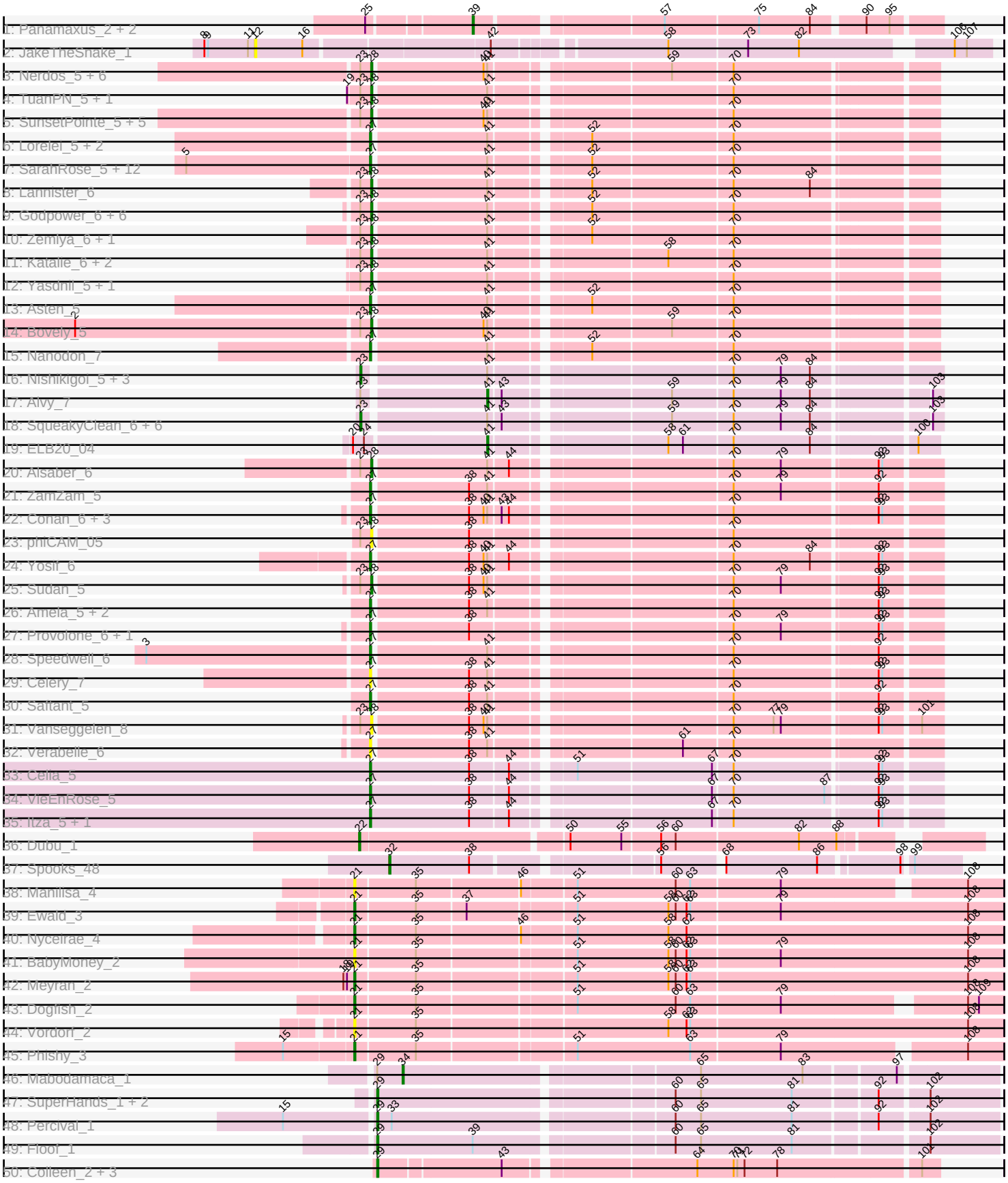
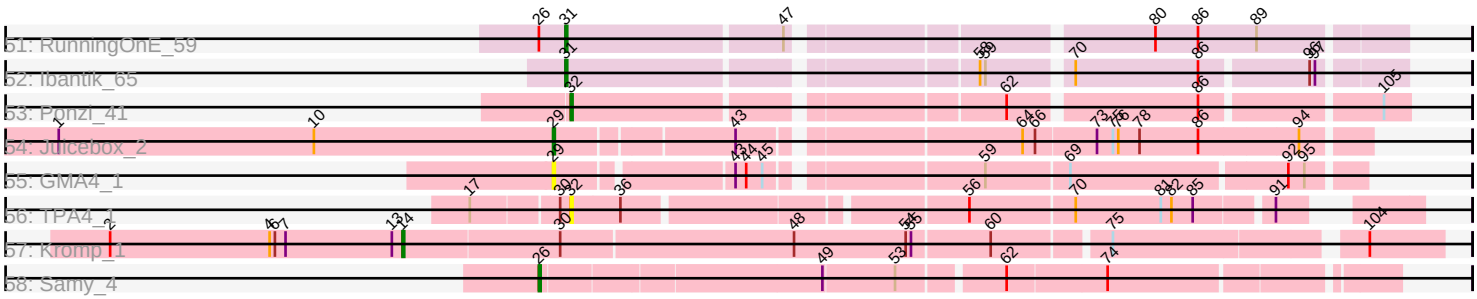
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1: Panamaxus_2 + 2
2: JakeTheSnake_1
3: Nerdos_5 + 6
4: TuanPN_5 + 1
5: SunsetPointe_5 + 5
6: Lorelei_5 + 2
7: SarahRose_5 + 12
8: Lannister_6
9: Godpower_6 + 6
10: Zemlya_6 + 1
11: Katalie_6 + 2
12: Yasuhil_5 + 1
13: Asten_5
14: Bovely_5
15: Nanodon_7
16: Nishikigoi_5 + 3
17: Alvy_7
18: SqueakyClean_6 + 6
19: ELB20_04
20: Alsaber_6
21: ZamZam_5
22: Conan_6 + 3
23: phiCAM_05
24: Yosif_6
25: Sudan_5
26: Amela_5 + 2
27: Provolone_6 + 1
28: Speedwell_6
29: Celery_7
30: Saltant_5
31: Vanseggelen_8
32: Verabelle_6
33: Celia_5
34: VieEnRose_5
35: Itza_5 + 1
36: Dubu_1
37: Spooks_48
38: Manilisa_4
39: Ewald_3
40: Nycelrae_4
41: BabyMoney_2
42: Meyran_2
43: Dogfish_2
44: Vordon_2
45: Phishy_3
46: Mabodamaca_1
47: SuperHands_1 + 2
48: Percival_1
49: Floof_1
50: Colleen_2 + 3

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51: RunningOnE_59
52: Ibantik_65
53: Ponzi_41
54: Juicebox_2
55: GMA4_1
56: TPA4_1
57: Kromp_1
58: Samy_4

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 347408 Report

This analysis was run 11/14/26 on database version 672.

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 347408 has 117 members, 10 are drafts.

Phages represented in each track:
• Track 1 : Panamaxus_2, Popcicle_2, Caviar_2
• Track 2 : JakeTheSnake_1
• Track 3 : Nerdos_5, Leviticus_5, Phettuccine_5, Aaronocolus_5, Unstoppable_5, Indigo_5, Esperer_5
• Track 4 : TuanPN_5, Ejemplo_5
• Track 5 : SunsetPointe_5, BeardedLady_6, Legacy_5, Ozzie_5, Hydra_7, Caliburn_5
• Track 6 : Lorelei_5, Nabi_5, Rana_5
• Track 7 : SarahRose_5, Chucky_5, OzzyJ_6, Snorlax_5, TagePhighter_6, Dwayne_5, Werner_5, BarryBee_7, Hippo_5, Triste_5, Danzina_6, Emaanora_7, Whatever_5
• Track 8 : Lannister_6
• Track 9 : Godpower_6, Sujidade_6, Brataylor_6, Dattran_6, Goby_5, Lika_5, Toma_5
• Track 10 : Zemlya_6, Celeste_5
• Track 11 : Katalie_6, South40_6, RedBear_7
• Track 12 : Yasdnil_5, Maneekul_5
• Track 13 : Asten_5
• Track 14 : Bovely_5
• Track 15 : Nanodon_7
• Track 16 : Nishikigoi_5, Haizum_5, Amethyst_5, Diane_5
• Track 17 : Alvy_7
• Track 18 : SqueakyClean_6, Andris_5, Zainub_7, Paolo_7, Janus_6, Animus_6, GirlDinner_5
• Track 19 : ELB20_04
• Track 20 : Alsaber_6
• Track 21 : ZamZam_5
• Track 22 : Conan_6, Dexers_4, Kaine_5, Pavo_6
• Track 23 : phiCAM_05
• Track 24 : Yosif_6
• Track 25 : Sudan_5
• Track 26 : Amela_5, Verse_5, SunkenRoot_5
• Track 27 : Provolone_6, ElGato_6

• Track 28 : Speedwell_6
• Track 29 : Celery_7
• Track 30 : Saftant_5
• Track 31 : Vanseggelen_8
• Track 32 : Verabelle_6
• Track 33 : Celia_5
• Track 34 : VieEnRose_5
• Track 35 : Itza_5, Urza_5
• Track 36 : Dubu_1
• Track 37 : Spooks_48
• Track 38 : Manilisa_4
• Track 39 : Ewald_3
• Track 40 : Nyceirae_4
• Track 41 : BabyMoney_2
• Track 42 : Meyran_2
• Track 43 : Dogfish_2
• Track 44 : Vordorf_2
• Track 45 : Phishy_3
• Track 46 : Mabodamaca_1
• Track 47 : SuperHands_1, Forester_1, Gretchen_1
• Track 48 : Percival_1
• Track 49 : Floof_1
• Track 50 : Colleen_2, TouchMeNot_2, Arianna_2, Poushou_2
• Track 51 : RunningOnE_59
• Track 52 : Ibantik_65
• Track 53 : Ponzi_41
• Track 54 : Juicebox_2
• Track 55 : GMA4_1
• Track 56 : TPA4_1
• Track 57 : Kromp_1
• Track 58 : Samy_4

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

The start number called the most often in the published annotations is 27, it was called in 35 of the 107 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• Amela_5, Asten_5, BarryBee_7, Celery_7, Celia_5, Chucky_5, Conan_6, Danzina_6, Dexers_4, Dwayne_5, ElGato_6, Emaanora_7, Hippo_5, Itza_5, Kaine_5, Lorelei_5, Nabi_5, Nanodon_7, OzzyJ_6, Pavo_6, Provolone_6, Rana_5, Saftant_5, SarahRose_5, Snorlax_5, Speedwell_6, SunkenRoot_5, TagePhighter_6, Triste_5, Urza_5, Verabelle_6, Verse_5, VieEnRose_5, Werner_5, Whatever_5, Yosif_6, ZamZam_5,

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

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

• Aaronocolus_5, Alsaber_6, Alvy_7, Amethyst_5, Andris_5, Animus_6, Arianna_2, BabyMoney_2, BeardedLady_6, Bovely_5, Brataylor_6, Caliburn_5, Caviar_2, Celeste_5, Colleen_2, Dattran_6, Diane_5, Dogfish_2, Dubu_1, ELB20_04, Ejemplo_5, Esperer_5, Ewald_3, Floof_1, Forester_1, GMA4_1, GirlDinner_5, Goby_5, Godpower_6, Gretchen_1, Haizum_5, Hydra_7, Ibantik_65, Indigo_5, JakeTheSnake_1, Janus_6, Juicebox_2, Katalie_6, Kromp_1, Lannister_6, Legacy_5, Leviticus_5, Lika_5, Mabodamaca_1, ManeekuI_5, Manilisa_4, Meyran_2, Nerdos_5, Nishikigoi_5, Nyceirae_4, Ozzie_5, Panamaxus_2, Paolo_7, Percival_1, Phettuccine_5, Phishy_3, Ponzi_41, Popcicle_2, Poushou_2, RedBear_7, RunningOnE_59, Samy_4, South40_6, Spooks_48, SqueakyClean_6, Sudan_5, Sujidade_6, SunsetPointe_5, SuperHands_1, TPA4_1, Toma_5, TouchMeNot_2, TuanPN_5, Unstoppable_5, Vanseggelen_8, Vordorf_2, Yasdnil_5, Zainub_7, Zemlya_6, phiCAM_05,

Summary by start number:

Start 12:
• Found in 1 of 117 (0.9%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: JakeTheSnake_1 (AY),

Start 14:
• Found in 1 of 117 (0.9%) of genes in pham
• Manual Annotations of this start: 1 of 107
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Kromp_1 (singleton),

Start 21:
• Found in 8 of 117 (6.8%) of genes in pham
• Manual Annotations of this start: 5 of 107
• Called 100.0% of time when present
• Phage (with cluster) where this start called: BabyMoney_2 (DT), Dogfish_2 (DT), Ewald_3 (DT), Manilisa_4 (DT), Meyran_2 (DT), Nyceirae_4 (DT), Phishy_3 (DT), Vordorf_2 (DT),

Start 22:
• Found in 1 of 117 (0.9%) of genes in pham
• Manual Annotations of this start: 1 of 107
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Dubu_1 (BJ),

Start 23:
• Found in 47 of 117 (40.2%) of genes in pham
• Manual Annotations of this start: 11 of 107
• Called 23.4% of time when present
• Phage (with cluster) where this start called: Amethyst_5 (BD2), Andris_5 (BD2), Animus_6 (BD2), Diane_5 (BD2), GirlDinner_5 (BD2), Haizum_5 (BD2), Janus_6 (BD2), Nishikigoi_5 (BD2), Paolo_7 (BD2), SqueakyClean_6 (BD2), Zainub_7 (BD2),

Start 26:
• Found in 2 of 117 (1.7%) of genes in pham
• Manual Annotations of this start: 1 of 107

• Called 50.0% of time when present
• Phage (with cluster) where this start called: Samy_4 (singleton),

Start 27:
• Found in 37 of 117 (31.6%) of genes in pham
• Manual Annotations of this start: 35 of 107
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Amela_5 (BD3), Asten_5 (BD1), BarryBee_7 (BD1), Celery_7 (BD3), Celia_5 (BD6), Chucky_5 (BD1), Conan_6 (BD3), Danzina_6 (BD1), Dexers_4 (BD3), Dwayne_5 (BD1), ElGato_6 (BD3), Emaanora_7 (BD1), Hippo_5 (BD1), Itza_5 (BD6), Kaine_5 (BD3), Lorelei_5 (BD1), Nabi_5 (BD1), Nanodon_7 (BD1), OzzyJ_6 (BD1), Pavo_6 (BD3), Provolone_6 (BD3), Rana_5 (BD1), Saftant_5 (BD3), SarahRose_5 (BD1), Snorlax_5 (BD1), Speedwell_6 (BD3), SunkenRoot_5 (BD3), TagePhighter_6 (BD1), Triste_5 (BD1), Urza_5 (BD6), Verabelle_6 (BD3), Verse_5 (BD3), VieEnRose_5 (BD6), Werner_5 (BD1), Whatever_5 (BD1), Yosif_6 (BD3), ZamZam_5 (BD3),

Start 28:
• Found in 35 of 117 (29.9%) of genes in pham
• Manual Annotations of this start: 33 of 107
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Aaronocolus_5 (BD1), Alsaber_6 (BD3), BeardedLady_6 (BD1), Bovely_5 (BD1), Brataylor_6 (BD1), Caliburn_5 (BD1), Celeste_5 (BD1), Dattran_6 (BD1), Ejemplo_5 (BD1), Esperer_5 (BD1), Goby_5 (BD1), Godpower_6 (BD1), Hydra_7 (BD1), Indigo_5 (BD1), Katalie_6 (BD1), Lannister_6 (BD1), Legacy_5 (BD1), Leviticus_5 (BD1), Lika_5 (BD1), Maneekul_5 (BD1), Nerdos_5 (BD1), Ozzie_5 (BD1), Phettuccine_5 (BD1), RedBear_7 (BD1), South40_6 (BD1), Sudan_5 (BD3), Sujidade_6 (BD1), SunsetPointe_5 (BD1), Toma_5 (BD1), TuanPN_5 (BD1), Unstoppable_5 (BD1), Vanseggelen_8 (BD3), Yasdnil_5 (BD1), Zemlya_6 (BD1), phiCAM_05 (BD3),

Start 29:
• Found in 12 of 117 (10.3%) of genes in pham
• Manual Annotations of this start: 10 of 107
• Called 91.7% of time when present
• Phage (with cluster) where this start called: Arianna_2 (EO), Colleen_2 (EO), Floof_1 (EH), Forester_1 (EH), GMA4_1 (singleton), Gretchen_1 (EH), Juicebox_2 (singleton), Percival_1 (EH), Poushou_2 (EO), SuperHands_1 (EH), TouchMeNot_2 (EO),

Start 31:
• Found in 2 of 117 (1.7%) of genes in pham
• Manual Annotations of this start: 2 of 107
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Ibantik_65 (JN), RunningOnE_59 (JN),

Start 32:
• Found in 3 of 117 (2.6%) of genes in pham
• Manual Annotations of this start: 2 of 107
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Ponzi_41 (singleton), Spooks_48 (BT), TPA4_1 (singleton),

Start 34:
• Found in 1 of 117 (0.9%) of genes in pham
• Manual Annotations of this start: 1 of 107
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Mabodamaca_1 (EH),

Start 39:
• Found in 4 of 117 (3.4%) of genes in pham
• Manual Annotations of this start: 3 of 107
• Called 75.0% of time when present
• Phage (with cluster) where this start called: Caviar_2 (A3), Panamaxus_2 (A3), Popcicle_2 (A3),

Start 41:
• Found in 78 of 117 (66.7%) of genes in pham
• Manual Annotations of this start: 2 of 107
• Called 2.6% of time when present
• Phage (with cluster) where this start called: Alvy_7 (BD2), ELB20_04 (BD2),

Summary by clusters:

There are 13 clusters represented in this pham: singleton, EH, JN, BJ, BT, EO, A3, BD6, BD1, BD3, BD2, AY, DT,

Info for manual annotations of cluster A3:
•Start number 39 was manually annotated 3 times for cluster A3.

Info for manual annotations of cluster BD1:
•Start number 27 was manually annotated 18 times for cluster BD1.
•Start number 28 was manually annotated 31 times for cluster BD1.

Info for manual annotations of cluster BD2:
•Start number 23 was manually annotated 11 times for cluster BD2.
•Start number 41 was manually annotated 2 times for cluster BD2.

Info for manual annotations of cluster BD3:
•Start number 27 was manually annotated 13 times for cluster BD3.
•Start number 28 was manually annotated 2 times for cluster BD3.

Info for manual annotations of cluster BD6:
•Start number 27 was manually annotated 4 times for cluster BD6.

Info for manual annotations of cluster BJ:
•Start number 22 was manually annotated 1 time for cluster BJ.

Info for manual annotations of cluster BT:
•Start number 32 was manually annotated 1 time for cluster BT.

Info for manual annotations of cluster DT:
•Start number 21 was manually annotated 5 times for cluster DT.

Info for manual annotations of cluster EH:

•Start number 29 was manually annotated 5 times for cluster EH.
•Start number 34 was manually annotated 1 time for cluster EH.

Info for manual annotations of cluster EO:
•Start number 29 was manually annotated 4 times for cluster EO.

Info for manual annotations of cluster JN:
•Start number 31 was manually annotated 2 times for cluster JN.

Gene Information:

Gene: Aaronocolus_5 Start: 1956, Stop: 2381, Start Num: 28
Candidate Starts for Aaronocolus_5:
(Start: 23 @1947 has 11 MA's), (Start: 28 @1956 has 33 MA's), (40, 2043), (Start: 41 @2046 has 2 MA's), (59, 2178), (70, 2226),

Gene: Alsaber_6 Start: 2072, Stop: 2500, Start Num: 28
Candidate Starts for Alsaber_6:
(Start: 23 @2063 has 11 MA's), (Start: 28 @2072 has 33 MA's), (Start: 41 @2162 has 2 MA's), (44, 2177), (70, 2342), (79, 2381), (92, 2453), (93, 2456),

Gene: Alvy_7 Start: 1993, Stop: 2328, Start Num: 41
Candidate Starts for Alvy_7:
(Start: 23 @1897 has 11 MA's), (Start: 41 @1993 has 2 MA's), (43, 2002), (59, 2125), (70, 2173), (79, 2212), (84, 2236), (103, 2320),

Gene: Amela_5 Start: 2131, Stop: 2559, Start Num: 27
Candidate Starts for Amela_5:
(Start: 27 @2131 has 35 MA's), (38, 2206), (Start: 41 @2221 has 2 MA's), (70, 2401), (92, 2512), (93, 2515),

Gene: Amethyst_5 Start: 1696, Stop: 2130, Start Num: 23
Candidate Starts for Amethyst_5:
(Start: 23 @1696 has 11 MA's), (Start: 41 @1792 has 2 MA's), (70, 1972), (79, 2011), (84, 2035),

Gene: Andris_5 Start: 1727, Stop: 2158, Start Num: 23
Candidate Starts for Andris_5:
(Start: 23 @1727 has 11 MA's), (Start: 41 @1823 has 2 MA's), (43, 1832), (59, 1955), (70, 2003), (79, 2042), (84, 2066), (103, 2150),

Gene: Animus_6 Start: 2074, Stop: 2505, Start Num: 23
Candidate Starts for Animus_6:
(Start: 23 @2074 has 11 MA's), (Start: 41 @2170 has 2 MA's), (43, 2179), (59, 2302), (70, 2350), (79, 2389), (84, 2413), (103, 2497),

Gene: Arianna_2 Start: 799, Stop: 1230, Start Num: 29
Candidate Starts for Arianna_2:
(Start: 29 @799 has 10 MA's), (43, 895), (64, 1039), (70, 1069), (71, 1072), (72, 1078), (78, 1105), (101, 1216),

Gene: Asten_5 Start: 1930, Stop: 2355, Start Num: 27

Candidate Starts for Asten_5:
(Start: 27 @1930 has 35 MA's), (Start: 41 @2020 has 2 MA's), (52, 2089), (70, 2200),

Gene: BabyMoney_2 Start: 312, Stop: 830, Start Num: 21
Candidate Starts for BabyMoney_2:
(Start: 21 @312 has 5 MA's), (35, 360), (51, 483), (58, 558), (60, 564), (62, 573), (63, 576), (79, 648), (108, 801),

Gene: BarryBee_7 Start: 1930, Stop: 2355, Start Num: 27
Candidate Starts for BarryBee_7:
(5, 1780), (Start: 27 @1930 has 35 MA's), (Start: 41 @2020 has 2 MA's), (52, 2089), (70, 2200),

Gene: BeardedLady_6 Start: 2203, Stop: 2628, Start Num: 28
Candidate Starts for BeardedLady_6:
(Start: 23 @2194 has 11 MA's), (Start: 28 @2203 has 33 MA's), (40, 2290), (Start: 41 @2293 has 2 MA's), (70, 2473),

Gene: Bovely_5 Start: 1962, Stop: 2387, Start Num: 28
Candidate Starts for Bovely_5:
(2, 1722), (Start: 23 @1953 has 11 MA's), (Start: 28 @1962 has 33 MA's), (40, 2049), (Start: 41 @2052 has 2 MA's), (59, 2184), (70, 2232),

Gene: Brataylor_6 Start: 1933, Stop: 2358, Start Num: 28
Candidate Starts for Brataylor_6:
(Start: 23 @1924 has 11 MA's), (Start: 28 @1933 has 33 MA's), (Start: 41 @2023 has 2 MA's), (52, 2092), (70, 2203),

Gene: Caliburn_5 Start: 1936, Stop: 2361, Start Num: 28
Candidate Starts for Caliburn_5:
(Start: 23 @1927 has 11 MA's), (Start: 28 @1936 has 33 MA's), (40, 2023), (Start: 41 @2026 has 2 MA's), (70, 2206),

Gene: Caviar_2 Start: 862, Stop: 1212, Start Num: 39
Candidate Starts for Caviar_2:
(25, 784), (Start: 39 @862 has 3 MA's), (57, 1000), (75, 1075), (84, 1117), (90, 1156), (95, 1174),

Gene: Celery_7 Start: 2043, Stop: 2471, Start Num: 27
Candidate Starts for Celery_7:
(Start: 27 @2043 has 35 MA's), (38, 2118), (Start: 41 @2133 has 2 MA's), (70, 2313), (92, 2424), (93, 2427),

Gene: Celeste_5 Start: 1932, Stop: 2357, Start Num: 28
Candidate Starts for Celeste_5:
(Start: 23 @1923 has 11 MA's), (Start: 28 @1932 has 33 MA's), (Start: 41 @2022 has 2 MA's), (52, 2091), (70, 2202),

Gene: Celia_5 Start: 2204, Stop: 2638, Start Num: 27
Candidate Starts for Celia_5:
(Start: 27 @2204 has 35 MA's), (38, 2285), (44, 2315), (51, 2357), (67, 2465), (70, 2480), (92, 2591), (93, 2594),

Gene: Chucky_5 Start: 1931, Stop: 2356, Start Num: 27
Candidate Starts for Chucky_5:

(5, 1781), (Start: 27 @1931 has 35 MA's), (Start: 41 @2021 has 2 MA's), (52, 2090), (70, 2201),

Gene: Colleen_2 Start: 799, Stop: 1230, Start Num: 29
Candidate Starts for Colleen_2:
(Start: 29 @799 has 10 MA's), (43, 895), (64, 1039), (70, 1069), (71, 1072), (72, 1078), (78, 1105), (101, 1216),

Gene: Conan_6 Start: 1782, Stop: 2210, Start Num: 27
Candidate Starts for Conan_6:
(Start: 27 @1782 has 35 MA's), (38, 1857), (40, 1869), (Start: 41 @1872 has 2 MA's), (43, 1881), (44, 1887), (70, 2052), (92, 2163), (93, 2166),

Gene: Danzina_6 Start: 2130, Stop: 2555, Start Num: 27
Candidate Starts for Danzina_6:
(5, 1986), (Start: 27 @2130 has 35 MA's), (Start: 41 @2220 has 2 MA's), (52, 2289), (70, 2400),

Gene: Dattran_6 Start: 1931, Stop: 2356, Start Num: 28
Candidate Starts for Dattran_6:
(Start: 23 @1922 has 11 MA's), (Start: 28 @1931 has 33 MA's), (Start: 41 @2021 has 2 MA's), (52, 2090), (70, 2201),

Gene: Dexers_4 Start: 1775, Stop: 2203, Start Num: 27
Candidate Starts for Dexers_4:
(Start: 27 @1775 has 35 MA's), (38, 1850), (40, 1862), (Start: 41 @1865 has 2 MA's), (43, 1874), (44, 1880), (70, 2045), (92, 2156), (93, 2159),

Gene: Diane_5 Start: 1698, Stop: 2132, Start Num: 23
Candidate Starts for Diane_5:
(Start: 23 @1698 has 11 MA's), (Start: 41 @1794 has 2 MA's), (70, 1974), (79, 2013), (84, 2037),

Gene: Dogfish_2 Start: 447, Stop: 947, Start Num: 21
Candidate Starts for Dogfish_2:
(Start: 21 @447 has 5 MA's), (35, 495), (51, 618), (60, 699), (63, 711), (79, 783), (108, 918), (109, 927),

Gene: Dubu_1 Start: 90, Stop: 557, Start Num: 22
Candidate Starts for Dubu_1:
(Start: 22 @90 has 1 MA's), (50, 252), (55, 294), (56, 324), (60, 336), (82, 435), (88, 465),

Gene: Dwayne_5 Start: 1931, Stop: 2356, Start Num: 27
Candidate Starts for Dwayne_5:
(5, 1781), (Start: 27 @1931 has 35 MA's), (Start: 41 @2021 has 2 MA's), (52, 2090), (70, 2201),

Gene: ELB20_04 Start: 1845, Stop: 2180, Start Num: 41
Candidate Starts for ELB20_04:
(20, 1740), (24, 1749), (Start: 41 @1845 has 2 MA's), (58, 1974), (61, 1986), (70, 2025), (84, 2088), (100, 2163),

Gene: Ejemplo_5 Start: 1934, Stop: 2359, Start Num: 28
Candidate Starts for Ejemplo_5:
(19, 1916), (Start: 23 @1925 has 11 MA's), (Start: 28 @1934 has 33 MA's), (Start: 41 @2024 has 2 MA's), (70, 2204),

Gene: ElGato_6 Start: 1785, Stop: 2213, Start Num: 27
Candidate Starts for ElGato_6:
(Start: 27 @1785 has 35 MA's), (38, 1860), (70, 2055), (79, 2094), (92, 2166), (93, 2169),

Gene: Emaanora_7 Start: 1930, Stop: 2355, Start Num: 27
Candidate Starts for Emaanora_7:
(5, 1780), (Start: 27 @1930 has 35 MA's), (Start: 41 @2020 has 2 MA's), (52, 2089), (70, 2200),

Gene: Esperer_5 Start: 1956, Stop: 2381, Start Num: 28
Candidate Starts for Esperer_5:
(Start: 23 @1947 has 11 MA's), (Start: 28 @1956 has 33 MA's), (40, 2043), (Start: 41 @2046 has 2 MA's), (59, 2178), (70, 2226),

Gene: Ewald_3 Start: 702, Stop: 1220, Start Num: 21
Candidate Starts for Ewald_3:
(Start: 21 @702 has 5 MA's), (35, 750), (37, 789), (51, 873), (58, 948), (60, 954), (62, 963), (63, 966), (79, 1038), (108, 1191),

Gene: Floof_1 Start: 122, Stop: 601, Start Num: 29
Candidate Starts for Floof_1:
(Start: 29 @122 has 10 MA's), (Start: 39 @200 has 3 MA's), (60, 350), (65, 371), (81, 446), (102, 545),

Gene: Forester_1 Start: 128, Stop: 607, Start Num: 29
Candidate Starts for Forester_1:
(Start: 29 @128 has 10 MA's), (60, 356), (65, 377), (81, 452), (92, 515), (102, 551),

Gene: GMA4_1 Start: 79, Stop: 492, Start Num: 29
Candidate Starts for GMA4_1:
(Start: 29 @79 has 10 MA's), (43, 169), (44, 175), (45, 184), (59, 292), (69, 337), (92, 454), (95, 463),

Gene: GirlDinner_5 Start: 1737, Stop: 2168, Start Num: 23
Candidate Starts for GirlDinner_5:
(Start: 23 @1737 has 11 MA's), (Start: 41 @1833 has 2 MA's), (43, 1842), (59, 1965), (70, 2013), (79, 2052), (84, 2076), (103, 2160),

Gene: Goby_5 Start: 1931, Stop: 2356, Start Num: 28
Candidate Starts for Goby_5:
(Start: 23 @1922 has 11 MA's), (Start: 28 @1931 has 33 MA's), (Start: 41 @2021 has 2 MA's), (52, 2090), (70, 2201),

Gene: Godpower_6 Start: 1934, Stop: 2359, Start Num: 28
Candidate Starts for Godpower_6:
(Start: 23 @1925 has 11 MA's), (Start: 28 @1934 has 33 MA's), (Start: 41 @2024 has 2 MA's), (52, 2093), (70, 2204),

Gene: Gretchen_1 Start: 128, Stop: 607, Start Num: 29
Candidate Starts for Gretchen_1:
(Start: 29 @128 has 10 MA's), (60, 356), (65, 377), (81, 452), (92, 515), (102, 551),

Gene: Haizum_5 Start: 1727, Stop: 2161, Start Num: 23
Candidate Starts for Haizum_5:
(Start: 23 @1727 has 11 MA's), (Start: 41 @1823 has 2 MA's), (70, 2003), (79, 2042), (84, 2066),

Gene: Hippo_5 Start: 1930, Stop: 2355, Start Num: 27
Candidate Starts for Hippo_5:
(5, 1780), (Start: 27 @1930 has 35 MA's), (Start: 41 @2020 has 2 MA's), (52, 2089), (70, 2200),

Gene: Hydra_7 Start: 2493, Stop: 2918, Start Num: 28
Candidate Starts for Hydra_7:
(Start: 23 @2484 has 11 MA's), (Start: 28 @2493 has 33 MA's), (40, 2580), (Start: 41 @2583 has 2 MA's), (70, 2763),

Gene: Ibantik_65 Start: 27614, Stop: 28042, Start Num: 31
Candidate Starts for Ibantik_65:
(Start: 31 @27614 has 2 MA's), (58, 27824), (59, 27827), (70, 27869), (86, 27938), (96, 27995), (97, 27998),

Gene: Indigo_5 Start: 1956, Stop: 2381, Start Num: 28
Candidate Starts for Indigo_5:
(Start: 23 @1947 has 11 MA's), (Start: 28 @1956 has 33 MA's), (40, 2043), (Start: 41 @2046 has 2 MA's), (59, 2178), (70, 2226),

Gene: Itza_5 Start: 2126, Stop: 2560, Start Num: 27
Candidate Starts for Itza_5:
(Start: 27 @2126 has 35 MA's), (38, 2207), (44, 2237), (67, 2387), (70, 2402), (92, 2513), (93, 2516),

Gene: JakeTheSnake_1 Start: 52, Stop: 606, Start Num: 12
Candidate Starts for JakeTheSnake_1:
(8, 10), (9, 13), (11, 46), (12, 52), (16, 91), (42, 235), (58, 364), (73, 427), (82, 469), (106, 577), (107, 586),

Gene: Janus_6 Start: 2074, Stop: 2505, Start Num: 23
Candidate Starts for Janus_6:
(Start: 23 @2074 has 11 MA's), (Start: 41 @2170 has 2 MA's), (43, 2179), (59, 2302), (70, 2350), (79, 2389), (84, 2413), (103, 2497),

Gene: Juicebox_2 Start: 862, Stop: 1284, Start Num: 29
Candidate Starts for Juicebox_2:
(1, 583), (10, 727), (Start: 29 @862 has 10 MA's), (43, 955), (64, 1099), (66, 1105), (73, 1138), (75, 1147), (76, 1150), (78, 1162), (86, 1195), (94, 1249),

Gene: Kaine_5 Start: 1775, Stop: 2203, Start Num: 27
Candidate Starts for Kaine_5:
(Start: 27 @1775 has 35 MA's), (38, 1850), (40, 1862), (Start: 41 @1865 has 2 MA's), (43, 1874), (44, 1880), (70, 2045), (92, 2156), (93, 2159),

Gene: Katalie_6 Start: 2202, Stop: 2627, Start Num: 28
Candidate Starts for Katalie_6:
(Start: 23 @2193 has 11 MA's), (Start: 28 @2202 has 33 MA's), (Start: 41 @2292 has 2 MA's), (58, 2421), (70, 2472),

Gene: Kromp_1 Start: 200, Stop: 754, Start Num: 14
Candidate Starts for Kromp_1:
(2, 35), (4, 125), (6, 128), (7, 134), (13, 194), (Start: 14 @200 has 1 MA's), (30, 287), (48, 416), (54, 479), (55, 482), (60, 524), (75, 584), (104, 713),

Gene: Lannister_6 Start: 1938, Stop: 2363, Start Num: 28
Candidate Starts for Lannister_6:
(Start: 23 @1929 has 11 MA's), (Start: 28 @1938 has 33 MA's), (Start: 41 @2028 has 2 MA's), (52, 2097), (70, 2208), (84, 2271),

Gene: Legacy_5 Start: 1936, Stop: 2361, Start Num: 28
Candidate Starts for Legacy_5:
(Start: 23 @1927 has 11 MA's), (Start: 28 @1936 has 33 MA's), (40, 2023), (Start: 41 @2026 has 2 MA's), (70, 2206),

Gene: Leviticus_5 Start: 1956, Stop: 2381, Start Num: 28
Candidate Starts for Leviticus_5:
(Start: 23 @1947 has 11 MA's), (Start: 28 @1956 has 33 MA's), (40, 2043), (Start: 41 @2046 has 2 MA's), (59, 2178), (70, 2226),

Gene: Lika_5 Start: 1935, Stop: 2360, Start Num: 28
Candidate Starts for Lika_5:
(Start: 23 @1926 has 11 MA's), (Start: 28 @1935 has 33 MA's), (Start: 41 @2025 has 2 MA's), (52, 2094), (70, 2205),

Gene: Lorelei_5 Start: 1928, Stop: 2353, Start Num: 27
Candidate Starts for Lorelei_5:
(Start: 27 @1928 has 35 MA's), (Start: 41 @2018 has 2 MA's), (52, 2087), (70, 2198),

Gene: Mabodamaca_1 Start: 146, Stop: 604, Start Num: 34
Candidate Starts for Mabodamaca_1:
(Start: 29 @125 has 10 MA's), (Start: 34 @146 has 1 MA's), (65, 374), (83, 458), (97, 527),

Gene: Maneekul_5 Start: 1933, Stop: 2358, Start Num: 28
Candidate Starts for Maneekul_5:
(Start: 23 @1924 has 11 MA's), (Start: 28 @1933 has 33 MA's), (Start: 41 @2023 has 2 MA's), (70, 2203),

Gene: Manilisa_4 Start: 1002, Stop: 1505, Start Num: 21
Candidate Starts for Manilisa_4:
(Start: 21 @1002 has 5 MA's), (35, 1050), (46, 1131), (51, 1173), (60, 1254), (63, 1266), (79, 1338), (108, 1476),

Gene: Meyran_2 Start: 851, Stop: 1369, Start Num: 21
Candidate Starts for Meyran_2:
(18, 842), (19, 845), (Start: 21 @851 has 5 MA's), (35, 899), (51, 1022), (58, 1097), (60, 1103), (62, 1112), (63, 1115), (108, 1340),

Gene: Nabi_5 Start: 1928, Stop: 2353, Start Num: 27
Candidate Starts for Nabi_5:
(Start: 27 @1928 has 35 MA's), (Start: 41 @2018 has 2 MA's), (52, 2087), (70, 2198),

Gene: Nanodon_7 Start: 2127, Stop: 2552, Start Num: 27
Candidate Starts for Nanodon_7:
(Start: 27 @2127 has 35 MA's), (Start: 41 @2217 has 2 MA's), (52, 2286), (70, 2397),

Gene: Nerdos_5 Start: 1956, Stop: 2381, Start Num: 28
Candidate Starts for Nerdos_5:

(Start: 23 @1947 has 11 MA's), (Start: 28 @1956 has 33 MA's), (40, 2043), (Start: 41 @2046 has 2 MA's), (59, 2178), (70, 2226),

Gene: Nishikigoi_5 Start: 1727, Stop: 2161, Start Num: 23
Candidate Starts for Nishikigoi_5:
(Start: 23 @1727 has 11 MA's), (Start: 41 @1823 has 2 MA's), (70, 2003), (79, 2042), (84, 2066),

Gene: Nyceirae_4 Start: 828, Stop: 1346, Start Num: 21
Candidate Starts for Nyceirae_4:
(Start: 21 @828 has 5 MA's), (35, 876), (46, 957), (51, 999), (58, 1074), (62, 1089), (108, 1317),

Gene: Ozzie_5 Start: 1936, Stop: 2361, Start Num: 28
Candidate Starts for Ozzie_5:
(Start: 23 @1927 has 11 MA's), (Start: 28 @1936 has 33 MA's), (40, 2023), (Start: 41 @2026 has 2 MA's), (70, 2206),

Gene: OzzyJ_6 Start: 1931, Stop: 2356, Start Num: 27
Candidate Starts for OzzyJ_6:
(5, 1781), (Start: 27 @1931 has 35 MA's), (Start: 41 @2021 has 2 MA's), (52, 2090), (70, 2201),

Gene: Panamaxus_2 Start: 862, Stop: 1212, Start Num: 39
Candidate Starts for Panamaxus_2:
(25, 784), (Start: 39 @862 has 3 MA's), (57, 1000), (75, 1075), (84, 1117), (90, 1156), (95, 1174),

Gene: Paolo_7 Start: 2350, Stop: 2781, Start Num: 23
Candidate Starts for Paolo_7:
(Start: 23 @2350 has 11 MA's), (Start: 41 @2446 has 2 MA's), (43, 2455), (59, 2578), (70, 2626), (79, 2665), (84, 2689), (103, 2773),

Gene: Pavo_6 Start: 2055, Stop: 2483, Start Num: 27
Candidate Starts for Pavo_6:
(Start: 27 @2055 has 35 MA's), (38, 2130), (40, 2142), (Start: 41 @2145 has 2 MA's), (43, 2154), (44, 2160), (70, 2325), (92, 2436), (93, 2439),

Gene: Percival_1 Start: 128, Stop: 607, Start Num: 29
Candidate Starts for Percival_1:
(15, 56), (Start: 29 @128 has 10 MA's), (33, 140), (60, 356), (65, 377), (81, 452), (92, 515), (102, 551),

Gene: Phettuccine_5 Start: 1956, Stop: 2381, Start Num: 28
Candidate Starts for Phettuccine_5:
(Start: 23 @1947 has 11 MA's), (Start: 28 @1956 has 33 MA's), (40, 2043), (Start: 41 @2046 has 2 MA's), (59, 2178), (70, 2226),

Gene: Phishy_3 Start: 800, Stop: 1303, Start Num: 21
Candidate Starts for Phishy_3:
(15, 746), (Start: 21 @800 has 5 MA's), (35, 848), (51, 971), (63, 1064), (79, 1136), (108, 1274),

Gene: Ponzi_41 Start: 22312, Stop: 22740, Start Num: 32
Candidate Starts for Ponzi_41:
(Start: 32 @22312 has 2 MA's), (62, 22534), (86, 22633), (105, 22726),

Gene: Popcicle_2 Start: 862, Stop: 1212, Start Num: 39
Candidate Starts for Popcicle_2:

(25, 784), (Start: 39 @862 has 3 MA's), (57, 1000), (75, 1075), (84, 1117), (90, 1156), (95, 1174),

Gene: Poushou_2 Start: 799, Stop: 1230, Start Num: 29
Candidate Starts for Poushou_2:
(Start: 29 @799 has 10 MA's), (43, 895), (64, 1039), (70, 1069), (71, 1072), (72, 1078), (78, 1105), (101, 1216),

Gene: Provolone_6 Start: 1785, Stop: 2213, Start Num: 27
Candidate Starts for Provolone_6:
(Start: 27 @1785 has 35 MA's), (38, 1860), (70, 2055), (79, 2094), (92, 2166), (93, 2169),

Gene: Rana_5 Start: 1928, Stop: 2353, Start Num: 27
Candidate Starts for Rana_5:
(Start: 27 @1928 has 35 MA's), (Start: 41 @2018 has 2 MA's), (52, 2087), (70, 2198),

Gene: RedBear_7 Start: 2202, Stop: 2627, Start Num: 28
Candidate Starts for RedBear_7:
(Start: 23 @2193 has 11 MA's), (Start: 28 @2202 has 33 MA's), (Start: 41 @2292 has 2 MA's), (58, 2421), (70, 2472),

Gene: RunningOnE_59 Start: 26921, Stop: 27355, Start Num: 31
Candidate Starts for RunningOnE_59:
(Start: 26 @26906 has 1 MA's), (Start: 31 @26921 has 2 MA's), (47, 27038), (80, 27221), (86, 27245), (89, 27278),

Gene: Saftant_5 Start: 2088, Stop: 2516, Start Num: 27
Candidate Starts for Saftant_5:
(Start: 27 @2088 has 35 MA's), (38, 2163), (Start: 41 @2178 has 2 MA's), (70, 2358), (92, 2469),

Gene: Samy_4 Start: 1334, Stop: 1780, Start Num: 26
Candidate Starts for Samy_4:
(Start: 26 @1334 has 1 MA's), (49, 1484), (53, 1523), (62, 1577), (74, 1631),

Gene: SarahRose_5 Start: 1930, Stop: 2355, Start Num: 27
Candidate Starts for SarahRose_5:
(5, 1780), (Start: 27 @1930 has 35 MA's), (Start: 41 @2020 has 2 MA's), (52, 2089), (70, 2200),

Gene: Snorlax_5 Start: 1930, Stop: 2355, Start Num: 27
Candidate Starts for Snorlax_5:
(5, 1780), (Start: 27 @1930 has 35 MA's), (Start: 41 @2020 has 2 MA's), (52, 2089), (70, 2200),

Gene: South40_6 Start: 2202, Stop: 2627, Start Num: 28
Candidate Starts for South40_6:
(Start: 23 @2193 has 11 MA's), (Start: 28 @2202 has 33 MA's), (Start: 41 @2292 has 2 MA's), (58, 2421), (70, 2472),

Gene: Speedwell_6 Start: 2026, Stop: 2454, Start Num: 27
Candidate Starts for Speedwell_6:
(3, 1846), (Start: 27 @2026 has 35 MA's), (Start: 41 @2116 has 2 MA's), (70, 2296), (92, 2407),

Gene: Spooks_48 Start: 26248, Stop: 26673, Start Num: 32
Candidate Starts for Spooks_48:

(Start: 32 @26248 has 2 MA's), (38, 26314), (56, 26449), (68, 26494), (86, 26569), (98, 26629), (99, 26635),

Gene: SqueakyClean_6 Start: 2000, Stop: 2431, Start Num: 23
Candidate Starts for SqueakyClean_6:
(Start: 23 @2000 has 11 MA's), (Start: 41 @2096 has 2 MA's), (43, 2105), (59, 2228), (70, 2276), (79, 2315), (84, 2339), (103, 2423),

Gene: Sudan_5 Start: 2062, Stop: 2490, Start Num: 28
Candidate Starts for Sudan_5:
(Start: 23 @2053 has 11 MA's), (Start: 28 @2062 has 33 MA's), (38, 2137), (40, 2149), (Start: 41 @2152 has 2 MA's), (70, 2332), (79, 2371), (92, 2443), (93, 2446),

Gene: Sujidade_6 Start: 2226, Stop: 2651, Start Num: 28
Candidate Starts for Sujidade_6:
(Start: 23 @2217 has 11 MA's), (Start: 28 @2226 has 33 MA's), (Start: 41 @2316 has 2 MA's), (52, 2385), (70, 2496),

Gene: SunkenRoot_5 Start: 2124, Stop: 2552, Start Num: 27
Candidate Starts for SunkenRoot_5:
(Start: 27 @2124 has 35 MA's), (38, 2199), (Start: 41 @2214 has 2 MA's), (70, 2394), (92, 2505), (93, 2508),

Gene: SunsetPointe_5 Start: 1955, Stop: 2380, Start Num: 28
Candidate Starts for SunsetPointe_5:
(Start: 23 @1946 has 11 MA's), (Start: 28 @1955 has 33 MA's), (40, 2042), (Start: 41 @2045 has 2 MA's), (70, 2225),

Gene: SuperHands_1 Start: 128, Stop: 607, Start Num: 29
Candidate Starts for SuperHands_1:
(Start: 29 @128 has 10 MA's), (60, 356), (65, 377), (81, 452), (92, 515), (102, 551),

Gene: TPA4_1 Start: 75, Stop: 497, Start Num: 32
Candidate Starts for TPA4_1:
(17, 24), (30, 69), (Start: 32 @75 has 2 MA's), (36, 102), (56, 279), (70, 336), (81, 384), (82, 390), (85, 402), (91, 441),

Gene: TagePhighter_6 Start: 1930, Stop: 2355, Start Num: 27
Candidate Starts for TagePhighter_6:
(5, 1780), (Start: 27 @1930 has 35 MA's), (Start: 41 @2020 has 2 MA's), (52, 2089), (70, 2200),

Gene: Toma_5 Start: 1931, Stop: 2356, Start Num: 28
Candidate Starts for Toma_5:
(Start: 23 @1922 has 11 MA's), (Start: 28 @1931 has 33 MA's), (Start: 41 @2021 has 2 MA's), (52, 2090), (70, 2201),

Gene: TouchMeNot_2 Start: 799, Stop: 1230, Start Num: 29
Candidate Starts for TouchMeNot_2:
(Start: 29 @799 has 10 MA's), (43, 895), (64, 1039), (70, 1069), (71, 1072), (72, 1078), (78, 1105), (101, 1216),

Gene: Triste_5 Start: 1931, Stop: 2356, Start Num: 27
Candidate Starts for Triste_5:

(5, 1781), (Start: 27 @1931 has 35 MA's), (Start: 41 @2021 has 2 MA's), (52, 2090), (70, 2201),

Gene: TuanPN_5 Start: 1934, Stop: 2359, Start Num: 28
Candidate Starts for TuanPN_5:
(19, 1916), (Start: 23 @1925 has 11 MA's), (Start: 28 @1934 has 33 MA's), (Start: 41 @2024 has 2 MA's), (70, 2204),

Gene: Unstoppable_5 Start: 1956, Stop: 2381, Start Num: 28
Candidate Starts for Unstoppable_5:
(Start: 23 @1947 has 11 MA's), (Start: 28 @1956 has 33 MA's), (40, 2043), (Start: 41 @2046 has 2 MA's), (59, 2178), (70, 2226),

Gene: Urza_5 Start: 2126, Stop: 2560, Start Num: 27
Candidate Starts for Urza_5:
(Start: 27 @2126 has 35 MA's), (38, 2207), (44, 2237), (67, 2387), (70, 2402), (92, 2513), (93, 2516),

Gene: Vanseggelen_8 Start: 1678, Stop: 2106, Start Num: 28
Candidate Starts for Vanseggelen_8:
(Start: 23 @1669 has 11 MA's), (Start: 28 @1678 has 33 MA's), (38, 1753), (40, 1765), (Start: 41 @1768 has 2 MA's), (70, 1948), (77, 1981), (79, 1987), (92, 2059), (93, 2062), (101, 2089),

Gene: Verabelle_6 Start: 2045, Stop: 2473, Start Num: 27
Candidate Starts for Verabelle_6:
(Start: 27 @2045 has 35 MA's), (38, 2120), (Start: 41 @2135 has 2 MA's), (61, 2276), (70, 2315),

Gene: Verse_5 Start: 2125, Stop: 2553, Start Num: 27
Candidate Starts for Verse_5:
(Start: 27 @2125 has 35 MA's), (38, 2200), (Start: 41 @2215 has 2 MA's), (70, 2395), (92, 2506), (93, 2509),

Gene: VieEnRose_5 Start: 2200, Stop: 2634, Start Num: 27
Candidate Starts for VieEnRose_5:
(Start: 27 @2200 has 35 MA's), (38, 2281), (44, 2311), (67, 2461), (70, 2476), (87, 2551), (92, 2587), (93, 2590),

Gene: Vordorf_2 Start: 594, Stop: 1112, Start Num: 21
Candidate Starts for Vordorf_2:
(Start: 21 @594 has 5 MA's), (35, 642), (58, 840), (62, 855), (63, 858), (108, 1083),

Gene: Werner_5 Start: 1931, Stop: 2356, Start Num: 27
Candidate Starts for Werner_5:
(5, 1781), (Start: 27 @1931 has 35 MA's), (Start: 41 @2021 has 2 MA's), (52, 2090), (70, 2201),

Gene: Whatever_5 Start: 1931, Stop: 2356, Start Num: 27
Candidate Starts for Whatever_5:
(5, 1781), (Start: 27 @1931 has 35 MA's), (Start: 41 @2021 has 2 MA's), (52, 2090), (70, 2201),

Gene: Yasdnil_5 Start: 1930, Stop: 2355, Start Num: 28
Candidate Starts for Yasdnil_5:
(Start: 23 @1921 has 11 MA's), (Start: 28 @1930 has 33 MA's), (Start: 41 @2020 has 2 MA's), (70, 2200),

Gene: Yosif_6 Start: 2393, Stop: 2821, Start Num: 27

Candidate Starts for Yosif_6:
(Start: 27 @2393 has 35 MA's), (38, 2468), (40, 2480), (Start: 41 @2483 has 2 MA's), (44, 2498), (70, 2663), (84, 2726), (92, 2774), (93, 2777),

Gene: Zainub_7 Start: 2296, Stop: 2727, Start Num: 23
Candidate Starts for Zainub_7:
(Start: 23 @2296 has 11 MA's), (Start: 41 @2392 has 2 MA's), (43, 2401), (59, 2524), (70, 2572), (79, 2611), (84, 2635), (103, 2719),

Gene: ZamZam_5 Start: 2057, Stop: 2485, Start Num: 27
Candidate Starts for ZamZam_5:
(Start: 27 @2057 has 35 MA's), (38, 2132), (Start: 41 @2147 has 2 MA's), (70, 2327), (79, 2366), (92, 2438),

Gene: Zemlya_6 Start: 1930, Stop: 2355, Start Num: 28
Candidate Starts for Zemlya_6:
(Start: 23 @1921 has 11 MA's), (Start: 28 @1930 has 33 MA's), (Start: 41 @2020 has 2 MA's), (52, 2089), (70, 2200),

Gene: phiCAM_05 Start: 2073, Stop: 2501, Start Num: 28
Candidate Starts for phiCAM_05:
(Start: 23 @2064 has 11 MA's), (Start: 28 @2073 has 33 MA's), (38, 2148), (70, 2343),