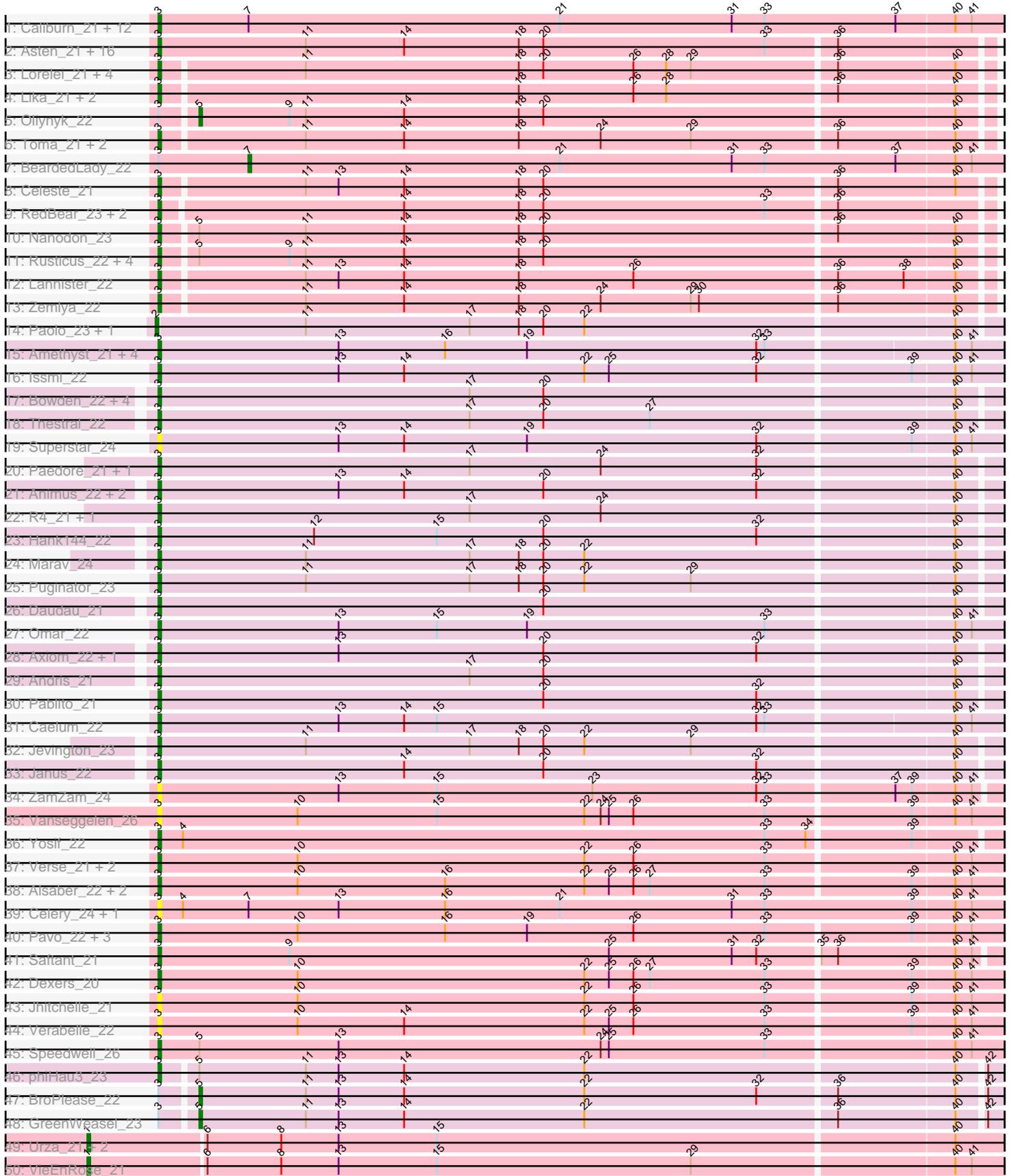Pham 290986

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 290986 Report

This analysis was run 03/28/26 on database version 641.

Pham number 290986 has 116 members, 9 are drafts.

Phages represented in each track:
• Track 1 : Caliburn_21, Legacy_21, Nerdos_21, Phettuccine_21, Leviticus_21, Unstoppable_21, SunsetPointe_21, Aaronocolus_21, Hydra_23, Indigo_21, Bovely_21, Ozzie_21, Esperer_21
• Track 2 : Asten_21, TuanPN_21, Snorlax_21, Yasdnil_21, Maneekul_21, Hippo_21, Ejemplo_21, Werner_21, Dwayne_21, SarahRose_21, Chucky_21, BarryBee_23, OzzyJ_22, TagePhighter_22, Whatever_21, Triste_21, Emaanora_23
• Track 3 : Lorelei_21, Danzina_22, Brataylor_22, Nabi_21, Rana_21
• Track 4 : Lika_21, Sujidade_22, Godpower_22
• Track 5 : Oliynyk_22
• Track 6 : Toma_21, Dattran_22, Goby_21
• Track 7 : BeardedLady_22
• Track 8 : Celeste_21
• Track 9 : RedBear_23, South40_22, Katalie_22
• Track 10 : Nanodon_23
• Track 11 : Rusticus_22, Izzy_22, Jash_22, BryanRecycles_22, Eddasa_22
• Track 12 : Lannister_22
• Track 13 : Zemlya_22
• Track 14 : Paolo_23, Zainub_23
• Track 15 : Amethyst_21, Diane_21, Haizum_21, Nishikigoi_21, Tefunt_21
• Track 16 : Issmi_22
• Track 17 : Bowden_22, TrvxScott_20, BartholomewSD_23, Alvy_23, TinaBelcher_21
• Track 18 : Thestral_22
• Track 19 : Superstar_24
• Track 20 : Paedore_21, Loofah_22
• Track 21 : Animus_22, SqueakyClean_22, GirlDinner_21
• Track 22 : R4_21, ELB20_20
• Track 23 : Hank144_22
• Track 24 : Marav_24
• Track 25 : Puginator_23
• Track 26 : Daudau_21
• Track 27 : Omar_22
• Track 28 : Axiom_22, Triumph_23
• Track 29 : Andris_21
• Track 30 : Pablito_21
• Track 31 : Caelum_22
• Track 32 : Jevington_23

- Track 33 : Janus_22
- Track 34 : ZamZam_24
- Track 35 : Vanseggelen_26
- Track 36 : Yosif_22
- Track 37 : Verse_21, Amela_21, SunkenRoot_23
- Track 38 : Alsaber_22, Sudan_22, Kaine_21
- Track 39 : Celery_24, phiCAM_22
- Track 40 : Pavo_22, ElGato_22, Conan_22, Provolone_22
- Track 41 : Saftant_21
- Track 42 : Dexers_20
- Track 43 : Jhitchelle_21
- Track 44 : Verabelle_22
- Track 45 : Speedwell_26
- Track 46 : phiHau3_23
- Track 47 : BroPlease_22
- Track 48 : GreenWeasel_23
- Track 49 : Urza_21, Celia_21, Itza_21
- Track 50 : VieEnRose_21

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

The start number called the most often in the published annotations is 3, it was called in 97 of the 107 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
- Aaronocolus_21, Alsaber_22, Alvy_23, Amela_21, Amethyst_21, Andris_21, Animus_22, Asten_21, Axiom_22, BarryBee_23, BartholomewSD_23, Bovely_21, Bowden_22, Brataylor_22, BryanRecycles_22, Caelum_22, Caliburn_21, Celery_24, Celeste_21, Chucky_21, Conan_22, Danzina_22, Dattran_22, Daudau_21, Dexers_20, Diane_21, Dwayne_21, ELB20_20, Eddasa_22, Ejemplo_21, ElGato_22, Emaanora_23, Esperer_21, GirlDinner_21, Goby_21, Godpower_22, Haizum_21, Hank144_22, Hippo_21, Hydra_23, Indigo_21, Issmi_22, Izzy_22, Janus_22, Jash_22, Jevington_23, Jhitchelle_21, Kaine_21, Katalie_22, Lannister_22, Legacy_21, Leviticus_21, Lika_21, Loofah_22, Lorelei_21, Maneekul_21, Marav_24, Nabi_21, Nanodon_23, Nerdos_21, Nishikigoi_21, Omar_22, Ozzie_21, OzzyJ_22, Pablito_21, Paedore_21, Pavo_22, Phettuccine_21, Provolone_22, Puginator_23, R4_21, Rana_21, RedBear_23, Rusticus_22, Saftant_21, SarahRose_21, Snorlax_21, South40_22, Speedwell_26, SqueakyClean_22, Sudan_22, Sujidade_22, SunkenRoot_23, SunsetPointe_21, Superstar_24, TagePhighter_22, Tefunt_21, Thestral_22, TinaBelcher_21, Toma_21, Triste_21, Triumph_23, TrvxScott_20, TuanPN_21, Unstoppable_21, Vanseggelen_26, Verabelle_22, Verse_21, Werner_21, Whatever_21, Yasdnil_21, Yosif_22, ZamZam_24, Zemlya_22, phiCAM_22, phiHau3_23,

Genes that have the "Most Annotated" start but do not call it:
- BeardedLady_22, BroPlease_22, GreenWeasel_23, Oliynyk_22,

Genes that do not have the "Most Annotated" start:
- Celia_21, Itza_21, Paolo_23, Urza_21, VieEnRose_21, Zainub_23,

Summary by start number:

Start 1:
• Found in 4 of 116 (3.4%) of genes in pham
• Manual Annotations of this start: 4 of 107
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Celia_21 (BD6), Itza_21 (BD6), Urza_21 (BD6), VieEnRose_21 (BD6),

Start 2:
• Found in 2 of 116 (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: Paolo_23 (BD2), Zainub_23 (BD2),

Start 3:
• Found in 110 of 116 (94.8%) of genes in pham
• Manual Annotations of this start: 97 of 107
• Called 96.4% of time when present
• Phage (with cluster) where this start called: Aaronocolus_21 (BD1), Alsaber_22 (BD3), Alvy_23 (BD2), Amela_21 (BD3), Amethyst_21 (BD2), Andris_21 (BD2), Animus_22 (BD2), Asten_21 (BD1), Axiom_22 (BD2), BarryBee_23 (BD1), BartholomewSD_23 (BD2), Bovely_21 (BD1), Bowden_22 (BD2), Brataylor_22 (BD1), BryanRecycles_22 (BD1), Caelum_22 (BD2), Caliburn_21 (BD1), Celery_24 (BD3), Celeste_21 (BD1), Chucky_21 (BD1), Conan_22 (BD3), Danzina_22 (BD1), Dattran_22 (BD1), Daudau_21 (BD2), Dexers_20 (BD3), Diane_21 (BD2), Dwayne_21 (BD1), ELB20_20 (BD2), Eddasa_22 (BD1), Ejemplo_21 (BD1), ElGato_22 (BD3), Emaanora_23 (BD1), Esperer_21 (BD1), GirlDinner_21 (BD2), Goby_21 (BD1), Godpower_22 (BD1), Haizum_21 (BD2), Hank144_22 (BD2), Hippo_21 (BD1), Hydra_23 (BD1), Indigo_21 (BD1), Issmi_22 (BD2), Izzy_22 (BD1), Janus_22 (BD2), Jash_22 (BD1), Jevington_23 (BD2), Jhitchelle_21 (BD3), Kaine_21 (BD3), Katalie_22 (BD1), Lannister_22 (BD1), Legacy_21 (BD1), Leviticus_21 (BD1), Lika_21 (BD1), Loofah_22 (BD2), Lorelei_21 (BD1), Maneekul_21 (BD1), Marav_24 (BD2), Nabi_21 (BD1), Nanodon_23 (BD1), Nerdos_21 (BD1), Nishikigoi_21 (BD2), Omar_22 (BD2), Ozzie_21 (BD1), OzzyJ_22 (BD1), Pablito_21 (BD2), Paedore_21 (BD2), Pavo_22 (BD3), Phettuccine_21 (BD1), Provolone_22 (BD3), Puginator_23 (BD2), R4_21 (BD2), Rana_21 (BD1), RedBear_23 (BD1), Rusticus_22 (BD1), Saftant_21 (BD3), SarahRose_21 (BD1), Snorlax_21 (BD1), South40_22 (BD1), Speedwell_26 (BD3), SqueakyClean_22 (BD2), Sudan_22 (BD3), Sujidade_22 (BD1), SunkenRoot_23 (BD3), SunsetPointe_21 (BD1), Superstar_24 (BD2), TagePhighter_22 (BD1), Tefunt_21 (BD2), Thestral_22 (BD2), TinaBelcher_21 (BD2), Toma_21 (BD1), Triste_21 (BD1), Triumph_23 (BD2), TrvxScott_20 (BD2), TuanPN_21 (BD1), Unstoppable_21 (BD1), Vanseggelen_26 (BD3), Verabelle_22 (BD3), Verse_21 (BD3), Werner_21 (BD1), Whatever_21 (BD1), Yasdnil_21 (BD1), Yosif_22 (BD3), ZamZam_24 (BD3), Zemlya_22 (BD1), phiCAM_22 (BD3), phiHau3_23 (BD4),

Start 5:
• Found in 11 of 116 (9.5%) of genes in pham
• Manual Annotations of this start: 3 of 107
• Called 27.3% of time when present
• Phage (with cluster) where this start called: BroPlease_22 (BD4), GreenWeasel_23 (BD4), Oliynyk_22 (BD1),

Start 7:
• Found in 16 of 116 (13.8%) of genes in pham
• Manual Annotations of this start: 1 of 107
• Called 6.2% of time when present
• Phage (with cluster) where this start called: BeardedLady_22 (BD1),

Summary by clusters:

There are 5 clusters represented in this pham: BD4, BD6, BD1, BD3, BD2,

Info for manual annotations of cluster BD1:
•Start number 3 was manually annotated 53 times for cluster BD1.
•Start number 5 was manually annotated 1 time for cluster BD1.
•Start number 7 was manually annotated 1 time for cluster BD1.

Info for manual annotations of cluster BD2:
•Start number 2 was manually annotated 2 times for cluster BD2.
•Start number 3 was manually annotated 31 times for cluster BD2.

Info for manual annotations of cluster BD3:
•Start number 3 was manually annotated 12 times for cluster BD3.

Info for manual annotations of cluster BD4:
•Start number 3 was manually annotated 1 time for cluster BD4.
•Start number 5 was manually annotated 2 times for cluster BD4.

Info for manual annotations of cluster BD6:
•Start number 1 was manually annotated 4 times for cluster BD6.

Gene Information:
Gene: Aaronocolus_21 Start: 17072, Stop: 17380, Start Num: 3
Candidate Starts for Aaronocolus_21:
(Start: 3 @17072 has 97 MA's), (Start: 7 @17105 has 1 MA's), (21, 17219), (31, 17282), (33, 17294), (37, 17342), (40, 17363), (41, 17369),

Gene: Alsaber_22 Start: 17759, Stop: 18064, Start Num: 3
Candidate Starts for Alsaber_22:
(Start: 3 @17759 has 97 MA's), (10, 17810), (16, 17864), (22, 17915), (25, 17924), (26, 17933), (27, 17939), (33, 17981), (39, 18032), (40, 18047), (41, 18053),

Gene: Alvy_23 Start: 17073, Stop: 17375, Start Num: 3
Candidate Starts for Alvy_23:
(Start: 3 @17073 has 97 MA's), (17, 17187), (20, 17214), (40, 17361),

Gene: Amela_21 Start: 18052, Stop: 18357, Start Num: 3
Candidate Starts for Amela_21:
(Start: 3 @18052 has 97 MA's), (10, 18103), (22, 18208), (26, 18226), (33, 18274), (40, 18340), (41, 18346),

Gene: Amethyst_21 Start: 17528, Stop: 17833, Start Num: 3
Candidate Starts for Amethyst_21:
(Start: 3 @17528 has 97 MA's), (13, 17594), (16, 17633), (19, 17663), (32, 17747), (33, 17750), (40, 17816), (41, 17822),

Gene: Andris_21 Start: 16778, Stop: 17080, Start Num: 3
Candidate Starts for Andris_21:
(Start: 3 @16778 has 97 MA's), (17, 16892), (20, 16919), (40, 17066),

Gene: Animus_22 Start: 17114, Stop: 17416, Start Num: 3
Candidate Starts for Animus_22:
(Start: 3 @17114 has 97 MA's), (13, 17180), (14, 17204), (20, 17255), (32, 17333), (40, 17402),

Gene: Asten_21 Start: 17035, Stop: 17334, Start Num: 3
Candidate Starts for Asten_21:
(Start: 3 @17035 has 97 MA's), (11, 17089), (14, 17125), (18, 17167), (20, 17176), (33, 17257), (36, 17281),

Gene: Axiom_22 Start: 16927, Stop: 17229, Start Num: 3
Candidate Starts for Axiom_22:
(Start: 3 @16927 has 97 MA's), (13, 16993), (20, 17068), (32, 17146), (40, 17215),

Gene: BarryBee_23 Start: 17045, Stop: 17344, Start Num: 3
Candidate Starts for BarryBee_23:
(Start: 3 @17045 has 97 MA's), (11, 17099), (14, 17135), (18, 17177), (20, 17186), (33, 17267), (36, 17291),

Gene: BartholomewSD_23 Start: 17073, Stop: 17375, Start Num: 3
Candidate Starts for BartholomewSD_23:
(Start: 3 @17073 has 97 MA's), (17, 17187), (20, 17214), (40, 17361),

Gene: BeardedLady_22 Start: 17352, Stop: 17627, Start Num: 7
Candidate Starts for BeardedLady_22:
(Start: 3 @17319 has 97 MA's), (Start: 7 @17352 has 1 MA's), (21, 17466), (31, 17529), (33, 17541), (37, 17589), (40, 17610), (41, 17616),

Gene: Bovely_21 Start: 17078, Stop: 17386, Start Num: 3
Candidate Starts for Bovely_21:
(Start: 3 @17078 has 97 MA's), (Start: 7 @17111 has 1 MA's), (21, 17225), (31, 17288), (33, 17300), (37, 17348), (40, 17369), (41, 17375),

Gene: Bowden_22 Start: 17005, Stop: 17307, Start Num: 3
Candidate Starts for Bowden_22:
(Start: 3 @17005 has 97 MA's), (17, 17119), (20, 17146), (40, 17293),

Gene: Brataylor_22 Start: 17062, Stop: 17358, Start Num: 3
Candidate Starts for Brataylor_22:
(Start: 3 @17062 has 97 MA's), (11, 17113), (18, 17191), (20, 17200), (26, 17233), (28, 17245), (29, 17254), (36, 17305), (40, 17347),

Gene: BroPlease_22 Start: 17764, Stop: 18051, Start Num: 5
Candidate Starts for BroPlease_22:

(Start: 3 @17752 has 97 MA's), (Start: 5 @17764 has 3 MA's), (11, 17803), (13, 17815), (14, 17839), (22, 17905), (32, 17968), (36, 17995), (40, 18037), (42, 18046),

Gene: BryanRecycles_22 Start: 17223, Stop: 17519, Start Num: 3
Candidate Starts for BryanRecycles_22:
(Start: 3 @17223 has 97 MA's), (Start: 5 @17235 has 3 MA's), (9, 17268), (11, 17274), (14, 17310), (18, 17352), (20, 17361), (40, 17508),

Gene: Caelum_22 Start: 17555, Stop: 17860, Start Num: 3
Candidate Starts for Caelum_22:
(Start: 3 @17555 has 97 MA's), (13, 17621), (14, 17645), (15, 17657), (32, 17774), (33, 17777), (40, 17843), (41, 17849),

Gene: Caliburn_21 Start: 17052, Stop: 17360, Start Num: 3
Candidate Starts for Caliburn_21:
(Start: 3 @17052 has 97 MA's), (Start: 7 @17085 has 1 MA's), (21, 17199), (31, 17262), (33, 17274), (37, 17322), (40, 17343), (41, 17349),

Gene: Celery_24 Start: 17710, Stop: 18018, Start Num: 3
Candidate Starts for Celery_24:
(Start: 3 @17710 has 97 MA's), (4, 17719), (Start: 7 @17743 has 1 MA's), (13, 17776), (16, 17815), (21, 17857), (31, 17920), (33, 17932), (39, 17986), (40, 18001), (41, 18007),

Gene: Celeste_21 Start: 17054, Stop: 17350, Start Num: 3
Candidate Starts for Celeste_21:
(Start: 3 @17054 has 97 MA's), (11, 17105), (13, 17117), (14, 17141), (18, 17183), (20, 17192), (36, 17297), (40, 17339),

Gene: Celia_21 Start: 17498, Stop: 17827, Start Num: 1
Candidate Starts for Celia_21:
(Start: 1 @17498 has 4 MA's), (6, 17540), (8, 17567), (13, 17588), (15, 17624), (40, 17810),

Gene: Chucky_21 Start: 17046, Stop: 17345, Start Num: 3
Candidate Starts for Chucky_21:
(Start: 3 @17046 has 97 MA's), (11, 17100), (14, 17136), (18, 17178), (20, 17187), (33, 17268), (36, 17292),

Gene: Conan_22 Start: 17481, Stop: 17786, Start Num: 3
Candidate Starts for Conan_22:
(Start: 3 @17481 has 97 MA's), (10, 17532), (16, 17586), (19, 17616), (26, 17655), (33, 17703), (39, 17754), (40, 17769), (41, 17775),

Gene: Danzina_22 Start: 17264, Stop: 17560, Start Num: 3
Candidate Starts for Danzina_22:
(Start: 3 @17264 has 97 MA's), (11, 17315), (18, 17393), (20, 17402), (26, 17435), (28, 17447), (29, 17456), (36, 17507), (40, 17549),

Gene: Dattran_22 Start: 17053, Stop: 17349, Start Num: 3
Candidate Starts for Dattran_22:
(Start: 3 @17053 has 97 MA's), (11, 17104), (14, 17140), (18, 17182), (24, 17212), (29, 17245), (36, 17296), (40, 17338),

Gene: Daudau_21 Start: 16985, Stop: 17287, Start Num: 3

Candidate Starts for Daudau_21:
(Start: 3 @16985 has 97 MA's), (20, 17126), (40, 17273),

Gene: Dexers_20 Start: 17462, Stop: 17767, Start Num: 3
Candidate Starts for Dexers_20:
(Start: 3 @17462 has 97 MA's), (10, 17513), (22, 17618), (25, 17627), (26, 17636), (27, 17642), (33, 17684), (39, 17735), (40, 17750), (41, 17756),

Gene: Diane_21 Start: 17521, Stop: 17826, Start Num: 3
Candidate Starts for Diane_21:
(Start: 3 @17521 has 97 MA's), (13, 17587), (16, 17626), (19, 17656), (32, 17740), (33, 17743), (40, 17809), (41, 17815),

Gene: Dwayne_21 Start: 17042, Stop: 17341, Start Num: 3
Candidate Starts for Dwayne_21:
(Start: 3 @17042 has 97 MA's), (11, 17096), (14, 17132), (18, 17174), (20, 17183), (33, 17264), (36, 17288),

Gene: ELB20_20 Start: 17109, Stop: 17411, Start Num: 3
Candidate Starts for ELB20_20:
(Start: 3 @17109 has 97 MA's), (17, 17223), (24, 17271), (40, 17397),

Gene: Eddasa_22 Start: 17223, Stop: 17519, Start Num: 3
Candidate Starts for Eddasa_22:
(Start: 3 @17223 has 97 MA's), (Start: 5 @17235 has 3 MA's), (9, 17268), (11, 17274), (14, 17310), (18, 17352), (20, 17361), (40, 17508),

Gene: Ejemplo_21 Start: 17042, Stop: 17341, Start Num: 3
Candidate Starts for Ejemplo_21:
(Start: 3 @17042 has 97 MA's), (11, 17096), (14, 17132), (18, 17174), (20, 17183), (33, 17264), (36, 17288),

Gene: ElGato_22 Start: 17484, Stop: 17789, Start Num: 3
Candidate Starts for ElGato_22:
(Start: 3 @17484 has 97 MA's), (10, 17535), (16, 17589), (19, 17619), (26, 17658), (33, 17706), (39, 17757), (40, 17772), (41, 17778),

Gene: Emaanora_23 Start: 17045, Stop: 17344, Start Num: 3
Candidate Starts for Emaanora_23:
(Start: 3 @17045 has 97 MA's), (11, 17099), (14, 17135), (18, 17177), (20, 17186), (33, 17267), (36, 17291),

Gene: Esperer_21 Start: 17072, Stop: 17380, Start Num: 3
Candidate Starts for Esperer_21:
(Start: 3 @17072 has 97 MA's), (Start: 7 @17105 has 1 MA's), (21, 17219), (31, 17282), (33, 17294), (37, 17342), (40, 17363), (41, 17369),

Gene: GirlDinner_21 Start: 16776, Stop: 17078, Start Num: 3
Candidate Starts for GirlDinner_21:
(Start: 3 @16776 has 97 MA's), (13, 16842), (14, 16866), (20, 16917), (32, 16995), (40, 17064),

Gene: Goby_21 Start: 17059, Stop: 17355, Start Num: 3
Candidate Starts for Goby_21:

(Start: 3 @17059 has 97 MA's), (11, 17110), (14, 17146), (18, 17188), (24, 17218), (29, 17251), (36, 17302), (40, 17344),

Gene: Godpower_22 Start: 17070, Stop: 17366, Start Num: 3
Candidate Starts for Godpower_22:
(Start: 3 @17070 has 97 MA's), (18, 17199), (26, 17241), (28, 17253), (36, 17313), (40, 17355),

Gene: GreenWeasel_23 Start: 17773, Stop: 18060, Start Num: 5
Candidate Starts for GreenWeasel_23:
(Start: 3 @17761 has 97 MA's), (Start: 5 @17773 has 3 MA's), (11, 17812), (13, 17824), (14, 17848), (22, 17914), (36, 18004), (40, 18046), (42, 18055),

Gene: Haizum_21 Start: 17553, Stop: 17858, Start Num: 3
Candidate Starts for Haizum_21:
(Start: 3 @17553 has 97 MA's), (13, 17619), (16, 17658), (19, 17688), (32, 17772), (33, 17775), (40, 17841), (41, 17847),

Gene: Hank144_22 Start: 17171, Stop: 17473, Start Num: 3
Candidate Starts for Hank144_22:
(Start: 3 @17171 has 97 MA's), (12, 17228), (15, 17273), (20, 17312), (32, 17390), (40, 17459),

Gene: Hippo_21 Start: 17045, Stop: 17344, Start Num: 3
Candidate Starts for Hippo_21:
(Start: 3 @17045 has 97 MA's), (11, 17099), (14, 17135), (18, 17177), (20, 17186), (33, 17267), (36, 17291),

Gene: Hydra_23 Start: 17600, Stop: 17908, Start Num: 3
Candidate Starts for Hydra_23:
(Start: 3 @17600 has 97 MA's), (Start: 7 @17633 has 1 MA's), (21, 17747), (31, 17810), (33, 17822), (37, 17870), (40, 17891), (41, 17897),

Gene: Indigo_21 Start: 17072, Stop: 17380, Start Num: 3
Candidate Starts for Indigo_21:
(Start: 3 @17072 has 97 MA's), (Start: 7 @17105 has 1 MA's), (21, 17219), (31, 17282), (33, 17294), (37, 17342), (40, 17363), (41, 17369),

Gene: Issmi_22 Start: 17987, Stop: 18292, Start Num: 3
Candidate Starts for Issmi_22:
(Start: 3 @17987 has 97 MA's), (13, 18053), (14, 18077), (22, 18143), (25, 18152), (32, 18206), (39, 18260), (40, 18275), (41, 18281),

Gene: Itza_21 Start: 17421, Stop: 17750, Start Num: 1
Candidate Starts for Itza_21:
(Start: 1 @17421 has 4 MA's), (6, 17463), (8, 17490), (13, 17511), (15, 17547), (40, 17733),

Gene: Izzy_22 Start: 17270, Stop: 17566, Start Num: 3
Candidate Starts for Izzy_22:
(Start: 3 @17270 has 97 MA's), (Start: 5 @17282 has 3 MA's), (9, 17315), (11, 17321), (14, 17357), (18, 17399), (20, 17408), (40, 17555),

Gene: Janus_22 Start: 17114, Stop: 17416, Start Num: 3
Candidate Starts for Janus_22:
(Start: 3 @17114 has 97 MA's), (14, 17204), (20, 17255), (32, 17333), (40, 17402),

Gene: Jash_22 Start: 17223, Stop: 17519, Start Num: 3
Candidate Starts for Jash_22:
(Start: 3 @17223 has 97 MA's), (Start: 5 @17235 has 3 MA's), (9, 17268), (11, 17274), (14, 17310), (18, 17352), (20, 17361), (40, 17508),

Gene: Jevington_23 Start: 17423, Stop: 17725, Start Num: 3
Candidate Starts for Jevington_23:
(Start: 3 @17423 has 97 MA's), (11, 17477), (17, 17537), (18, 17555), (20, 17564), (22, 17579), (29, 17618), (40, 17711),

Gene: Jhitchelle_21 Start: 17391, Stop: 17696, Start Num: 3
Candidate Starts for Jhitchelle_21:
(Start: 3 @17391 has 97 MA's), (10, 17442), (22, 17547), (26, 17565), (33, 17613), (39, 17664), (40, 17679), (41, 17685),

Gene: Kaine_21 Start: 17462, Stop: 17767, Start Num: 3
Candidate Starts for Kaine_21:
(Start: 3 @17462 has 97 MA's), (10, 17513), (16, 17567), (22, 17618), (25, 17627), (26, 17636), (27, 17642), (33, 17684), (39, 17735), (40, 17750), (41, 17756),

Gene: Katalie_22 Start: 17311, Stop: 17607, Start Num: 3
Candidate Starts for Katalie_22:
(Start: 3 @17311 has 97 MA's), (14, 17398), (18, 17440), (20, 17449), (33, 17530), (36, 17554),

Gene: Lannister_22 Start: 17079, Stop: 17375, Start Num: 3
Candidate Starts for Lannister_22:
(Start: 3 @17079 has 97 MA's), (11, 17130), (13, 17142), (14, 17166), (18, 17208), (26, 17250), (36, 17322), (38, 17346), (40, 17364),

Gene: Legacy_21 Start: 17043, Stop: 17351, Start Num: 3
Candidate Starts for Legacy_21:
(Start: 3 @17043 has 97 MA's), (Start: 7 @17076 has 1 MA's), (21, 17190), (31, 17253), (33, 17265), (37, 17313), (40, 17334), (41, 17340),

Gene: Leviticus_21 Start: 17072, Stop: 17380, Start Num: 3
Candidate Starts for Leviticus_21:
(Start: 3 @17072 has 97 MA's), (Start: 7 @17105 has 1 MA's), (21, 17219), (31, 17282), (33, 17294), (37, 17342), (40, 17363), (41, 17369),

Gene: Lika_21 Start: 17074, Stop: 17370, Start Num: 3
Candidate Starts for Lika_21:
(Start: 3 @17074 has 97 MA's), (18, 17203), (26, 17245), (28, 17257), (36, 17317), (40, 17359),

Gene: Loofah_22 Start: 17038, Stop: 17340, Start Num: 3
Candidate Starts for Loofah_22:
(Start: 3 @17038 has 97 MA's), (17, 17152), (24, 17200), (32, 17257), (40, 17326),

Gene: Lorelei_21 Start: 17044, Stop: 17340, Start Num: 3
Candidate Starts for Lorelei_21:
(Start: 3 @17044 has 97 MA's), (11, 17095), (18, 17173), (20, 17182), (26, 17215), (28, 17227), (29, 17236), (36, 17287), (40, 17329),

Gene: Maneekul_21 Start: 17041, Stop: 17340, Start Num: 3
Candidate Starts for Maneekul_21:
(Start: 3 @17041 has 97 MA's), (11, 17095), (14, 17131), (18, 17173), (20, 17182), (33, 17263), (36, 17287),

Gene: Marav_24 Start: 17773, Stop: 18075, Start Num: 3
Candidate Starts for Marav_24:
(Start: 3 @17773 has 97 MA's), (11, 17827), (17, 17887), (18, 17905), (20, 17914), (22, 17929), (40, 18061),

Gene: Nabi_21 Start: 17044, Stop: 17340, Start Num: 3
Candidate Starts for Nabi_21:
(Start: 3 @17044 has 97 MA's), (11, 17095), (18, 17173), (20, 17182), (26, 17215), (28, 17227), (29, 17236), (36, 17287), (40, 17329),

Gene: Nanodon_23 Start: 17252, Stop: 17548, Start Num: 3
Candidate Starts for Nanodon_23:
(Start: 3 @17252 has 97 MA's), (Start: 5 @17264 has 3 MA's), (11, 17303), (14, 17339), (18, 17381), (20, 17390), (36, 17495), (40, 17537),

Gene: Nerdos_21 Start: 17072, Stop: 17380, Start Num: 3
Candidate Starts for Nerdos_21:
(Start: 3 @17072 has 97 MA's), (Start: 7 @17105 has 1 MA's), (21, 17219), (31, 17282), (33, 17294), (37, 17342), (40, 17363), (41, 17369),

Gene: Nishikigoi_21 Start: 17553, Stop: 17858, Start Num: 3
Candidate Starts for Nishikigoi_21:
(Start: 3 @17553 has 97 MA's), (13, 17619), (16, 17658), (19, 17688), (32, 17772), (33, 17775), (40, 17841), (41, 17847),

Gene: Oliynyk_22 Start: 17235, Stop: 17519, Start Num: 5
Candidate Starts for Oliynyk_22:
(Start: 3 @17223 has 97 MA's), (Start: 5 @17235 has 3 MA's), (9, 17268), (11, 17274), (14, 17310), (18, 17352), (20, 17361), (40, 17508),

Gene: Omar_22 Start: 17891, Stop: 18196, Start Num: 3
Candidate Starts for Omar_22:
(Start: 3 @17891 has 97 MA's), (13, 17957), (15, 17993), (19, 18026), (33, 18113), (40, 18179), (41, 18185),

Gene: Ozzie_21 Start: 17052, Stop: 17360, Start Num: 3
Candidate Starts for Ozzie_21:
(Start: 3 @17052 has 97 MA's), (Start: 7 @17085 has 1 MA's), (21, 17199), (31, 17262), (33, 17274), (37, 17322), (40, 17343), (41, 17349),

Gene: OzzyJ_22 Start: 17036, Stop: 17335, Start Num: 3
Candidate Starts for OzzyJ_22:
(Start: 3 @17036 has 97 MA's), (11, 17090), (14, 17126), (18, 17168), (20, 17177), (33, 17258), (36, 17282),

Gene: Pablito_21 Start: 16878, Stop: 17180, Start Num: 3
Candidate Starts for Pablito_21:
(Start: 3 @16878 has 97 MA's), (20, 17019), (32, 17097), (40, 17166),

Gene: Paedore_21 Start: 17038, Stop: 17340, Start Num: 3
Candidate Starts for Paedore_21:
(Start: 3 @17038 has 97 MA's), (17, 17152), (24, 17200), (32, 17257), (40, 17326),

Gene: Paolo_23 Start: 17435, Stop: 17737, Start Num: 2
Candidate Starts for Paolo_23:
(Start: 2 @17435 has 2 MA's), (11, 17489), (17, 17549), (18, 17567), (20, 17576), (22, 17591), (40, 17723),

Gene: Pavo_22 Start: 17754, Stop: 18059, Start Num: 3
Candidate Starts for Pavo_22:
(Start: 3 @17754 has 97 MA's), (10, 17805), (16, 17859), (19, 17889), (26, 17928), (33, 17976), (39, 18027), (40, 18042), (41, 18048),

Gene: Phettuccine_21 Start: 17072, Stop: 17380, Start Num: 3
Candidate Starts for Phettuccine_21:
(Start: 3 @17072 has 97 MA's), (Start: 7 @17105 has 1 MA's), (21, 17219), (31, 17282), (33, 17294), (37, 17342), (40, 17363), (41, 17369),

Gene: Provolone_22 Start: 17484, Stop: 17789, Start Num: 3
Candidate Starts for Provolone_22:
(Start: 3 @17484 has 97 MA's), (10, 17535), (16, 17589), (19, 17619), (26, 17658), (33, 17706), (39, 17757), (40, 17772), (41, 17778),

Gene: Puginator_23 Start: 17480, Stop: 17782, Start Num: 3
Candidate Starts for Puginator_23:
(Start: 3 @17480 has 97 MA's), (11, 17534), (17, 17594), (18, 17612), (20, 17621), (22, 17636), (29, 17675), (40, 17768),

Gene: R4_21 Start: 17120, Stop: 17422, Start Num: 3
Candidate Starts for R4_21:
(Start: 3 @17120 has 97 MA's), (17, 17234), (24, 17282), (40, 17408),

Gene: Rana_21 Start: 17044, Stop: 17340, Start Num: 3
Candidate Starts for Rana_21:
(Start: 3 @17044 has 97 MA's), (11, 17095), (18, 17173), (20, 17182), (26, 17215), (28, 17227), (29, 17236), (36, 17287), (40, 17329),

Gene: RedBear_23 Start: 17311, Stop: 17607, Start Num: 3
Candidate Starts for RedBear_23:
(Start: 3 @17311 has 97 MA's), (14, 17398), (18, 17440), (20, 17449), (33, 17530), (36, 17554),

Gene: Rusticus_22 Start: 17223, Stop: 17519, Start Num: 3
Candidate Starts for Rusticus_22:
(Start: 3 @17223 has 97 MA's), (Start: 5 @17235 has 3 MA's), (9, 17268), (11, 17274), (14, 17310), (18, 17352), (20, 17361), (40, 17508),

Gene: Saftant_21 Start: 18032, Stop: 18334, Start Num: 3
Candidate Starts for Saftant_21:
(Start: 3 @18032 has 97 MA's), (9, 18080), (25, 18197), (31, 18242), (32, 18251), (35, 18272), (36, 18278), (40, 18320), (41, 18326),

Gene: SarahRose_21 Start: 17042, Stop: 17341, Start Num: 3
Candidate Starts for SarahRose_21:
(Start: 3 @17042 has 97 MA's), (11, 17096), (14, 17132), (18, 17174), (20, 17183), (33, 17264), (36, 17288),

Gene: Snorlax_21 Start: 17045, Stop: 17344, Start Num: 3
Candidate Starts for Snorlax_21:
(Start: 3 @17045 has 97 MA's), (11, 17099), (14, 17135), (18, 17177), (20, 17186), (33, 17267), (36, 17291),

Gene: South40_22 Start: 17311, Stop: 17607, Start Num: 3
Candidate Starts for South40_22:
(Start: 3 @17311 has 97 MA's), (14, 17398), (18, 17440), (20, 17449), (33, 17530), (36, 17554),

Gene: Speedwell_26 Start: 19778, Stop: 20083, Start Num: 3
Candidate Starts for Speedwell_26:
(Start: 3 @19778 has 97 MA's), (Start: 5 @19793 has 3 MA's), (13, 19844), (24, 19940), (25, 19943), (33, 20000), (40, 20066), (41, 20072),

Gene: SqueakyClean_22 Start: 17040, Stop: 17342, Start Num: 3
Candidate Starts for SqueakyClean_22:
(Start: 3 @17040 has 97 MA's), (13, 17106), (14, 17130), (20, 17181), (32, 17259), (40, 17328),

Gene: Sudan_22 Start: 17749, Stop: 18054, Start Num: 3
Candidate Starts for Sudan_22:
(Start: 3 @17749 has 97 MA's), (10, 17800), (16, 17854), (22, 17905), (25, 17914), (26, 17923), (27, 17929), (33, 17971), (39, 18022), (40, 18037), (41, 18043),

Gene: Sujidade_22 Start: 17350, Stop: 17646, Start Num: 3
Candidate Starts for Sujidade_22:
(Start: 3 @17350 has 97 MA's), (18, 17479), (26, 17521), (28, 17533), (36, 17593), (40, 17635),

Gene: SunkenRoot_23 Start: 18045, Stop: 18350, Start Num: 3
Candidate Starts for SunkenRoot_23:
(Start: 3 @18045 has 97 MA's), (10, 18096), (22, 18201), (26, 18219), (33, 18267), (40, 18333), (41, 18339),

Gene: SunsetPointe_21 Start: 17062, Stop: 17370, Start Num: 3
Candidate Starts for SunsetPointe_21:
(Start: 3 @17062 has 97 MA's), (Start: 7 @17095 has 1 MA's), (21, 17209), (31, 17272), (33, 17284), (37, 17332), (40, 17353), (41, 17359),

Gene: Superstar_24 Start: 18759, Stop: 19064, Start Num: 3
Candidate Starts for Superstar_24:
(Start: 3 @18759 has 97 MA's), (13, 18825), (14, 18849), (19, 18894), (32, 18978), (39, 19032), (40, 19047), (41, 19053),

Gene: TagePhighter_22 Start: 17045, Stop: 17344, Start Num: 3
Candidate Starts for TagePhighter_22:
(Start: 3 @17045 has 97 MA's), (11, 17099), (14, 17135), (18, 17177), (20, 17186), (33, 17267), (36, 17291),

Gene: Tefunt_21 Start: 17553, Stop: 17858, Start Num: 3

Candidate Starts for Tefunt_21:
(Start: 3 @17553 has 97 MA's), (13, 17619), (16, 17658), (19, 17688), (32, 17772), (33, 17775), (40, 17841), (41, 17847),

Gene: Thestral_22 Start: 17008, Stop: 17310, Start Num: 3
Candidate Starts for Thestral_22:
(Start: 3 @17008 has 97 MA's), (17, 17122), (20, 17149), (27, 17188), (40, 17296),

Gene: TinaBelcher_21 Start: 16956, Stop: 17258, Start Num: 3
Candidate Starts for TinaBelcher_21:
(Start: 3 @16956 has 97 MA's), (17, 17070), (20, 17097), (40, 17244),

Gene: Toma_21 Start: 17059, Stop: 17355, Start Num: 3
Candidate Starts for Toma_21:
(Start: 3 @17059 has 97 MA's), (11, 17110), (14, 17146), (18, 17188), (24, 17218), (29, 17251), (36, 17302), (40, 17344),

Gene: Triste_21 Start: 17036, Stop: 17335, Start Num: 3
Candidate Starts for Triste_21:
(Start: 3 @17036 has 97 MA's), (11, 17090), (14, 17126), (18, 17168), (20, 17177), (33, 17258), (36, 17282),

Gene: Triumph_23 Start: 16957, Stop: 17259, Start Num: 3
Candidate Starts for Triumph_23:
(Start: 3 @16957 has 97 MA's), (13, 17023), (20, 17098), (32, 17176), (40, 17245),

Gene: TrvxScott_20 Start: 16958, Stop: 17260, Start Num: 3
Candidate Starts for TrvxScott_20:
(Start: 3 @16958 has 97 MA's), (17, 17072), (20, 17099), (40, 17246),

Gene: TuanPN_21 Start: 17042, Stop: 17341, Start Num: 3
Candidate Starts for TuanPN_21:
(Start: 3 @17042 has 97 MA's), (11, 17096), (14, 17132), (18, 17174), (20, 17183), (33, 17264), (36, 17288),

Gene: Unstoppable_21 Start: 17063, Stop: 17371, Start Num: 3
Candidate Starts for Unstoppable_21:
(Start: 3 @17063 has 97 MA's), (Start: 7 @17096 has 1 MA's), (21, 17210), (31, 17273), (33, 17285), (37, 17333), (40, 17354), (41, 17360),

Gene: Urza_21 Start: 17433, Stop: 17762, Start Num: 1
Candidate Starts for Urza_21:
(Start: 1 @17433 has 4 MA's), (6, 17475), (8, 17502), (13, 17523), (15, 17559), (40, 17745),

Gene: Vanseggelen_26 Start: 17414, Stop: 17719, Start Num: 3
Candidate Starts for Vanseggelen_26:
(Start: 3 @17414 has 97 MA's), (10, 17465), (15, 17516), (22, 17570), (24, 17576), (25, 17579), (26, 17588), (33, 17636), (39, 17687), (40, 17702), (41, 17708),

Gene: Verabelle_22 Start: 17747, Stop: 18052, Start Num: 3
Candidate Starts for Verabelle_22:
(Start: 3 @17747 has 97 MA's), (10, 17798), (14, 17837), (22, 17903), (25, 17912), (26, 17921), (33, 17969), (39, 18020), (40, 18035), (41, 18041),

Gene: Verse_21 Start: 18046, Stop: 18351, Start Num: 3
Candidate Starts for Verse_21:
(Start: 3 @18046 has 97 MA's), (10, 18097), (22, 18202), (26, 18220), (33, 18268), (40, 18334), (41, 18340),

Gene: VieEnRose_21 Start: 17499, Stop: 17828, Start Num: 1
Candidate Starts for VieEnRose_21:
(Start: 1 @17499 has 4 MA's), (6, 17541), (8, 17568), (13, 17589), (15, 17625), (29, 17718), (40, 17811), (41, 17817),

Gene: Werner_21 Start: 17046, Stop: 17345, Start Num: 3
Candidate Starts for Werner_21:
(Start: 3 @17046 has 97 MA's), (11, 17100), (14, 17136), (18, 17178), (20, 17187), (33, 17268), (36, 17292),

Gene: Whatever_21 Start: 17046, Stop: 17345, Start Num: 3
Candidate Starts for Whatever_21:
(Start: 3 @17046 has 97 MA's), (11, 17100), (14, 17136), (18, 17178), (20, 17187), (33, 17268), (36, 17292),

Gene: Yasdnil_21 Start: 17038, Stop: 17337, Start Num: 3
Candidate Starts for Yasdnil_21:
(Start: 3 @17038 has 97 MA's), (11, 17092), (14, 17128), (18, 17170), (20, 17179), (33, 17260), (36, 17284),

Gene: Yosif_22 Start: 17987, Stop: 18289, Start Num: 3
Candidate Starts for Yosif_22:
(Start: 3 @17987 has 97 MA's), (4, 17996), (33, 18209), (34, 18224), (39, 18260),

Gene: Zainub_23 Start: 17393, Stop: 17695, Start Num: 2
Candidate Starts for Zainub_23:
(Start: 2 @17393 has 2 MA's), (11, 17447), (17, 17507), (18, 17525), (20, 17534), (22, 17549), (40, 17681),

Gene: ZamZam_24 Start: 18038, Stop: 18340, Start Num: 3
Candidate Starts for ZamZam_24:
(Start: 3 @18038 has 97 MA's), (13, 18104), (15, 18140), (23, 18197), (32, 18257), (33, 18260), (37, 18305), (39, 18311), (40, 18326), (41, 18332),

Gene: Zemlya_22 Start: 17070, Stop: 17366, Start Num: 3
Candidate Starts for Zemlya_22:
(Start: 3 @17070 has 97 MA's), (11, 17121), (14, 17157), (18, 17199), (24, 17229), (29, 17262), (30, 17265), (36, 17313), (40, 17355),

Gene: phiCAM_22 Start: 19709, Stop: 20017, Start Num: 3
Candidate Starts for phiCAM_22:
(Start: 3 @19709 has 97 MA's), (4, 19718), (Start: 7 @19742 has 1 MA's), (13, 19775), (16, 19814), (21, 19856), (31, 19919), (33, 19931), (39, 19985), (40, 20000), (41, 20006),

Gene: phiHau3_23 Start: 17729, Stop: 18028, Start Num: 3
Candidate Starts for phiHau3_23:

(Start: 3 @17729 has 97 MA's), (Start: 5 @17741 has 3 MA's), (11, 17780), (13, 17792), (14, 17816), (22, 17882), (40, 18014), (42, 18023),