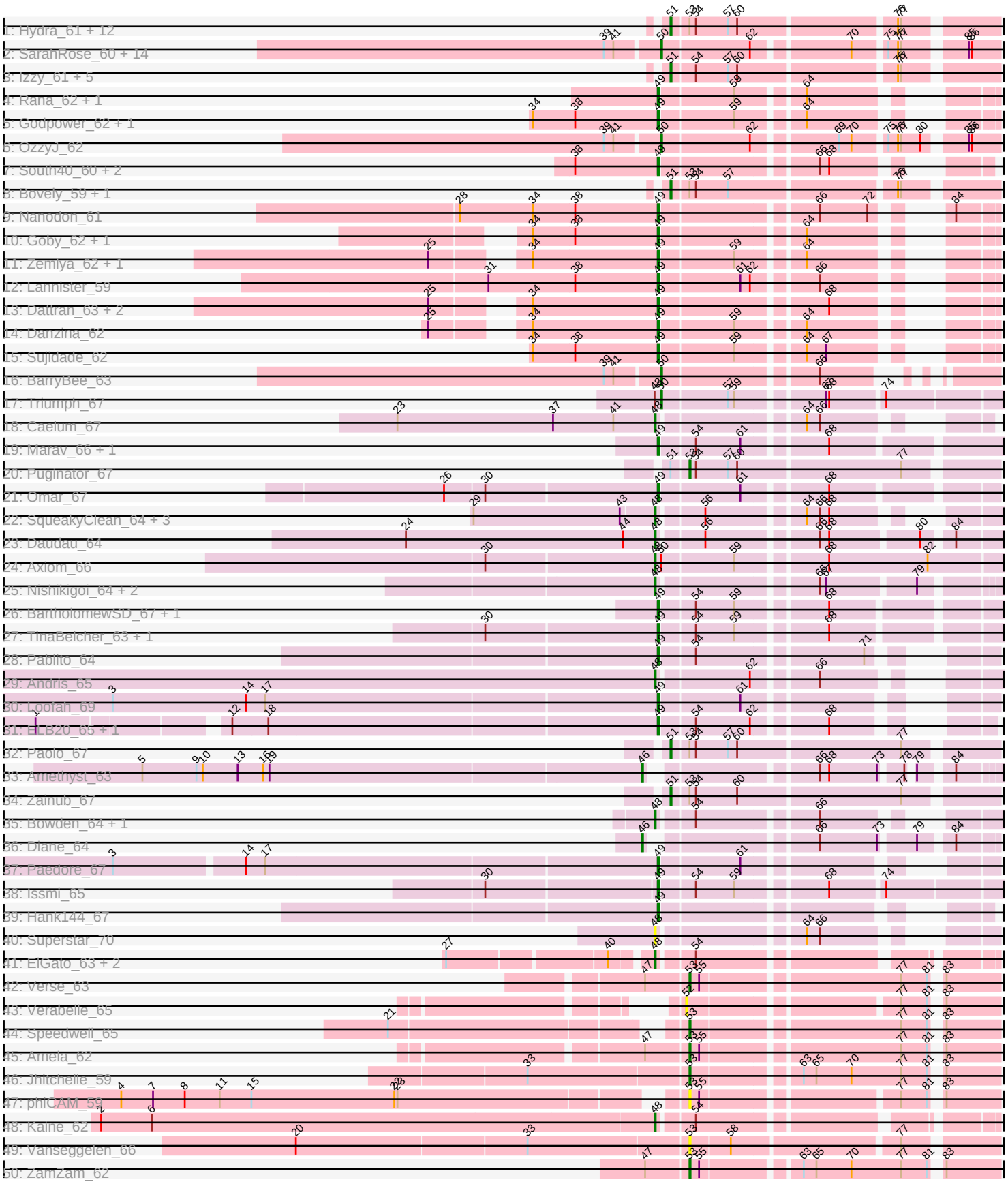
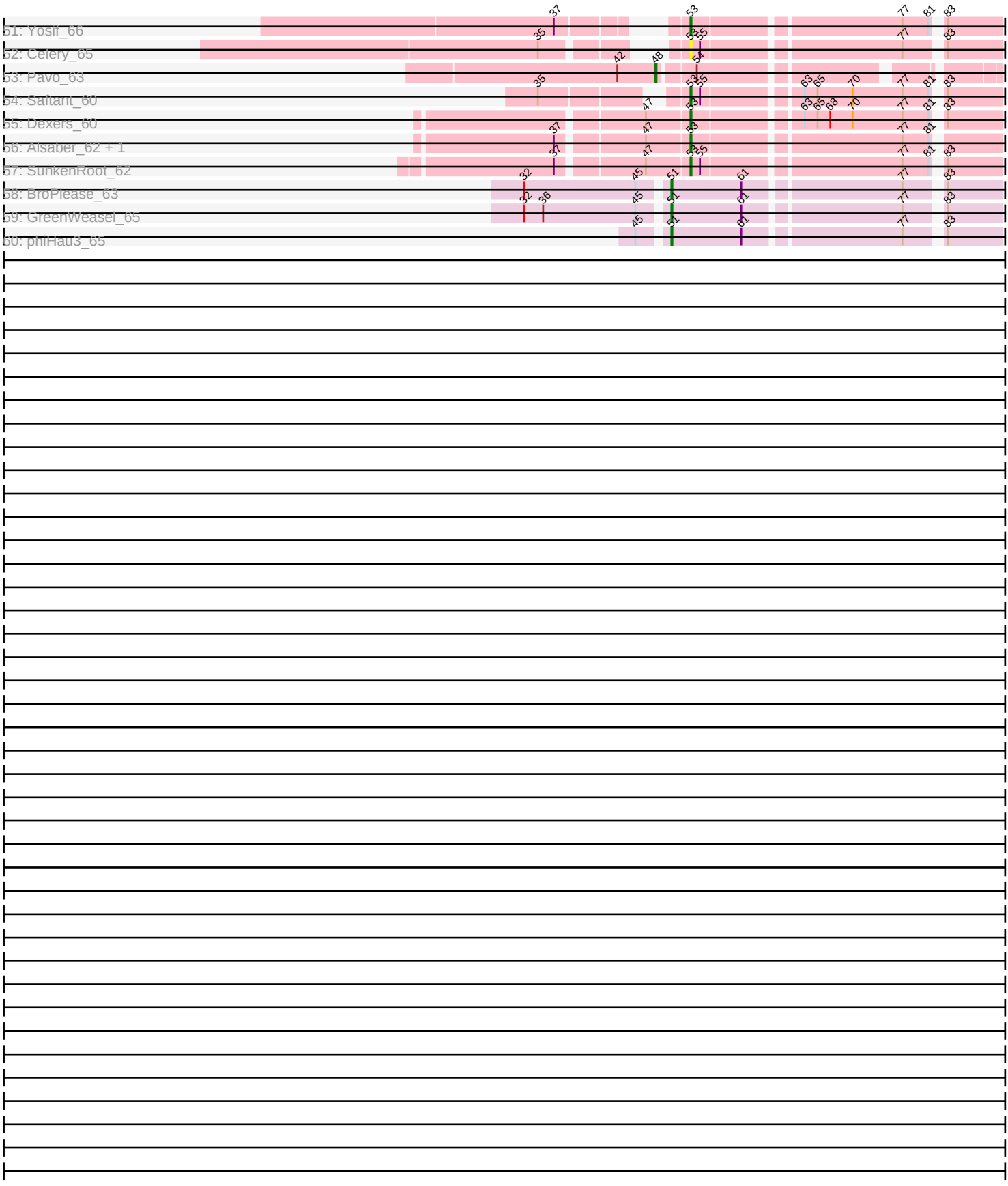
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1: Hydra_61 + 12
2: SarahRose_60 + 14
3: Izzy_61 + 5
4: Rana_62 + 1
5: Godpower_62 + 1
6: OzzyJ_62
7: South40_60 + 2
8: Bovely_59 + 1
9: Nanodon_61
10: Goby_62 + 1
11: Zemlya_62 + 1
12: Lannister_59
13: Dattran_63 + 2
14: Danzina_62
15: Sujidade_62
16: BarryBee_63
17: Triumph_67
18: Caelum_67
19: Marav_66 + 1
20: Puginator_67
21: Omar_67
22: SqueakyClean_64 + 3
23: Daudau_64
24: Axiom_66
25: Nishikigoi_64 + 2
26: BartholomewSD_67 + 1
27: TinaBelcher_63 + 1
28: Pablito_64
29: Andris_65
30: Loofah_69
31: BEB20_65 + 1
32: Paolo_67
33: Amethyst_63
34: Zainub_67
35: Bowden_64 + 1
36: Diane_64
37: Paedore_67
38: Issmi_65
39: HankI44_67
40: Superstar_70
41: ElGato_63 + 2
42: Verse_63
43: Verabelle_65
44: Speedwell_65
45: Amela_62
46: Jnitchelle_59
47: phiCAM_59
48: Kaine_62
49: Vanseggelen_66
50: ZamZam_62

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51: Yosif_66
52: Celery_65
53: Pavo_63
54: Saltant_60
55: Dexers_60
56: Alsaber_62 + 1
57: SunkenRoot_62
58: BroPlease_63
59: GreenWeasel_65
60: phiHau3_65

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 347427 Report

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

Pham number 347427 has 113 members, 6 are drafts.

Phages represented in each track:
• Track 1 : Hydra_61, Legacy_58, BeardedLady_59, SunsetPointe_58, Phettuccine_59, Indigo_58, Esperer_60, Leviticus_60, Nerdos_58, EnochSoames_63, Ozzie_58, Unstoppable_59, Aaronocolus_59
• Track 2 : SarahRose_60, Snorlax_60, TagePhighter_62, Whatever_60, Emaanora_63, Triste_61, Asten_60, Yasdnil_60, Ejemplo_58, Hippo_60, Werner_60, Dwayne_60, TuanPN_58, Chucky_60, Maneekul_60
• Track 3 : Izzy_61, BryanRecycles_61, Eddasa_62, Rusticus_61, Oliynyk_61, Jash_61
• Track 4 : Rana_62, Lorelei_61
• Track 5 : Godpower_62, Lika_61
• Track 6 : OzzyJ_62
• Track 7 : South40_60, Katalie_60, RedBear_61
• Track 8 : Bovely_59, Caliburn_58
• Track 9 : Nanodon_61
• Track 10 : Goby_62, Toma_62
• Track 11 : Zemlya_62, Brataylor_63
• Track 12 : Lannister_59
• Track 13 : Dattran_63, Celeste_62, Nabi_62
• Track 14 : Danzina_62
• Track 15 : Sujidade_62
• Track 16 : BarryBee_63
• Track 17 : Triumph_67
• Track 18 : Caelum_67
• Track 19 : Marav_66, Jevington_64
• Track 20 : Puginator_67
• Track 21 : Omar_67
• Track 22 : SqueakyClean_64, GirlDinner_63, Janus_64, Animus_63
• Track 23 : Daudau_64
• Track 24 : Axiom_66
• Track 25 : Nishikigoi_64, Tefunt_63, Haizum_63
• Track 26 : BartholomewSD_67, Alvy_67
• Track 27 : TinaBelcher_63, Thestral_65
• Track 28 : Pablito_64
• Track 29 : Andris_65
• Track 30 : Loofah_69
• Track 31 : ELB20_65, R4_66
• Track 32 : Paolo_67

• Track 33 : Amethyst_63
• Track 34 : Zainub_67
• Track 35 : Bowden_64, TrvxScott_63
• Track 36 : Diane_64
• Track 37 : Paedore_67
• Track 38 : Issmi_65
• Track 39 : Hank144_67
• Track 40 : Superstar_70
• Track 41 : ElGato_63, Conan_63, Provolone_63
• Track 42 : Verse_63
• Track 43 : Verabelle_65
• Track 44 : Speedwell_65
• Track 45 : Amela_62
• Track 46 : Jhitchelle_59
• Track 47 : phiCAM_59
• Track 48 : Kaine_62
• Track 49 : Vanseggelen_66
• Track 50 : ZamZam_62
• Track 51 : Yosif_66
• Track 52 : Celery_65
• Track 53 : Pavo_63
• Track 54 : Saftant_60
• Track 55 : Dexers_60
• Track 56 : Alsaber_62, Sudan_62
• Track 57 : SunkenRoot_62
• Track 58 : BroPlease_63
• Track 59 : GreenWeasel_65
• Track 60 : phiHau3_65

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

The start number called the most often in the published annotations is 49, it was called in 32 of the 107 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• Alvy_67, BartholomewSD_67, Brataylor_63, Celeste_62, Danzina_62, Dattran_63, ELB20_65, Goby_62, Godpower_62, Hank144_67, Issmi_65, Jevington_64, Katalie_60, Lannister_59, Lika_61, Loofah_69, Lorelei_61, Marav_66, Nabi_62, Nanodon_61, Omar_67, Pablito_64, Paedore_67, R4_66, Rana_62, RedBear_61, South40_60, Sujidade_62, Thestral_65, TinaBelcher_63, Toma_62, Zemlya_62,

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

Genes that do not have the "Most Annotated" start:
• Aaronocolus_59, Alsaber_62, Amela_62, Amethyst_63, Andris_65, Animus_63, Asten_60, Axiom_66, BarryBee_63, BeardedLady_59, Bovely_59, Bowden_64, BroPlease_63, BryanRecycles_61, Caelum_67, Caliburn_58, Celery_65, Chucky_60, Conan_63, Daudau_64, Dexers_60, Diane_64, Dwayne_60, Eddasa_62, Ejemplo_58, ElGato_63, Emaanora_63, EnochSoames_63, Esperer_60,

GirlDinner_63, GreenWeasel_65, Haizum_63, Hippo_60, Hydra_61, Indigo_58, Izzy_61, Janus_64, Jash_61, Jhitchelle_59, Kaine_62, Legacy_58, Leviticus_60, Maneekul_60, Nerdos_58, Nishikigoi_64, Oliynyk_61, Ozzie_58, OzzyJ_62, Paolo_67, Pavo_63, Phettuccine_59, Provolone_63, Puginator_67, Rusticus_61, Saftant_60, SarahRose_60, Snorlax_60, Speedwell_65, SqueakyClean_64, Sudan_62, SunkenRoot_62, SunsetPointe_58, Superstar_70, TagePhighter_62, Tefunt_63, Triste_61, Triumph_67, TrvxScott_63, TuanPN_58, Unstoppable_59, Vanseggelen_66, Verabelle_65, Verse_63, Werner_60, Whatever_60, Yasdnil_60, Yosif_66, Zainub_67, ZamZam_62, phiCAM_59, phiHau3_65,

Summary by start number:

Start 46:
• Found in 2 of 113 (1.8%) 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: Amethyst_63 (BD2), Diane_64 (BD2),

Start 48:
• Found in 20 of 113 (17.7%) of genes in pham
• Manual Annotations of this start: 18 of 107
• Called 95.0% of time when present
• Phage (with cluster) where this start called: Andris_65 (BD2), Animus_63 (BD2), Axiom_66 (BD2), Bowden_64 (BD2), Caelum_67 (BD2), Conan_63 (BD3), Daudau_64 (BD2), ElGato_63 (BD3), GirlDinner_63 (BD2), Haizum_63 (BD2), Janus_64 (BD2), Kaine_62 (BD3), Nishikigoi_64 (BD2), Pavo_63 (BD3), Provolone_63 (BD3), SqueakyClean_64 (BD2), Superstar_70 (BD2), Tefunt_63 (BD2), TrvxScott_63 (BD2),

Start 49:
• Found in 32 of 113 (28.3%) of genes in pham
• Manual Annotations of this start: 32 of 107
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Alvy_67 (BD2), BartholomewSD_67 (BD2), Brataylor_63 (BD1), Celeste_62 (BD1), Danzina_62 (BD1), Dattran_63 (BD1), ELB20_65 (BD2), Goby_62 (BD1), Godpower_62 (BD1), Hank144_67 (BD2), Issmi_65 (BD2), Jevington_64 (BD2), Katalie_60 (BD1), Lannister_59 (BD1), Lika_61 (BD1), Loofah_69 (BD2), Lorelei_61 (BD1), Marav_66 (BD2), Nabi_62 (BD1), Nanodon_61 (BD1), Omar_67 (BD2), Pablito_64 (BD2), Paedore_67 (BD2), R4_66 (BD2), Rana_62 (BD1), RedBear_61 (BD1), South40_60 (BD1), Sujidade_62 (BD1), Thestral_65 (BD2), TinaBelcher_63 (BD2), Toma_62 (BD1), Zemlya_62 (BD1),

Start 50:
• Found in 19 of 113 (16.8%) of genes in pham
• Manual Annotations of this start: 18 of 107
• Called 94.7% of time when present
• Phage (with cluster) where this start called: Asten_60 (BD1), BarryBee_63 (BD1), Chucky_60 (BD1), Dwayne_60 (BD1), Ejemplo_58 (BD1), Emaanora_63 (BD1), Hippo_60 (BD1), Maneekul_60 (BD1), OzzyJ_62 (BD1), SarahRose_60 (BD1), Snorlax_60 (BD1), TagePhighter_62 (BD1), Triste_61 (BD1), Triumph_67 (BD2), TuanPN_58 (BD1), Werner_60 (BD1), Whatever_60 (BD1), Yasdnil_60 (BD1),

Start 51:

• Found in 27 of 113 (23.9%) of genes in pham
• Manual Annotations of this start: 25 of 107
• Called 96.3% of time when present
• Phage (with cluster) where this start called: Aaronocolus_59 (BD1), BeardedLady_59 (BD1), Bovely_59 (BD1), BroPlease_63 (BD4), BryanRecycles_61 (BD1), Caliburn_58 (BD1), Eddasa_62 (BD1), EnochSoames_63 (BD1), Esperer_60 (BD1), GreenWeasel_65 (BD4), Hydra_61 (BD1), Indigo_58 (BD1), Izzy_61 (BD1), Jash_61 (BD1), Legacy_58 (BD1), Leviticus_60 (BD1), Nerdos_58 (BD1), Oliynyk_61 (BD1), Ozzie_58 (BD1), Paolo_67 (BD2), Phettuccine_59 (BD1), Rusticus_61 (BD1), SunsetPointe_58 (BD1), Unstoppable_59 (BD1), Zainub_67 (BD2), phiHau3_65 (BD4),

Start 52:
• Found in 1 of 113 (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: Verabelle_65 (BD3),

Start 53:
• Found in 32 of 113 (28.3%) of genes in pham
• Manual Annotations of this start: 12 of 107
• Called 46.9% of time when present
• Phage (with cluster) where this start called: Alsaber_62 (BD3), Amela_62 (BD3), Celery_65 (BD3), Dexers_60 (BD3), Jhitchelle_59 (BD3), Puginator_67 (BD2), Saftant_60 (BD3), Speedwell_65 (BD3), Sudan_62 (BD3), SunkenRoot_62 (BD3), Vanseggelen_66 (BD3), Verse_63 (BD3), Yosif_66 (BD3), ZamZam_62 (BD3), phiCAM_59 (BD3),

Summary by clusters:

There are 4 clusters represented in this pham: BD4, BD1, BD3, BD2,

Info for manual annotations of cluster BD1:
•Start number 49 was manually annotated 18 times for cluster BD1.
•Start number 50 was manually annotated 17 times for cluster BD1.
•Start number 51 was manually annotated 20 times for cluster BD1.

Info for manual annotations of cluster BD2:
•Start number 46 was manually annotated 2 times for cluster BD2.
•Start number 48 was manually annotated 13 times for cluster BD2.
•Start number 49 was manually annotated 14 times for cluster BD2.
•Start number 50 was manually annotated 1 time for cluster BD2.
•Start number 51 was manually annotated 2 times for cluster BD2.
•Start number 53 was manually annotated 1 time for cluster BD2.

Info for manual annotations of cluster BD3:
•Start number 48 was manually annotated 5 times for cluster BD3.
•Start number 53 was manually annotated 11 times for cluster BD3.

Info for manual annotations of cluster BD4:
•Start number 51 was manually annotated 3 times for cluster BD4.

Gene Information:

Gene: Aaronocolus_59 Start: 42586, Stop: 42305, Start Num: 51
Candidate Starts for Aaronocolus_59:
(Start: 51 @42586 has 25 MA's), (Start: 53 @42571 has 12 MA's), (54, 42565), (57, 42535), (60, 42526), (76, 42388), (77, 42385),

Gene: Alsaber_62 Start: 42249, Stop: 41989, Start Num: 53
Candidate Starts for Alsaber_62:
(37, 42363), (47, 42288), (Start: 53 @42249 has 12 MA's), (77, 42069), (81, 42045),

Gene: Alvy_67 Start: 44300, Stop: 44016, Start Num: 49
Candidate Starts for Alvy_67:
(Start: 49 @44300 has 32 MA's), (54, 44270), (59, 44234), (68, 44159),

Gene: Amela_62 Start: 43234, Stop: 42974, Start Num: 53
Candidate Starts for Amela_62:
(47, 43273), (Start: 53 @43234 has 12 MA's), (55, 43225), (77, 43054), (81, 43030), (83, 43024),

Gene: Amethyst_63 Start: 42442, Stop: 42170, Start Num: 46
Candidate Starts for Amethyst_63:
(5, 42907), (9, 42856), (10, 42850), (13, 42817), (16, 42793), (19, 42787), (Start: 46 @42442 has 2 MA's), (66, 42310), (68, 42301), (73, 42256), (78, 42238), (79, 42235), (84, 42208),

Gene: Andris_65 Start: 43276, Stop: 43028, Start Num: 48
Candidate Starts for Andris_65:
(Start: 48 @43276 has 18 MA's), (62, 43195), (66, 43144),

Gene: Animus_63 Start: 43498, Stop: 43250, Start Num: 48
Candidate Starts for Animus_63:
(29, 43666), (43, 43528), (Start: 48 @43498 has 18 MA's), (56, 43459), (64, 43378), (66, 43366), (68, 43357),

Gene: Asten_60 Start: 44843, Stop: 44562, Start Num: 50
Candidate Starts for Asten_60:
(39, 44891), (41, 44882), (Start: 50 @44843 has 18 MA's), (62, 44762), (70, 44681), (75, 44654), (76, 44645), (77, 44642), (85, 44591), (86, 44588),

Gene: Axiom_66 Start: 43697, Stop: 43389, Start Num: 48
Candidate Starts for Axiom_66:
(30, 43853), (Start: 48 @43697 has 18 MA's), (Start: 50 @43691 has 18 MA's), (59, 43625), (68, 43550), (82, 43457),

Gene: BarryBee_63 Start: 44820, Stop: 44581, Start Num: 50
Candidate Starts for BarryBee_63:
(39, 44868), (41, 44859), (Start: 50 @44820 has 18 MA's), (66, 44688),

Gene: BartholomewSD_67 Start: 43419, Stop: 43135, Start Num: 49
Candidate Starts for BartholomewSD_67:
(Start: 49 @43419 has 32 MA's), (54, 43389), (59, 43353), (68, 43278),

Gene: BeardedLady_59 Start: 42960, Stop: 42679, Start Num: 51
Candidate Starts for BeardedLady_59:

(Start: 51 @42960 has 25 MA's), (Start: 53 @42945 has 12 MA's), (54, 42939), (57, 42909), (60, 42900), (76, 42762), (77, 42759),

Gene: Bovely_59 Start: 42589, Stop: 42308, Start Num: 51
Candidate Starts for Bovely_59:
(Start: 51 @42589 has 25 MA's), (Start: 53 @42574 has 12 MA's), (54, 42568), (57, 42538), (76, 42391), (77, 42388),

Gene: Bowden_64 Start: 44219, Stop: 43971, Start Num: 48
Candidate Starts for Bowden_64:
(Start: 48 @44219 has 18 MA's), (54, 44189), (66, 44087),

Gene: Brataylor_63 Start: 44363, Stop: 44121, Start Num: 49
Candidate Starts for Brataylor_63:
(25, 44546), (34, 44480), (Start: 49 @44363 has 32 MA's), (59, 44297), (64, 44243),

Gene: BroPlease_63 Start: 42623, Stop: 42342, Start Num: 51
Candidate Starts for BroPlease_63:
(32, 42752), (45, 42647), (Start: 51 @42623 has 25 MA's), (61, 42557), (77, 42422), (83, 42392),

Gene: BryanRecycles_61 Start: 43076, Stop: 42795, Start Num: 51
Candidate Starts for BryanRecycles_61:
(Start: 51 @43076 has 25 MA's), (54, 43055), (57, 43025), (60, 43016), (76, 42878), (77, 42875),

Gene: Caelum_67 Start: 42912, Stop: 42673, Start Num: 48
Candidate Starts for Caelum_67:
(23, 43155), (37, 43008), (41, 42951), (Start: 48 @42912 has 18 MA's), (64, 42792), (66, 42780),

Gene: Caliburn_58 Start: 42690, Stop: 42409, Start Num: 51
Candidate Starts for Caliburn_58:
(Start: 51 @42690 has 25 MA's), (Start: 53 @42675 has 12 MA's), (54, 42669), (57, 42639), (76, 42492), (77, 42489),

Gene: Celery_65 Start: 42219, Stop: 41959, Start Num: 53
Candidate Starts for Celery_65:
(35, 42309), (Start: 53 @42219 has 12 MA's), (55, 42210), (77, 42039), (83, 42009),

Gene: Celeste_62 Start: 43828, Stop: 43586, Start Num: 49
Candidate Starts for Celeste_62:
(25, 44011), (34, 43945), (Start: 49 @43828 has 32 MA's), (68, 43687),

Gene: Chucky_60 Start: 44882, Stop: 44601, Start Num: 50
Candidate Starts for Chucky_60:
(39, 44930), (41, 44921), (Start: 50 @44882 has 18 MA's), (62, 44801), (70, 44720), (75, 44693), (76, 44684), (77, 44681), (85, 44630), (86, 44627),

Gene: Conan_63 Start: 42705, Stop: 42436, Start Num: 48
Candidate Starts for Conan_63:
(27, 42876), (40, 42738), (Start: 48 @42705 has 18 MA's), (54, 42675),

Gene: Danzina_62 Start: 44077, Stop: 43835, Start Num: 49
Candidate Starts for Danzina_62:
(25, 44260), (34, 44194), (Start: 49 @44077 has 32 MA's), (59, 44011), (64, 43957),

Gene: Dattran_63 Start: 44219, Stop: 43977, Start Num: 49
Candidate Starts for Dattran_63:
(25, 44402), (34, 44336), (Start: 49 @44219 has 32 MA's), (68, 44078),

Gene: Daudau_64 Start: 42829, Stop: 42545, Start Num: 48
Candidate Starts for Daudau_64:
(24, 43063), (44, 42859), (Start: 48 @42829 has 18 MA's), (56, 42790), (66, 42697), (68, 42688), (80, 42610), (84, 42586),

Gene: Dexers_60 Start: 42491, Stop: 42231, Start Num: 53
Candidate Starts for Dexers_60:
(47, 42530), (Start: 53 @42491 has 12 MA's), (63, 42401), (65, 42389), (68, 42377), (70, 42356), (77, 42311), (81, 42287), (83, 42281),

Gene: Diane_64 Start: 43528, Stop: 43250, Start Num: 46
Candidate Starts for Diane_64:
(Start: 46 @43528 has 2 MA's), (66, 43396), (73, 43342), (79, 43312), (84, 43285),

Gene: Dwayne_60 Start: 44870, Stop: 44589, Start Num: 50
Candidate Starts for Dwayne_60:
(39, 44918), (41, 44909), (Start: 50 @44870 has 18 MA's), (62, 44789), (70, 44708), (75, 44681), (76, 44672), (77, 44669), (85, 44618), (86, 44615),

Gene: ELB20_65 Start: 43636, Stop: 43394, Start Num: 49
Candidate Starts for ELB20_65:
(1, 44191), (12, 44029), (18, 43996), (Start: 49 @43636 has 32 MA's), (54, 43606), (62, 43555), (68, 43495),

Gene: Eddasa_62 Start: 43615, Stop: 43334, Start Num: 51
Candidate Starts for Eddasa_62:
(Start: 51 @43615 has 25 MA's), (54, 43594), (57, 43564), (60, 43555), (76, 43417), (77, 43414),

Gene: Ejemplo_58 Start: 44808, Stop: 44527, Start Num: 50
Candidate Starts for Ejemplo_58:
(39, 44856), (41, 44847), (Start: 50 @44808 has 18 MA's), (62, 44727), (70, 44646), (75, 44619), (76, 44610), (77, 44607), (85, 44556), (86, 44553),

Gene: ElGato_63 Start: 42576, Stop: 42307, Start Num: 48
Candidate Starts for ElGato_63:
(27, 42747), (40, 42609), (Start: 48 @42576 has 18 MA's), (54, 42546),

Gene: Emaanora_63 Start: 44793, Stop: 44512, Start Num: 50
Candidate Starts for Emaanora_63:
(39, 44841), (41, 44832), (Start: 50 @44793 has 18 MA's), (62, 44712), (70, 44631), (75, 44604), (76, 44595), (77, 44592), (85, 44541), (86, 44538),

Gene: EnochSoames_63 Start: 42872, Stop: 42591, Start Num: 51
Candidate Starts for EnochSoames_63:
(Start: 51 @42872 has 25 MA's), (Start: 53 @42857 has 12 MA's), (54, 42851), (57, 42821), (60, 42812), (76, 42674), (77, 42671),

Gene: Esperer_60 Start: 42932, Stop: 42651, Start Num: 51

Candidate Starts for Esperer_60:
(Start: 51 @42932 has 25 MA's), (Start: 53 @42917 has 12 MA's), (54, 42911), (57, 42881), (60, 42872), (76, 42734), (77, 42731),

Gene: GirlDinner_63 Start: 42999, Stop: 42751, Start Num: 48
Candidate Starts for GirlDinner_63:
(29, 43167), (43, 43029), (Start: 48 @42999 has 18 MA's), (56, 42960), (64, 42879), (66, 42867), (68, 42858),

Gene: Goby_62 Start: 44645, Stop: 44403, Start Num: 49
Candidate Starts for Goby_62:
(34, 44762), (38, 44723), (Start: 49 @44645 has 32 MA's), (64, 44525),

Gene: Godpower_62 Start: 43921, Stop: 43679, Start Num: 49
Candidate Starts for Godpower_62:
(34, 44038), (38, 43999), (Start: 49 @43921 has 32 MA's), (59, 43855), (64, 43801),

Gene: GreenWeasel_65 Start: 42628, Stop: 42347, Start Num: 51
Candidate Starts for GreenWeasel_65:
(32, 42757), (36, 42739), (45, 42652), (Start: 51 @42628 has 25 MA's), (61, 42562), (77, 42427), (83, 42397),

Gene: Haizum_63 Start: 43248, Stop: 42967, Start Num: 48
Candidate Starts for Haizum_63:
(Start: 48 @43248 has 18 MA's), (66, 43116), (67, 43110), (79, 43032),

Gene: Hank144_67 Start: 44032, Stop: 43793, Start Num: 49
Candidate Starts for Hank144_67:
(Start: 49 @44032 has 32 MA's),

Gene: Hippo_60 Start: 44856, Stop: 44575, Start Num: 50
Candidate Starts for Hippo_60:
(39, 44904), (41, 44895), (Start: 50 @44856 has 18 MA's), (62, 44775), (70, 44694), (75, 44667), (76, 44658), (77, 44655), (85, 44604), (86, 44601),

Gene: Hydra_61 Start: 43768, Stop: 43487, Start Num: 51
Candidate Starts for Hydra_61:
(Start: 51 @43768 has 25 MA's), (Start: 53 @43753 has 12 MA's), (54, 43747), (57, 43717), (60, 43708), (76, 43570), (77, 43567),

Gene: Indigo_58 Start: 42582, Stop: 42301, Start Num: 51
Candidate Starts for Indigo_58:
(Start: 51 @42582 has 25 MA's), (Start: 53 @42567 has 12 MA's), (54, 42561), (57, 42531), (60, 42522), (76, 42384), (77, 42381),

Gene: Issmi_65 Start: 43195, Stop: 42905, Start Num: 49
Candidate Starts for Issmi_65:
(30, 43351), (Start: 49 @43195 has 32 MA's), (54, 43165), (59, 43129), (68, 43054), (74, 43006),

Gene: Izzy_61 Start: 43123, Stop: 42842, Start Num: 51
Candidate Starts for Izzy_61:
(Start: 51 @43123 has 25 MA's), (54, 43102), (57, 43072), (60, 43063), (76, 42925), (77, 42922),

Gene: Janus_64 Start: 43339, Stop: 43091, Start Num: 48
Candidate Starts for Janus_64:
(29, 43507), (43, 43369), (Start: 48 @43339 has 18 MA's), (56, 43300), (64, 43219), (66, 43207), (68, 43198),

Gene: Jash_61 Start: 43076, Stop: 42795, Start Num: 51
Candidate Starts for Jash_61:
(Start: 51 @43076 has 25 MA's), (54, 43055), (57, 43025), (60, 43016), (76, 42878), (77, 42875),

Gene: Jevington_64 Start: 41849, Stop: 41562, Start Num: 49
Candidate Starts for Jevington_64:
(Start: 49 @41849 has 32 MA's), (54, 41819), (61, 41777), (68, 41708),

Gene: Jhitchelle_59 Start: 41879, Stop: 41619, Start Num: 53
Candidate Starts for Jhitchelle_59:
(33, 42026), (Start: 53 @41879 has 12 MA's), (63, 41789), (65, 41777), (70, 41744), (77, 41699), (81, 41675), (83, 41669),

Gene: Kaine_62 Start: 42410, Stop: 42141, Start Num: 48
Candidate Starts for Kaine_62:
(2, 42929), (6, 42881), (Start: 48 @42410 has 18 MA's), (54, 42380),

Gene: Katalie_60 Start: 45065, Stop: 44826, Start Num: 49
Candidate Starts for Katalie_60:
(38, 45143), (Start: 49 @45065 has 32 MA's), (66, 44933), (68, 44924),

Gene: Lannister_59 Start: 43435, Stop: 43193, Start Num: 49
Candidate Starts for Lannister_59:
(31, 43594), (38, 43513), (Start: 49 @43435 has 32 MA's), (61, 43363), (62, 43354), (66, 43303),

Gene: Legacy_58 Start: 42681, Stop: 42400, Start Num: 51
Candidate Starts for Legacy_58:
(Start: 51 @42681 has 25 MA's), (Start: 53 @42666 has 12 MA's), (54, 42660), (57, 42630), (60, 42621), (76, 42483), (77, 42480),

Gene: Leviticus_60 Start: 43119, Stop: 42838, Start Num: 51
Candidate Starts for Leviticus_60:
(Start: 51 @43119 has 25 MA's), (Start: 53 @43104 has 12 MA's), (54, 43098), (57, 43068), (60, 43059), (76, 42921), (77, 42918),

Gene: Lika_61 Start: 44474, Stop: 44232, Start Num: 49
Candidate Starts for Lika_61:
(34, 44591), (38, 44552), (Start: 49 @44474 has 32 MA's), (59, 44408), (64, 44354),

Gene: Loofah_69 Start: 44483, Stop: 44238, Start Num: 49
Candidate Starts for Loofah_69:
(3, 44990), (14, 44864), (17, 44846), (Start: 49 @44483 has 32 MA's), (61, 44411),

Gene: Lorelei_61 Start: 43835, Stop: 43593, Start Num: 49
Candidate Starts for Lorelei_61:
(Start: 49 @43835 has 32 MA's), (59, 43769), (64, 43715),

Gene: Maneekul_60 Start: 44886, Stop: 44605, Start Num: 50

Candidate Starts for Maneekul_60:
(39, 44934), (41, 44925), (Start: 50 @44886 has 18 MA's), (62, 44805), (70, 44724), (75, 44697), (76, 44688), (77, 44685), (85, 44634), (86, 44631),

Gene: Marav_66 Start: 42372, Stop: 42085, Start Num: 49
Candidate Starts for Marav_66:
(Start: 49 @42372 has 32 MA's), (54, 42342), (61, 42300), (68, 42231),

Gene: Nabi_62 Start: 44368, Stop: 44129, Start Num: 49
Candidate Starts for Nabi_62:
(25, 44551), (34, 44485), (Start: 49 @44368 has 32 MA's), (68, 44227),

Gene: Nanodon_61 Start: 43459, Stop: 43217, Start Num: 49
Candidate Starts for Nanodon_61:
(28, 43645), (34, 43576), (38, 43537), (Start: 49 @43459 has 32 MA's), (66, 43327), (72, 43282), (84, 43252),

Gene: Nerdos_58 Start: 42581, Stop: 42300, Start Num: 51
Candidate Starts for Nerdos_58:
(Start: 51 @42581 has 25 MA's), (Start: 53 @42566 has 12 MA's), (54, 42560), (57, 42530), (60, 42521), (76, 42383), (77, 42380),

Gene: Nishikigoi_64 Start: 43248, Stop: 42967, Start Num: 48
Candidate Starts for Nishikigoi_64:
(Start: 48 @43248 has 18 MA's), (66, 43116), (67, 43110), (79, 43032),

Gene: Oliynyk_61 Start: 43076, Stop: 42795, Start Num: 51
Candidate Starts for Oliynyk_61:
(Start: 51 @43076 has 25 MA's), (54, 43055), (57, 43025), (60, 43016), (76, 42878), (77, 42875),

Gene: Omar_67 Start: 41635, Stop: 41354, Start Num: 49
Candidate Starts for Omar_67:
(26, 41830), (30, 41794), (Start: 49 @41635 has 32 MA's), (61, 41563), (68, 41494),

Gene: Ozzie_58 Start: 42690, Stop: 42409, Start Num: 51
Candidate Starts for Ozzie_58:
(Start: 51 @42690 has 25 MA's), (Start: 53 @42675 has 12 MA's), (54, 42669), (57, 42639), (60, 42630), (76, 42492), (77, 42489),

Gene: OzzyJ_62 Start: 44783, Stop: 44502, Start Num: 50
Candidate Starts for OzzyJ_62:
(39, 44831), (41, 44822), (Start: 50 @44783 has 18 MA's), (62, 44702), (69, 44633), (70, 44621), (75, 44594), (76, 44585), (77, 44582), (80, 44564), (85, 44531), (86, 44528),

Gene: Pablito_64 Start: 42647, Stop: 42402, Start Num: 49
Candidate Starts for Pablito_64:
(Start: 49 @42647 has 32 MA's), (54, 42617), (71, 42473),

Gene: Paedore_67 Start: 44040, Stop: 43795, Start Num: 49
Candidate Starts for Paedore_67:
(3, 44538), (14, 44421), (17, 44403), (Start: 49 @44040 has 32 MA's), (61, 43968),

Gene: Paolo_67 Start: 43540, Stop: 43253, Start Num: 51

Candidate Starts for Paolo_67:
(Start: 51 @43540 has 25 MA's), (Start: 53 @43525 has 12 MA's), (54, 43519), (57, 43489), (60, 43480), (77, 43333),

Gene: Pavo_63 Start: 42461, Stop: 42192, Start Num: 48
Candidate Starts for Pavo_63:
(42, 42497), (Start: 48 @42461 has 18 MA's), (54, 42431),

Gene: Phettuccine_59 Start: 42582, Stop: 42301, Start Num: 51
Candidate Starts for Phettuccine_59:
(Start: 51 @42582 has 25 MA's), (Start: 53 @42567 has 12 MA's), (54, 42561), (57, 42531), (60, 42522), (76, 42384), (77, 42381),

Gene: Provolone_63 Start: 42788, Stop: 42519, Start Num: 48
Candidate Starts for Provolone_63:
(27, 42959), (40, 42821), (Start: 48 @42788 has 18 MA's), (54, 42758),

Gene: Puginator_67 Start: 43574, Stop: 43302, Start Num: 53
Candidate Starts for Puginator_67:
(Start: 51 @43589 has 25 MA's), (Start: 53 @43574 has 12 MA's), (54, 43568), (57, 43538), (60, 43529), (77, 43382),

Gene: R4_66 Start: 43796, Stop: 43554, Start Num: 49
Candidate Starts for R4_66:
(1, 44351), (12, 44189), (18, 44156), (Start: 49 @43796 has 32 MA's), (54, 43766), (62, 43715), (68, 43655),

Gene: Rana_62 Start: 44257, Stop: 44015, Start Num: 49
Candidate Starts for Rana_62:
(Start: 49 @44257 has 32 MA's), (59, 44191), (64, 44137),

Gene: RedBear_61 Start: 45065, Stop: 44826, Start Num: 49
Candidate Starts for RedBear_61:
(38, 45143), (Start: 49 @45065 has 32 MA's), (66, 44933), (68, 44924),

Gene: Rusticus_61 Start: 43076, Stop: 42795, Start Num: 51
Candidate Starts for Rusticus_61:
(Start: 51 @43076 has 25 MA's), (54, 43055), (57, 43025), (60, 43016), (76, 42878), (77, 42875),

Gene: Saftant_60 Start: 42366, Stop: 42106, Start Num: 53
Candidate Starts for Saftant_60:
(35, 42477), (Start: 53 @42366 has 12 MA's), (55, 42357), (63, 42276), (65, 42264), (70, 42231), (77, 42186), (81, 42162), (83, 42156),

Gene: SarahRose_60 Start: 44855, Stop: 44574, Start Num: 50
Candidate Starts for SarahRose_60:
(39, 44903), (41, 44894), (Start: 50 @44855 has 18 MA's), (62, 44774), (70, 44693), (75, 44666), (76, 44657), (77, 44654), (85, 44603), (86, 44600),

Gene: Snorlax_60 Start: 44880, Stop: 44599, Start Num: 50
Candidate Starts for Snorlax_60:
(39, 44928), (41, 44919), (Start: 50 @44880 has 18 MA's), (62, 44799), (70, 44718), (75, 44691), (76, 44682), (77, 44679), (85, 44628), (86, 44625),

Gene: South40_60 Start: 45065, Stop: 44826, Start Num: 49
Candidate Starts for South40_60:
(38, 45143), (Start: 49 @45065 has 32 MA's), (66, 44933), (68, 44924),

Gene: Speedwell_65 Start: 43422, Stop: 43162, Start Num: 53
Candidate Starts for Speedwell_65:
(21, 43668), (Start: 53 @43422 has 12 MA's), (77, 43242), (81, 43218), (83, 43212),

Gene: SqueakyClean_64 Start: 43517, Stop: 43269, Start Num: 48
Candidate Starts for SqueakyClean_64:
(29, 43685), (43, 43547), (Start: 48 @43517 has 18 MA's), (56, 43478), (64, 43397), (66, 43385), (68, 43376),

Gene: Sudan_62 Start: 42256, Stop: 41996, Start Num: 53
Candidate Starts for Sudan_62:
(37, 42370), (47, 42295), (Start: 53 @42256 has 12 MA's), (77, 42076), (81, 42052),

Gene: Sujidade_62 Start: 44709, Stop: 44467, Start Num: 49
Candidate Starts for Sujidade_62:
(34, 44826), (38, 44787), (Start: 49 @44709 has 32 MA's), (59, 44643), (64, 44589), (67, 44571),

Gene: SunkenRoot_62 Start: 42961, Stop: 42701, Start Num: 53
Candidate Starts for SunkenRoot_62:
(37, 43075), (47, 43000), (Start: 53 @42961 has 12 MA's), (55, 42952), (77, 42781), (81, 42757), (83, 42751),

Gene: SunsetPointe_58 Start: 42697, Stop: 42416, Start Num: 51
Candidate Starts for SunsetPointe_58:
(Start: 51 @42697 has 25 MA's), (Start: 53 @42682 has 12 MA's), (54, 42676), (57, 42646), (60, 42637), (76, 42499), (77, 42496),

Gene: Superstar_70 Start: 43430, Stop: 43185, Start Num: 48
Candidate Starts for Superstar_70:
(Start: 48 @43430 has 18 MA's), (64, 43310), (66, 43298),

Gene: TagePhighter_62 Start: 44856, Stop: 44575, Start Num: 50
Candidate Starts for TagePhighter_62:
(39, 44904), (41, 44895), (Start: 50 @44856 has 18 MA's), (62, 44775), (70, 44694), (75, 44667), (76, 44658), (77, 44655), (85, 44604), (86, 44601),

Gene: Tefunt_63 Start: 43162, Stop: 42881, Start Num: 48
Candidate Starts for Tefunt_63:
(Start: 48 @43162 has 18 MA's), (66, 43030), (67, 43024), (79, 42946),

Gene: Thestral_65 Start: 43960, Stop: 43676, Start Num: 49
Candidate Starts for Thestral_65:
(30, 44119), (Start: 49 @43960 has 32 MA's), (54, 43930), (59, 43894), (68, 43819),

Gene: TinaBelcher_63 Start: 43827, Stop: 43543, Start Num: 49
Candidate Starts for TinaBelcher_63:
(30, 43986), (Start: 49 @43827 has 32 MA's), (54, 43797), (59, 43761), (68, 43686),

Gene: Toma_62 Start: 44648, Stop: 44406, Start Num: 49
Candidate Starts for Toma_62:
(34, 44765), (38, 44726), (Start: 49 @44648 has 32 MA's), (64, 44528),

Gene: Triste_61 Start: 44855, Stop: 44574, Start Num: 50
Candidate Starts for Triste_61:
(39, 44903), (41, 44894), (Start: 50 @44855 has 18 MA's), (62, 44774), (70, 44693), (75, 44666), (76, 44657), (77, 44654), (85, 44603), (86, 44600),

Gene: Triumph_67 Start: 43755, Stop: 43465, Start Num: 50
Candidate Starts for Triumph_67:
(Start: 48 @43761 has 18 MA's), (Start: 50 @43755 has 18 MA's), (57, 43695), (59, 43689), (67, 43617), (68, 43614), (74, 43566),

Gene: TrvxScott_63 Start: 44213, Stop: 43965, Start Num: 48
Candidate Starts for TrvxScott_63:
(Start: 48 @44213 has 18 MA's), (54, 44183), (66, 44081),

Gene: TuanPN_58 Start: 44808, Stop: 44527, Start Num: 50
Candidate Starts for TuanPN_58:
(39, 44856), (41, 44847), (Start: 50 @44808 has 18 MA's), (62, 44727), (70, 44646), (75, 44619), (76, 44610), (77, 44607), (85, 44556), (86, 44553),

Gene: Unstoppable_59 Start: 42580, Stop: 42299, Start Num: 51
Candidate Starts for Unstoppable_59:
(Start: 51 @42580 has 25 MA's), (Start: 53 @42565 has 12 MA's), (54, 42559), (57, 42529), (60, 42520), (76, 42382), (77, 42379),

Gene: Vanseggelen_66 Start: 42112, Stop: 41849, Start Num: 53
Candidate Starts for Vanseggelen_66:
(20, 42472), (33, 42259), (Start: 53 @42112 has 12 MA's), (58, 42076), (77, 41929),

Gene: Verabelle_65 Start: 41980, Stop: 41723, Start Num: 52
Candidate Starts for Verabelle_65:
(52, 41980), (77, 41803), (81, 41779), (83, 41773),

Gene: Verse_63 Start: 43225, Stop: 42965, Start Num: 53
Candidate Starts for Verse_63:
(47, 43264), (Start: 53 @43225 has 12 MA's), (55, 43216), (77, 43045), (81, 43021), (83, 43015),

Gene: Werner_60 Start: 44853, Stop: 44572, Start Num: 50
Candidate Starts for Werner_60:
(39, 44901), (41, 44892), (Start: 50 @44853 has 18 MA's), (62, 44772), (70, 44691), (75, 44664), (76, 44655), (77, 44652), (85, 44601), (86, 44598),

Gene: Whatever_60 Start: 44879, Stop: 44598, Start Num: 50
Candidate Starts for Whatever_60:
(39, 44927), (41, 44918), (Start: 50 @44879 has 18 MA's), (62, 44798), (70, 44717), (75, 44690), (76, 44681), (77, 44678), (85, 44627), (86, 44624),

Gene: Yasdnil_60 Start: 44905, Stop: 44624, Start Num: 50
Candidate Starts for Yasdnil_60:

(39, 44953), (41, 44944), (Start: 50 @44905 has 18 MA's), (62, 44824), (70, 44743), (75, 44716), (76, 44707), (77, 44704), (85, 44653), (86, 44650),

Gene: Yosif_66 Start: 43401, Stop: 43141, Start Num: 53
Candidate Starts for Yosif_66:
(37, 43479), (Start: 53 @43401 has 12 MA's), (77, 43221), (81, 43197), (83, 43191),

Gene: Zainub_67 Start: 43515, Stop: 43228, Start Num: 51
Candidate Starts for Zainub_67:
(Start: 51 @43515 has 25 MA's), (Start: 53 @43500 has 12 MA's), (54, 43494), (60, 43455), (77, 43308),

Gene: ZamZam_62 Start: 42681, Stop: 42421, Start Num: 53
Candidate Starts for ZamZam_62:
(47, 42720), (Start: 53 @42681 has 12 MA's), (55, 42672), (63, 42591), (65, 42579), (70, 42546), (77, 42501), (81, 42477), (83, 42471),

Gene: Zemlya_62 Start: 44382, Stop: 44140, Start Num: 49
Candidate Starts for Zemlya_62:
(25, 44565), (34, 44499), (Start: 49 @44382 has 32 MA's), (59, 44316), (64, 44262),

Gene: phiCAM_59 Start: 44024, Stop: 43770, Start Num: 53
Candidate Starts for phiCAM_59:
(4, 44528), (7, 44498), (8, 44468), (11, 44435), (15, 44405), (22, 44270), (23, 44267), (Start: 53 @44024 has 12 MA's), (55, 44015), (77, 43850), (81, 43826), (83, 43820),

Gene: phiHau3_65 Start: 43045, Stop: 42764, Start Num: 51
Candidate Starts for phiHau3_65:
(45, 43069), (Start: 51 @43045 has 25 MA's), (61, 42979), (77, 42844), (83, 42814),