat3_42:

(47, 34378), (51, 34366), (Start: 57 @34357 has 35 MA's), (Start: 60 @34345 has 3 MA's), (97, 34171), (126, 34069),

Gene: Penelope2018_84 Start: 59705, Stop: 60100, Start Num: 38

Candidate Starts for Penelope2018_84:

(8, 59582), (Start: 38 @59705 has 11 MA's), (61, 59780), (84, 59852), (97, 59885), (102, 59921), (104, 59927), (152, 60059), (157, 60077),

Gene: Peterson_65 Start: 43369, Stop: 42962, Start Num: 57

Candidate Starts for Peterson_65:

(5, 43570), (35, 43426), (37, 43423), (Start: 57 @43369 has 35 MA's), (Start: 60 @43357 has 3 MA's), (68, 43318), (96, 43216), (111, 43138), (131, 43084), (145, 43051), (149, 43042), (156, 42994),

Gene: Phox_14 Start: 5699, Stop: 6049, Start Num: 55

Candidate Starts for Phox_14:

(Start: 55 @5699 has 2 MA's), (Start: 60 @5714 has 3 MA's), (97, 5834), (117, 5912), (124, 5924), (125, 5927), (157, 6020),

Gene: Phox_6 Start: 2748, Stop: 3188, Start Num: 57

Candidate Starts for Phox_6:

(Start: 57 @2748 has 35 MA's), (Start: 60 @2760 has 3 MA's), (82, 2880), (97, 2970), (103, 3012), (140, 3108), (150, 3132),

Gene: Plumbus_81 Start: 45998, Stop: 46525, Start Num: 28

Candidate Starts for Plumbus_81:

(Start: 28 @45998 has 1 MA's), (29, 46001), (44, 46058), (45, 46061), (52, 46073), (78, 46163), (97, 46265), (111, 46337), (123, 46361), (147, 46433), (159, 46496),

Gene: Pollywog_86 Start: 51074, Stop: 51427, Start Num: 57

Candidate Starts for Pollywog_86:

(5, 50873), (35, 51017), (37, 51020), (Start: 57 @51074 has 35 MA's), (Start: 60 @51086 has 3 MA's), (97, 51206), (102, 51242), (104, 51248), (152, 51380),

Gene: PopTart_69 Start: 45137, Stop: 45511, Start Num: 53

Candidate Starts for PopTart_69:

(Start: 53 @45137 has 25 MA's), (Start: 60 @45152 has 3 MA's), (96, 45272), (97, 45287), (103, 45329), (142, 45425), (150, 45449),

Gene: Priscilla_76 Start: 48141, Stop: 48566, Start Num: 53

Candidate Starts for Priscilla_76:

(Start: 53 @48141 has 25 MA's), (Start: 60 @48156 has 3 MA's), (97, 48336), (116, 48420), (119, 48426), (121, 48429), (150, 48513),

Gene: RoMag_5 Start: 2623, Stop: 3003, Start Num: 60

Candidate Starts for RoMag_5:

(Start: 57 @2611 has 35 MA's), (Start: 60 @2623 has 3 MA's), (Start: 70 @2671 has 1 MA's), (71, 2677), (88, 2740), (97, 2794), (117, 2872), (124, 2884), (125, 2887),

Gene: Ronan_6 Start: 1749, Stop: 2189, Start Num: 57

Candidate Starts for Ronan_6:

(Start: 57 @1749 has 35 MA's), (Start: 60 @1761 has 3 MA's), (82, 1881), (97, 1971), (103, 2013), (140, 2109), (150, 2133),

Gene: SG4_76 Start: 47114, Stop: 47569, Start Num: 53

Candidate Starts for SG4_76:

(Start: 53 @47114 has 25 MA's), (Start: 60 @47129 has 3 MA's), (89, 47279), (90, 47282), (97, 47339), (116, 47423), (119, 47429), (121, 47432), (150, 47516),

Gene: Saal_78 Start: 49224, Stop: 49649, Start Num: 53

Candidate Starts for Saal_78:

(Start: 53 @49224 has 25 MA's), (Start: 60 @49239 has 3 MA's), (97, 49419), (116, 49503), (119, 49509), (121, 49512), (150, 49596),

Gene: Saints25_43 Start: 34897, Stop: 34421, Start Num: 57

Candidate Starts for Saints25_43:

(32, 34969), (Start: 57 @34897 has 35 MA's), (Start: 60 @34885 has 3 MA's), (89, 34735), (97, 34675), (111, 34603), (123, 34579), (147, 34507), (159, 34444),

Gene: SassyB_69 Start: 45137, Stop: 45511, Start Num: 53

Candidate Starts for SassyB_69:

(Start: 53 @45137 has 25 MA's), (Start: 60 @45152 has 3 MA's), (96, 45272), (97, 45287), (103, 45329), (142, 45425), (150, 45449),

Gene: Seabastian_94 Start: 50986, Stop: 51387, Start Num: 58

Candidate Starts for Seabastian_94:

(20, 50863), (44, 50956), (49, 50965), (Start: 58 @50986 has 16 MA's), (97, 51154), (100, 51181), (102, 51199), (108, 51226), (134, 51295), (136, 51298), (150, 51334),

Gene: Seanderson_63 Start: 42839, Stop: 42384, Start Num: 58

Candidate Starts for Seanderson_63:

(5, 43040), (35, 42896), (37, 42893), (Start: 58 @42839 has 16 MA's), (89, 42677), (90, 42674), (97, 42617), (100, 42590), (102, 42572), (108, 42545), (134, 42476), (136, 42473), (150, 42437),

Gene: Shaqnato_6 Start: 1766, Stop: 2206, Start Num: 57

Candidate Starts for Shaqnato_6:

(Start: 57 @1766 has 35 MA's), (Start: 60 @1778 has 3 MA's), (82, 1898), (97, 1988), (103, 2030), (140, 2126), (150, 2150),

Gene: SirDuracell_42 Start: 34192, Stop: 33677, Start Num: 31

Candidate Starts for SirDuracell_42:

(Start: 31 @34192 has 1 MA's), (56, 34120), (59, 34108), (89, 33952), (97, 33892), (151, 33721), (155, 33700),

Gene: Smooch_23 Start: 10621, Stop: 10995, Start Num: 46

Candidate Starts for Smooch_23:

(24, 10534), (36, 10591), (Start: 46 @10621 has 1 MA's), (Start: 57 @10633 has 35 MA's), (Start: 60 @10645 has 3 MA's), (97, 10765), (116, 10849), (119, 10855), (121, 10858), (150, 10942),

Gene: Sprinklers_6 Start: 1749, Stop: 2189, Start Num: 57

Candidate Starts for Sprinklers_6:

(Start: 57 @1749 has 35 MA's), (Start: 60 @1761 has 3 MA's), (82, 1881), (97, 1971), (103, 2013), (140, 2109), (150, 2133),

Gene: SwagPiggett_82 Start: 50360, Stop: 50785, Start Num: 53

Candidate Starts for SwagPiggett_82:

(Start: 53 @50360 has 25 MA's), (Start: 60 @50375 has 3 MA's), (97, 50555), (116, 50639), (119, 50645), (121, 50648), (150, 50732),

Gene: Taj_85 Start: 49957, Stop: 50334, Start Num: 53

Candidate Starts for Taj_85:

(Start: 53 @49957 has 25 MA's), (Start: 60 @49972 has 3 MA's), (85, 50050), (97, 50107), (116, 50191), (119, 50197), (121, 50200), (150, 50284),

Gene: Thibault_74 Start: 51276, Stop: 51677, Start Num: 58

Candidate Starts for Thibault_74:

(21, 51156), (22, 51159), (33, 51207), (37, 51222), (Start: 58 @51276 has 16 MA's), (97, 51444), (100, 51471), (102, 51489), (108, 51516), (134, 51585), (136, 51588), (150, 51624),

Gene: Thoth_84 Start: 59759, Stop: 60154, Start Num: 38

Candidate Starts for Thoth_84:

(8, 59636), (Start: 38 @59759 has 11 MA's), (61, 59834), (84, 59906), (97, 59939), (102, 59975), (104, 59981), (152, 60113), (157, 60131),

Gene: Tootsieroll_77 Start: 49368, Stop: 49754, Start Num: 53

Candidate Starts for Tootsieroll_77:

(Start: 53 @49368 has 25 MA's), (Start: 60 @49383 has 3 MA's), (97, 49518), (109, 49584), (127, 49617), (128, 49623), (141, 49659), (143, 49668), (158, 49734),

Gene: Visconti_85 Start: 59720, Stop: 60115, Start Num: 38

Candidate Starts for Visconti_85:

(8, 59597), (Start: 38 @59720 has 11 MA's), (61, 59795), (84, 59867), (97, 59900), (102, 59936), (104, 59942), (152, 60074), (157, 60092),

Gene: Wachhund_78 Start: 45999, Stop: 46379, Start Num: 53

Candidate Starts for Wachhund_78:

(Start: 53 @45999 has 25 MA's), (Start: 60 @46014 has 3 MA's), (97, 46149), (105, 46203), (110, 46212), (130, 46260), (139, 46278), (148, 46302), (151, 46320),

Gene: WaldoWhy_85 Start: 59683, Stop: 60078, Start Num: 38

Candidate Starts for WaldoWhy_85:

(8, 59560), (Start: 38 @59683 has 11 MA's), (61, 59758), (84, 59830), (97, 59863), (102, 59899), (104, 59905), (152, 60037), (157, 60055),

Gene: Wee_84 Start: 50033, Stop: 50410, Start Num: 53

Candidate Starts for Wee_84:

(Start: 53 @50033 has 25 MA's), (Start: 60 @50048 has 3 MA's), (85, 50126), (97, 50183), (116, 50267), (119, 50273), (121, 50276), (150, 50360),

Gene: Whatsapiecost_73 Start: 43853, Stop: 44332, Start Num: 54

Candidate Starts for Whatsapiecost_73:

(Start: 54 @43853 has 3 MA's), (Start: 60 @43868 has 3 MA's), (89, 44018), (90, 44021), (97, 44078), (111, 44150), (123, 44174), (147, 44246), (159, 44309),

Gene: Yassified_6 Start: 1770, Stop: 2210, Start Num: 57

Candidate Starts for Yassified_6:

(Start: 57 @1770 has 35 MA's), (Start: 60 @1782 has 3 MA's), (82, 1902), (97, 1992), (103, 2034), (140, 2130), (150, 2154),

Gene: Yoshi_94 Start: 49980, Stop: 50474, Start Num: 19

Candidate Starts for Yoshi_94:

(Start: 19 @49980 has 1 MA's), (43, 50073), (47, 50082), (Start: 57 @50103 has 35 MA's), (97, 50268), (112, 50331), (114, 50337), (129, 50358), (144, 50397),

Gene: Zeeculate_77 Start: 48542, Stop: 48138, Start Num: 57

Candidate Starts for Zeeculate_77:

(Start: 57 @48542 has 35 MA's), (Start: 60 @48530 has 3 MA's), (75, 48467), (92, 48410), (97, 48368), (116, 48284), (119, 48278), (121, 48275), (150, 48191),

Gene: Zeuska_66 Start: 43778, Stop: 43305, Start Num: 58

Candidate Starts for Zeuska_66:

(5, 43979), (35, 43835), (37, 43832), (Start: 58 @43778 has 16 MA's), (Start: 60 @43766 has 3 MA's), (89, 43616), (90, 43613), (97, 43556), (106, 43493), (153, 43358), (160, 43325),