

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 296521 Report

This analysis was run 04/25/26 on database version 644.

Pham number 296521 has 74 members, 4 are drafts.

Phages represented in each track:

- Track 1 : Maih_14, BabyGotBac_14, Asis_14, TP1604_14, Salete_14, BayC_14
- Track 2 : YDN12_15
- Track 3 : Mischief19_16
- Track 4 : Abt2graduatex2_15
- Track 5 : Xkcd426_15
- Track 6 : RainyPolka_15
- Track 7 : Shrubaron_28, RobsFeet_29, Metamorphoo_28
- Track 8 : Shotgun_27, Germa_29, Rockwell_27, Quhwah_31, CrazyRich_27, Savannah_27, Honeyfin_29, Phorgeous_27, BrazzalePHS_27, Onika_27, Cranjis_29, Hermeonysus_27, Pulchra_29, Paschalis_27, Yeti_28, Selwyn23_29, Ramiel05_27, Jollipop_28, Antares_28, Jefe_28, Kowalski_27, Phrancesco_28, PiperSansNom_28, Glorp_29, Scumberland_29, Piperis_28
- Track 9 : Ganandorf_27, PierreOrion_28
- Track 10 : Smarties_36, Ariadne_36
- Track 11 : LittleFortune_29
- Track 12 : Gina_29, Teamocil_29
- Track 13 : ClearAsMud_30, SirFrank_27
- Track 14 : Busephilis_27
- Track 15 : Crisis_29, KaiHaiDragon_28
- Track 16 : Merry_, Sunny_
- Track 17 : Skugga_26
- Track 18 : Megan_22
- Track 19 : NoodlelyBoi_28
- Track 20 : Nicole72_23
- Track 21 : Fireman_28, Tyrumbra_26
- Track 22 : Matzah_24, Cinna_23
- Track 23 : Terij_24
- Track 24 : Cressida_25
- Track 25 : MementoMori_24
- Track 26 : Margaery_23
- Track 27 : Hendrix_59
- Track 28 : Leaf_62, Dewdrop_62
- Track 29 : Rasputia_58
- Track 30 : FuzzBuster_33
- Track 31 : TurkishDelight_18
- Track 32 : Kithara_26
- Track 33 : Sunfish_33

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

The start number called the most often in the published annotations is 29, it was called in 45 of the 70 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Antares_28, Ariadne_36, BrazzalePHS_27, Busephilis_27, ClearAsMud_30, Cranjis_29, CrazyRich_27, Crisis_29, Dewdrop_62, Fireman_28, Germa_29, Gina_29, Glorp_29, Hendrix_59, Hermeonysus_27, Honeyfin_29, Jefe_28, Jollipop_28, KaiHaiDragon_28, Kowalski_27, Leaf_62, LittleFortune_29, Megan_22, Merry_, Metamorphoo_28, Onika_27, Paschalis_27, Phorgeous_27, Phrancesco_28, PiperSansNom_28, Piperis_28, Pulchra_29, Quhwah_31, Ramiel05_27, RobsFeet_29, Rockwell_27, Savannah_27, Scumberland_29, Selwyn23_29, Shotgun_27, Shrubaron_28, SirFrank_27, Skugga_26, Smarties_36, Sunny_, Teamocil_29, Tyumbra_26, Yeti_28,

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

- Ganandorf_27, NoodlelyBoi_28, PierreOrion_28,

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

- Abt2graduatex2_15, Asis_14, BabyGotBac_14, BayC_14, Cinna_23, Cressida_25, FuzzBuster_33, Kithara_26, Maih_14, Margaery_23, Matzah_24, MementoMori_24, Mischief19_16, Nicole72_23, RainyPolka_15, Rasputia_58, Salete_14, Sunfish_33, TP1604_14, Terij_24, TurkishDelight_18, Xkcd426_15, YDN12_15,

Summary by start number:

Start 26:

- Found in 12 of 74 (16.2%) of genes in pham
- Manual Annotations of this start: 12 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abt2graduatex2_15 (BG), Asis_14 (BG), BabyGotBac_14 (BG), BayC_14 (BG), Maih_14 (BG), Mischief19_16 (BG), RainyPolka_15 (BG), Salete_14 (BG), TP1604_14 (BG), TurkishDelight_18 (singleton), Xkcd426_15 (BG), YDN12_15 (BG),

Start 27:

- Found in 2 of 74 (2.7%) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kithara_26 (singleton), Sunfish_33 (singleton),

Start 28:

- Found in 1 of 74 (1.4%) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Rasputia_58 (GC),

Start 29:

- Found in 51 of 74 (68.9%) of genes in pham
- Manual Annotations of this start: 45 of 70
- Called 94.1% of time when present
- Phage (with cluster) where this start called: Antares_28 (EC), Ariadne_36 (EC), BrazzalePHS_27 (EC), Busephilis_27 (EC), ClearAsMud_30 (EC), Cranjjs_29 (EC), CrazyRich_27 (EC), Crisis_29 (EC), Dewdrop_62 (GC), Fireman_28 (EC), Germa_29 (EC), Gina_29 (EC), Glorp_29 (EC), Hendrix_59 (GC), Hermeonysus_27 (EC), Honeyfin_29 (EC), Jefe_28 (EC), Jollipop_28 (EC), KaiHaiDragon_28 (EC), Kowalski_27 (EC), Leaf_62 (GC), LittleFortune_29 (EC), Megan_22 (EC), Merry_ (EC), Metamorphoo_28 (EC), Onika_27 (EC), Paschalis_27 (EC), Phorgeous_27 (EC), Phrancesco_28 (EC), PiperSansNom_28 (EC), Piperis_28 (EC), Pulchra_29 (EC), Quhwah_31 (EC), Ramiel05_27 (EC), RobsFeet_29 (EC), Rockwell_27 (EC), Savannah_27 (EC), Scumberland_29 (EC), Selwyn23_29 (EC), Shotgun_27 (EC), Shrubaron_28 (EC), SirFrank_27 (EC), Skugga_26 (EC), Smarties_36 (EC), Sunny_ (EC), Teamocil_29 (EC), Tyumbra_26 (EC), Yeti_28 (EC),

Start 30:

- Found in 6 of 74 (8.1%) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 33.3% of time when present
- Phage (with cluster) where this start called: FuzzBuster_33 (GM), Nicole72_23 (EC),

Start 36:

- Found in 9 of 74 (12.2%) of genes in pham
- Manual Annotations of this start: 6 of 70
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Cinna_23 (EI), Cressida_25 (EI), Margaery_23 (EI), Matzah_24 (EI), MementoMori_24 (EI), Terij_24 (EI),

Start 44:

- Found in 60 of 74 (81.1%) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 5.0% of time when present
- Phage (with cluster) where this start called: Ganandorf_27 (EC), NoodlelyBoi_28 (EC), PierreOrion_28 (EC),

Summary by clusters:

There are 6 clusters represented in this pham: singleton, BG, EI, EC, GC, GM,

Info for manual annotations of cluster BG:

- Start number 26 was manually annotated 11 times for cluster BG.

Info for manual annotations of cluster EC:

- Start number 29 was manually annotated 42 times for cluster EC.
- Start number 30 was manually annotated 1 time for cluster EC.
- Start number 44 was manually annotated 2 times for cluster EC.

Info for manual annotations of cluster EI:

- Start number 36 was manually annotated 6 times for cluster EI.

Info for manual annotations of cluster GC:

- Start number 28 was manually annotated 1 time for cluster GC.
- Start number 29 was manually annotated 3 times for cluster GC.

Info for manual annotations of cluster GM:

- Start number 30 was manually annotated 1 time for cluster GM.

Gene Information:

Gene: Abt2graduatex2_15 Start: 16020, Stop: 16913, Start Num: 26

Candidate Starts for Abt2graduatex2_15:

(1, 15447), (2, 15624), (3, 15642), (4, 15654), (5, 15714), (6, 15720), (7, 15741), (8, 15759), (9, 15762), (10, 15813), (11, 15843), (12, 15855), (13, 15864), (14, 15873), (16, 15882), (17, 15891), (18, 15894), (20, 15918), (23, 15951), (24, 15993), (Start: 26 @16020 has 12 MA's), (Start: 30 @16035 has 2 MA's), (35, 16098), (39, 16122), (Start: 44 @16146 has 2 MA's), (46, 16155), (54, 16218), (56, 16227), (73, 16350), (75, 16365), (77, 16398), (79, 16419), (81, 16425), (92, 16485), (99, 16533), (100, 16539), (104, 16575), (113, 16692), (115, 16716), (117, 16734), (125, 16797), (129, 16818), (130, 16836),

Gene: Antares_28 Start: 15892, Stop: 16722, Start Num: 29

Candidate Starts for Antares_28:

(Start: 29 @15892 has 45 MA's), (Start: 44 @16003 has 2 MA's), (55, 16075), (64, 16135), (84, 16285), (86, 16312), (89, 16336), (92, 16351), (98, 16390), (99, 16399), (101, 16411), (128, 16633), (134, 16687),

Gene: Ariadne_36 Start: 17634, Stop: 18449, Start Num: 29

Candidate Starts for Ariadne_36:

(Start: 29 @17634 has 45 MA's), (42, 17736), (Start: 44 @17745 has 2 MA's), (46, 17754), (64, 17877), (85, 18051), (99, 18144), (120, 18300), (128, 18354), (135, 18411), (141, 18435),

Gene: Asis_14 Start: 15544, Stop: 16440, Start Num: 26

Candidate Starts for Asis_14:

(Start: 26 @15544 has 12 MA's), (35, 15622), (39, 15646), (Start: 44 @15670 has 2 MA's), (46, 15679), (54, 15742), (73, 15874), (75, 15889), (77, 15922), (79, 15943), (85, 15982), (87, 15991), (99, 16057), (100, 16063), (101, 16069), (104, 16099), (106, 16129), (109, 16153), (117, 16258), (123, 16291), (129, 16342), (130, 16360), (137, 16399), (143, 16426),

Gene: BabyGotBac_14 Start: 15544, Stop: 16440, Start Num: 26

Candidate Starts for BabyGotBac_14:

(Start: 26 @15544 has 12 MA's), (35, 15622), (39, 15646), (Start: 44 @15670 has 2 MA's), (46, 15679), (54, 15742), (73, 15874), (75, 15889), (77, 15922), (79, 15943), (85, 15982), (87, 15991), (99, 16057), (100, 16063), (101, 16069), (104, 16099), (106, 16129), (109, 16153), (117, 16258), (123, 16291), (129, 16342), (130, 16360), (137, 16399), (143, 16426),

Gene: BayC_14 Start: 15544, Stop: 16440, Start Num: 26

Candidate Starts for BayC_14:

(Start: 26 @15544 has 12 MA's), (35, 15622), (39, 15646), (Start: 44 @15670 has 2 MA's), (46, 15679), (54, 15742), (73, 15874), (75, 15889), (77, 15922), (79, 15943), (85, 15982), (87, 15991), (99, 16057), (100, 16063), (101, 16069), (104, 16099), (106, 16129), (109, 16153), (117, 16258), (123, 16291), (129, 16342), (130, 16360), (137, 16399), (143, 16426),

Gene: BrazzalePHS_27 Start: 15687, Stop: 16517, Start Num: 29

Candidate Starts for BrazzalePHS_27:

(Start: 29 @15687 has 45 MA's), (Start: 44 @15798 has 2 MA's), (55, 15870), (64, 15930), (84, 16080), (86, 16107), (89, 16131), (92, 16146), (98, 16185), (99, 16194), (101, 16206), (128, 16428), (134, 16482),

Gene: Busephilis_27 Start: 15623, Stop: 16453, Start Num: 29

Candidate Starts for Busephilis_27:

(Start: 29 @15623 has 45 MA's), (Start: 44 @15734 has 2 MA's), (55, 15806), (64, 15866), (84, 16016), (86, 16043), (89, 16067), (92, 16082), (98, 16121), (99, 16130), (101, 16142), (108, 16214), (128, 16364), (134, 16418),

Gene: Cinna_23 Start: 15247, Stop: 16008, Start Num: 36

Candidate Starts for Cinna_23:

(31, 15178), (Start: 36 @15247 has 6 MA's), (60, 15400), (79, 15562), (92, 15646), (98, 15685), (99, 15694), (108, 15778), (109, 15781), (114, 15814), (117, 15829), (121, 15853), (127, 15901), (130, 15931), (131, 15940), (139, 15976),

Gene: ClearAsMud_30 Start: 16413, Stop: 17243, Start Num: 29

Candidate Starts for ClearAsMud_30:

(Start: 29 @16413 has 45 MA's), (Start: 44 @16524 has 2 MA's), (55, 16596), (84, 16806), (86, 16833), (89, 16857), (92, 16872), (99, 16920), (101, 16932), (117, 17079), (120, 17100), (128, 17154), (134, 17208),

Gene: Cranjis_29 Start: 15847, Stop: 16677, Start Num: 29

Candidate Starts for Cranjis_29:

(Start: 29 @15847 has 45 MA's), (Start: 44 @15958 has 2 MA's), (55, 16030), (64, 16090), (84, 16240), (86, 16267), (89, 16291), (92, 16306), (98, 16345), (99, 16354), (101, 16366), (128, 16588), (134, 16642),

Gene: CrazyRich_27 Start: 15657, Stop: 16487, Start Num: 29

Candidate Starts for CrazyRich_27:

(Start: 29 @15657 has 45 MA's), (Start: 44 @15768 has 2 MA's), (55, 15840), (64, 15900), (84, 16050), (86, 16077), (89, 16101), (92, 16116), (98, 16155), (99, 16164), (101, 16176), (128, 16398), (134, 16452),

Gene: Cressida_25 Start: 15291, Stop: 16052, Start Num: 36

Candidate Starts for Cressida_25:

(31, 15222), (Start: 36 @15291 has 6 MA's), (60, 15444), (79, 15606), (86, 15651), (92, 15690), (98, 15729), (99, 15738), (108, 15822), (109, 15825), (114, 15858), (117, 15873), (121, 15897), (130, 15975), (131, 15984), (139, 16020),

Gene: Crisis_29 Start: 15642, Stop: 16472, Start Num: 29

Candidate Starts for Crisis_29:

(Start: 29 @15642 has 45 MA's), (Start: 44 @15753 has 2 MA's), (55, 15825), (64, 15885), (84, 16035), (89, 16086), (92, 16101), (98, 16140), (99, 16149), (101, 16161), (128, 16383), (134, 16437),

Gene: Dewdrop_62 Start: 32410, Stop: 33225, Start Num: 29

Candidate Starts for Dewdrop_62:

(Start: 29 @32410 has 45 MA's), (Start: 36 @32482 has 6 MA's), (Start: 44 @32524 has 2 MA's), (58, 32614), (59, 32623), (82, 32800), (101, 32899), (109, 32977), (118, 33028),

Gene: Fireman_28 Start: 15540, Stop: 16349, Start Num: 29

Candidate Starts for Fireman_28:

(Start: 29 @15540 has 45 MA's), (42, 15642), (Start: 44 @15651 has 2 MA's), (46, 15660), (54, 15720), (55, 15723), (64, 15783), (79, 15918), (85, 15957), (98, 16041), (99, 16050), (120, 16206), (128, 16260), (134, 16314), (141, 16338),

Gene: FuzzBuster_33 Start: 16274, Stop: 17122, Start Num: 30

Candidate Starts for FuzzBuster_33:

(22, 16175), (Start: 30 @16274 has 2 MA's), (34, 16301), (55, 16463), (88, 16700), (94, 16736), (98, 16766), (107, 16847), (116, 16940), (129, 17036), (136, 17087),

Gene: Ganandorf_27 Start: 15815, Stop: 16534, Start Num: 44

Candidate Starts for Ganandorf_27:

(Start: 29 @15704 has 45 MA's), (Start: 44 @15815 has 2 MA's), (55, 15887), (64, 15947), (84, 16097), (86, 16124), (89, 16148), (92, 16163), (98, 16202), (99, 16211), (101, 16223), (128, 16445), (134, 16499),

Gene: Germa_29 Start: 15533, Stop: 16363, Start Num: 29

Candidate Starts for Germa_29:

(Start: 29 @15533 has 45 MA's), (Start: 44 @15644 has 2 MA's), (55, 15716), (64, 15776), (84, 15926), (86, 15953), (89, 15977), (92, 15992), (98, 16031), (99, 16040), (101, 16052), (128, 16274), (134, 16328),

Gene: Gina_29 Start: 15204, Stop: 16019, Start Num: 29

Candidate Starts for Gina_29:

(Start: 29 @15204 has 45 MA's), (42, 15306), (Start: 44 @15315 has 2 MA's), (46, 15324), (54, 15384), (79, 15582), (85, 15621), (92, 15666), (98, 15705), (99, 15714), (120, 15870), (128, 15924), (134, 15978),

Gene: Glorp_29 Start: 15705, Stop: 16535, Start Num: 29

Candidate Starts for Glorp_29:

(Start: 29 @15705 has 45 MA's), (Start: 44 @15816 has 2 MA's), (55, 15888), (64, 15948), (84, 16098), (86, 16125), (89, 16149), (92, 16164), (98, 16203), (99, 16212), (101, 16224), (128, 16446), (134, 16500),

Gene: Hendrix_59 Start: 32358, Stop: 33179, Start Num: 29

Candidate Starts for Hendrix_59:

(Start: 29 @32358 has 45 MA's), (Start: 36 @32430 has 6 MA's), (40, 32460), (Start: 44 @32475 has 2 MA's), (51, 32511), (69, 32646), (71, 32652), (108, 32931), (124, 33036), (140, 33138),

Gene: Hermeonysus_27 Start: 15576, Stop: 16406, Start Num: 29

Candidate Starts for Hermeonysus_27:

(Start: 29 @15576 has 45 MA's), (Start: 44 @15687 has 2 MA's), (55, 15759), (64, 15819), (84, 15969), (86, 15996), (89, 16020), (92, 16035), (98, 16074), (99, 16083), (101, 16095), (128, 16317), (134, 16371),

Gene: Honeyfin_29 Start: 15892, Stop: 16722, Start Num: 29

Candidate Starts for Honeyfin_29:

(Start: 29 @15892 has 45 MA's), (Start: 44 @16003 has 2 MA's), (55, 16075), (64, 16135), (84, 16285), (86, 16312), (89, 16336), (92, 16351), (98, 16390), (99, 16399), (101, 16411), (128, 16633), (134, 16687),

Gene: Jefe_28 Start: 15629, Stop: 16459, Start Num: 29

Candidate Starts for Jefe_28:

(Start: 29 @15629 has 45 MA's), (Start: 44 @15740 has 2 MA's), (55, 15812), (64, 15872), (84, 16022), (86, 16049), (89, 16073), (92, 16088), (98, 16127), (99, 16136), (101, 16148), (128, 16370), (134, 16424),

Gene: Jollipop_28 Start: 15974, Stop: 16804, Start Num: 29

Candidate Starts for Jollipop_28:

(Start: 29 @15974 has 45 MA's), (Start: 44 @16085 has 2 MA's), (55, 16157), (64, 16217), (84, 16367), (86, 16394), (89, 16418), (92, 16433), (98, 16472), (99, 16481), (101, 16493), (128, 16715), (134, 16769),

Gene: KaiHaiDragon_28 Start: 15568, Stop: 16398, Start Num: 29

Candidate Starts for KaiHaiDragon_28:

(Start: 29 @15568 has 45 MA's), (Start: 44 @15679 has 2 MA's), (55, 15751), (64, 15811), (84, 15961), (89, 16012), (92, 16027), (98, 16066), (99, 16075), (101, 16087), (128, 16309), (134, 16363),

Gene: Kithara_26 Start: 16496, Stop: 17302, Start Num: 27

Candidate Starts for Kithara_26:

(Start: 27 @16496 has 2 MA's), (38, 16589), (53, 16664), (57, 16691), (61, 16724), (62, 16739), (83, 16892), (94, 16943), (96, 16955), (105, 17024), (128, 17219), (129, 17228), (137, 17285),

Gene: Kowalski_27 Start: 15684, Stop: 16514, Start Num: 29

Candidate Starts for Kowalski_27:

(Start: 29 @15684 has 45 MA's), (Start: 44 @15795 has 2 MA's), (55, 15867), (64, 15927), (84, 16077), (86, 16104), (89, 16128), (92, 16143), (98, 16182), (99, 16191), (101, 16203), (128, 16425), (134, 16479),

Gene: Leaf_62 Start: 32410, Stop: 33225, Start Num: 29

Candidate Starts for Leaf_62:

(Start: 29 @32410 has 45 MA's), (Start: 36 @32482 has 6 MA's), (Start: 44 @32524 has 2 MA's), (58, 32614), (59, 32623), (82, 32800), (101, 32899), (109, 32977), (118, 33028),

Gene: LittleFortune_29 Start: 15934, Stop: 16764, Start Num: 29

Candidate Starts for LittleFortune_29:

(Start: 29 @15934 has 45 MA's), (Start: 44 @16045 has 2 MA's), (55, 16117), (64, 16177), (84, 16327), (86, 16354), (89, 16378), (92, 16393), (98, 16432), (99, 16441), (101, 16453), (120, 16621), (128, 16675), (134, 16729),

Gene: Maih_14 Start: 15543, Stop: 16439, Start Num: 26

Candidate Starts for Maih_14:

(Start: 26 @15543 has 12 MA's), (35, 15621), (39, 15645), (Start: 44 @15669 has 2 MA's), (46, 15678), (54, 15741), (73, 15873), (75, 15888), (77, 15921), (79, 15942), (85, 15981), (87, 15990), (99, 16056), (100, 16062), (101, 16068), (104, 16098), (106, 16128), (109, 16152), (117, 16257), (123, 16290), (129, 16341), (130, 16359), (137, 16398), (143, 16425),

Gene: Margaery_23 Start: 15201, Stop: 15968, Start Num: 36

Candidate Starts for Margaery_23:

(15, 14967), (19, 14985), (21, 15018), (31, 15132), (Start: 36 @15201 has 6 MA's), (70, 15423), (79, 15516), (85, 15555), (98, 15639), (99, 15648), (108, 15732), (114, 15768), (117, 15783), (130, 15885), (139, 15930), (146, 15957),

Gene: Matzah_24 Start: 15224, Stop: 15985, Start Num: 36

Candidate Starts for Matzah_24:

(31, 15155), (Start: 36 @15224 has 6 MA's), (60, 15377), (79, 15539), (92, 15623), (98, 15662), (99, 15671), (108, 15755), (109, 15758), (114, 15791), (117, 15806), (121, 15830), (127, 15878), (130, 15908), (131, 15917), (139, 15953),

Gene: Megan_22 Start: 16905, Stop: 17714, Start Num: 29

Candidate Starts for Megan_22:

(Start: 29 @16905 has 45 MA's), (42, 17007), (54, 17085), (55, 17088), (64, 17148), (85, 17322), (92, 17364), (98, 17403), (99, 17412), (109, 17499), (128, 17622),

Gene: MementoMori_24 Start: 14946, Stop: 15707, Start Num: 36

Candidate Starts for MementoMori_24:

(31, 14877), (Start: 36 @14946 has 6 MA's), (60, 15099), (79, 15261), (85, 15300), (92, 15345), (98, 15384), (99, 15393), (108, 15477), (109, 15480), (114, 15513), (117, 15528), (121, 15552), (127, 15600), (130, 15630), (131, 15639), (139, 15675), (144, 15696),

Gene: Merry_ Start: 15926, Stop: 16729, Start Num: 29

Candidate Starts for Merry_:

(Start: 29 @15926 has 45 MA's), (42, 16028), (Start: 44 @16037 has 2 MA's), (46, 16046), (66, 16193), (85, 16340), (95, 16403), (98, 16424), (99, 16433), (120, 16589), (128, 16643), (134, 16697),

Gene: Metamorphoo_28 Start: 15526, Stop: 16338, Start Num: 29

Candidate Starts for Metamorphoo_28:

(Start: 29 @15526 has 45 MA's), (42, 15628), (Start: 44 @15637 has 2 MA's), (46, 15646), (54, 15706), (55, 15709), (64, 15769), (79, 15904), (85, 15943), (98, 16027), (99, 16036), (120, 16192), (128, 16246), (134, 16300), (142, 16327),

Gene: Mischief19_16 Start: 18095, Stop: 18940, Start Num: 26

Candidate Starts for Mischief19_16:

(25, 18086), (Start: 26 @18095 has 12 MA's), (32, 18116), (33, 18122), (58, 18308), (65, 18362), (73, 18413), (75, 18428), (91, 18542), (93, 18551), (103, 18623), (109, 18689), (117, 18776), (119, 18782), (122, 18806), (130, 18878), (131, 18887), (132, 18899), (136, 18911),

Gene: Nicole72_23 Start: 17288, Stop: 18094, Start Num: 30

Candidate Starts for Nicole72_23:

(Start: 30 @17288 has 2 MA's), (49, 17432), (55, 17471), (63, 17528), (67, 17555), (79, 17663), (92, 17747), (98, 17786), (99, 17795), (114, 17915), (117, 17930), (120, 17951), (134, 18059),

Gene: NoodlelyBoi_28 Start: 16131, Stop: 16853, Start Num: 44

Candidate Starts for NoodlelyBoi_28:

(Start: 29 @16020 has 45 MA's), (Start: 44 @16131 has 2 MA's), (55, 16203), (67, 16290), (84, 16416), (86, 16443), (89, 16467), (92, 16482), (99, 16530), (101, 16542), (117, 16689), (120, 16710), (128, 16764), (134, 16818),

Gene: Onika_27 Start: 15658, Stop: 16488, Start Num: 29

Candidate Starts for Onika_27:

(Start: 29 @15658 has 45 MA's), (Start: 44 @15769 has 2 MA's), (55, 15841), (64, 15901), (84, 16051), (86, 16078), (89, 16102), (92, 16117), (98, 16156), (99, 16165), (101, 16177), (128, 16399), (134, 16453),

Gene: Paschalis_27 Start: 15672, Stop: 16502, Start Num: 29

Candidate Starts for Paschalis_27:

(Start: 29 @15672 has 45 MA's), (Start: 44 @15783 has 2 MA's), (55, 15855), (64, 15915), (84, 16065), (86, 16092), (89, 16116), (92, 16131), (98, 16170), (99, 16179), (101, 16191), (128, 16413), (134,

16467),

Gene: Phorgeous_27 Start: 15525, Stop: 16355, Start Num: 29

Candidate Starts for Phorgeous_27:

(Start: 29 @15525 has 45 MA's), (Start: 44 @15636 has 2 MA's), (55, 15708), (64, 15768), (84, 15918), (86, 15945), (89, 15969), (92, 15984), (98, 16023), (99, 16032), (101, 16044), (128, 16266), (134, 16320),

Gene: Phrancesco_28 Start: 15803, Stop: 16633, Start Num: 29

Candidate Starts for Phrancesco_28:

(Start: 29 @15803 has 45 MA's), (Start: 44 @15914 has 2 MA's), (55, 15986), (64, 16046), (84, 16196), (86, 16223), (89, 16247), (92, 16262), (98, 16301), (99, 16310), (101, 16322), (128, 16544), (134, 16598),

Gene: PierreOrion_28 Start: 15938, Stop: 16657, Start Num: 44

Candidate Starts for PierreOrion_28:

(Start: 29 @15827 has 45 MA's), (Start: 44 @15938 has 2 MA's), (55, 16010), (64, 16070), (84, 16220), (86, 16247), (89, 16271), (92, 16286), (98, 16325), (99, 16334), (101, 16346), (128, 16568), (134, 16622),

Gene: PiperSansNom_28 Start: 15979, Stop: 16809, Start Num: 29

Candidate Starts for PiperSansNom_28:

(Start: 29 @15979 has 45 MA's), (Start: 44 @16090 has 2 MA's), (55, 16162), (64, 16222), (84, 16372), (86, 16399), (89, 16423), (92, 16438), (98, 16477), (99, 16486), (101, 16498), (128, 16720), (134, 16774),

Gene: Piperis_28 Start: 15649, Stop: 16479, Start Num: 29

Candidate Starts for Piperis_28:

(Start: 29 @15649 has 45 MA's), (Start: 44 @15760 has 2 MA's), (55, 15832), (64, 15892), (84, 16042), (86, 16069), (89, 16093), (92, 16108), (98, 16147), (99, 16156), (101, 16168), (128, 16390), (134, 16444),

Gene: Pulchra_29 Start: 16049, Stop: 16879, Start Num: 29

Candidate Starts for Pulchra_29:

(Start: 29 @16049 has 45 MA's), (Start: 44 @16160 has 2 MA's), (55, 16232), (64, 16292), (84, 16442), (86, 16469), (89, 16493), (92, 16508), (98, 16547), (99, 16556), (101, 16568), (128, 16790), (134, 16844),

Gene: Quhwah_31 Start: 16275, Stop: 17105, Start Num: 29

Candidate Starts for Quhwah_31:

(Start: 29 @16275 has 45 MA's), (Start: 44 @16386 has 2 MA's), (55, 16458), (64, 16518), (84, 16668), (86, 16695), (89, 16719), (92, 16734), (98, 16773), (99, 16782), (101, 16794), (128, 17016), (134, 17070),

Gene: RainyPolka_15 Start: 15874, Stop: 16773, Start Num: 26

Candidate Starts for RainyPolka_15:

(24, 15847), (Start: 26 @15874 has 12 MA's), (35, 15952), (39, 15976), (Start: 44 @16000 has 2 MA's), (46, 16009), (54, 16072), (57, 16090), (73, 16204), (75, 16219), (77, 16252), (79, 16273), (85, 16312), (87, 16321), (99, 16387), (100, 16393), (104, 16429), (108, 16480), (109, 16483), (112, 16510), (117, 16588), (125, 16651), (130, 16690), (132, 16711), (137, 16729), (145, 16762),

Gene: Ramiel05_27 Start: 15684, Stop: 16514, Start Num: 29

Candidate Starts for Ramiel05_27:

(Start: 29 @15684 has 45 MA's), (Start: 44 @15795 has 2 MA's), (55, 15867), (64, 15927), (84, 16077), (86, 16104), (89, 16128), (92, 16143), (98, 16182), (99, 16191), (101, 16203), (128, 16425), (134, 16479),

Gene: Rasputia_58 Start: 32048, Stop: 32869, Start Num: 28

Candidate Starts for Rasputia_58:

(Start: 28 @32048 has 1 MA's), (Start: 44 @32165 has 2 MA's), (51, 32201), (53, 32225), (67, 32324), (90, 32477), (102, 32558), (108, 32621), (110, 32639), (124, 32726), (133, 32798),

Gene: RobsFeet_29 Start: 15807, Stop: 16619, Start Num: 29

Candidate Starts for RobsFeet_29:

(Start: 29 @15807 has 45 MA's), (42, 15909), (Start: 44 @15918 has 2 MA's), (46, 15927), (54, 15987), (55, 15990), (64, 16050), (79, 16185), (85, 16224), (98, 16308), (99, 16317), (120, 16473), (128, 16527), (134, 16581), (142, 16608),

Gene: Rockwell_27 Start: 15684, Stop: 16514, Start Num: 29

Candidate Starts for Rockwell_27:

(Start: 29 @15684 has 45 MA's), (Start: 44 @15795 has 2 MA's), (55, 15867), (64, 15927), (84, 16077), (86, 16104), (89, 16128), (92, 16143), (98, 16182), (99, 16191), (101, 16203), (128, 16425), (134, 16479),

Gene: Salete_14 Start: 15544, Stop: 16440, Start Num: 26

Candidate Starts for Salete_14:

(Start: 26 @15544 has 12 MA's), (35, 15622), (39, 15646), (Start: 44 @15670 has 2 MA's), (46, 15679), (54, 15742), (73, 15874), (75, 15889), (77, 15922), (79, 15943), (85, 15982), (87, 15991), (99, 16057), (100, 16063), (101, 16069), (104, 16099), (106, 16129), (109, 16153), (117, 16258), (123, 16291), (129, 16342), (130, 16360), (137, 16399), (143, 16426),

Gene: Savannah_27 Start: 15711, Stop: 16541, Start Num: 29

Candidate Starts for Savannah_27:

(Start: 29 @15711 has 45 MA's), (Start: 44 @15822 has 2 MA's), (55, 15894), (64, 15954), (84, 16104), (86, 16131), (89, 16155), (92, 16170), (98, 16209), (99, 16218), (101, 16230), (128, 16452), (134, 16506),

Gene: Scumberland_29 Start: 15899, Stop: 16729, Start Num: 29

Candidate Starts for Scumberland_29:

(Start: 29 @15899 has 45 MA's), (Start: 44 @16010 has 2 MA's), (55, 16082), (64, 16142), (84, 16292), (86, 16319), (89, 16343), (92, 16358), (98, 16397), (99, 16406), (101, 16418), (128, 16640), (134, 16694),

Gene: Selwyn23_29 Start: 15877, Stop: 16707, Start Num: 29

Candidate Starts for Selwyn23_29:

(Start: 29 @15877 has 45 MA's), (Start: 44 @15988 has 2 MA's), (55, 16060), (64, 16120), (84, 16270), (86, 16297), (89, 16321), (92, 16336), (98, 16375), (99, 16384), (101, 16396), (128, 16618), (134, 16672),

Gene: Shotgun_27 Start: 15509, Stop: 16339, Start Num: 29

Candidate Starts for Shotgun_27:

(Start: 29 @15509 has 45 MA's), (Start: 44 @15620 has 2 MA's), (55, 15692), (64, 15752), (84, 15902), (86, 15929), (89, 15953), (92, 15968), (98, 16007), (99, 16016), (101, 16028), (128, 16250), (134, 16304),

Gene: Shrubaron_28 Start: 15441, Stop: 16253, Start Num: 29

Candidate Starts for Shrubaron_28:

(Start: 29 @15441 has 45 MA's), (42, 15543), (Start: 44 @15552 has 2 MA's), (46, 15561), (54, 15621), (55, 15624), (64, 15684), (79, 15819), (85, 15858), (98, 15942), (99, 15951), (120, 16107), (128, 16161), (134, 16215), (142, 16242),

Gene: SirFrank_27 Start: 15623, Stop: 16453, Start Num: 29

Candidate Starts for SirFrank_27:

(Start: 29 @15623 has 45 MA's), (Start: 44 @15734 has 2 MA's), (55, 15806), (84, 16016), (86, 16043), (89, 16067), (92, 16082), (99, 16130), (101, 16142), (117, 16289), (120, 16310), (128, 16364), (134, 16418),

Gene: Skugga_26 Start: 15141, Stop: 15956, Start Num: 29

Candidate Starts for Skugga_26:

(Start: 29 @15141 has 45 MA's), (42, 15243), (Start: 44 @15252 has 2 MA's), (46, 15261), (55, 15324), (63, 15381), (85, 15558), (92, 15603), (99, 15651), (120, 15807), (128, 15861),

Gene: Smarties_36 Start: 17634, Stop: 18449, Start Num: 29

Candidate Starts for Smarties_36:

(Start: 29 @17634 has 45 MA's), (42, 17736), (Start: 44 @17745 has 2 MA's), (46, 17754), (64, 17877), (85, 18051), (99, 18144), (120, 18300), (128, 18354), (135, 18411), (141, 18435),

Gene: Sunfish_33 Start: 16941, Stop: 17747, Start Num: 27

Candidate Starts for Sunfish_33:

(Start: 27 @16941 has 2 MA's), (48, 17088), (52, 17106), (64, 17199), (72, 17250), (76, 17304), (78, 17322), (90, 17376), (105, 17475),

Gene: Sunny_ Start: 15926, Stop: 16729, Start Num: 29

Candidate Starts for Sunny_:

(Start: 29 @15926 has 45 MA's), (42, 16028), (Start: 44 @16037 has 2 MA's), (46, 16046), (66, 16193), (85, 16340), (95, 16403), (98, 16424), (99, 16433), (120, 16589), (128, 16643), (134, 16697),

Gene: TP1604_14 Start: 15544, Stop: 16440, Start Num: 26

Candidate Starts for TP1604_14:

(Start: 26 @15544 has 12 MA's), (35, 15622), (39, 15646), (Start: 44 @15670 has 2 MA's), (46, 15679), (54, 15742), (73, 15874), (75, 15889), (77, 15922), (79, 15943), (85, 15982), (87, 15991), (99, 16057), (100, 16063), (101, 16069), (104, 16099), (106, 16129), (109, 16153), (117, 16258), (123, 16291), (129, 16342), (130, 16360), (137, 16399), (143, 16426),

Gene: Teamocil_29 Start: 15303, Stop: 16118, Start Num: 29

Candidate Starts for Teamocil_29:

(Start: 29 @15303 has 45 MA's), (42, 15405), (Start: 44 @15414 has 2 MA's), (46, 15423), (54, 15483), (79, 15681), (85, 15720), (92, 15765), (98, 15804), (99, 15813), (120, 15969), (128, 16023), (134, 16077),

Gene: Terij_24 Start: 15272, Stop: 16039, Start Num: 36

Candidate Starts for Terij_24:

(Start: 30 @15203 has 2 MA's), (Start: 36 @15272 has 6 MA's), (63, 15452), (79, 15587), (85, 15626), (89, 15656), (98, 15710), (99, 15719), (108, 15803), (109, 15806), (114, 15839), (117, 15854), (121, 15878), (128, 15929), (130, 15956), (139, 16001), (146, 16028),

Gene: TurkishDelight_18 Start: 14791, Stop: 15639, Start Num: 26

Candidate Starts for TurkishDelight_18:

(Start: 26 @14791 has 12 MA's), (Start: 30 @14803 has 2 MA's), (37, 14881), (38, 14887), (41, 14908), (43, 14914), (45, 14923), (47, 14944), (72, 15112), (74, 15133), (80, 15196), (81, 15199), (97, 15286), (111, 15421), (124, 15538), (129, 15568), (130, 15586), (133, 15607), (137, 15622), (138, 15625),

Gene: Tyrumbra_26 Start: 14883, Stop: 15692, Start Num: 29

Candidate Starts for Tyrumbra_26:

(Start: 29 @14883 has 45 MA's), (42, 14985), (Start: 44 @14994 has 2 MA's), (46, 15003), (54, 15063), (55, 15066), (64, 15126), (79, 15261), (85, 15300), (98, 15384), (99, 15393), (120, 15549), (128, 15603), (134, 15657), (141, 15681),

Gene: Xkcd426_15 Start: 16526, Stop: 17386, Start Num: 26

Candidate Starts for Xkcd426_15:

(Start: 26 @16526 has 12 MA's), (Start: 30 @16541 has 2 MA's), (50, 16688), (56, 16718), (68, 16811), (73, 16841), (77, 16889), (90, 16967), (103, 17054), (104, 17066), (116, 17210), (117, 17222), (122, 17252), (126, 17288),

Gene: YDN12_15 Start: 15481, Stop: 16377, Start Num: 26

Candidate Starts for YDN12_15:

(Start: 26 @15481 has 12 MA's), (35, 15559), (39, 15583), (Start: 44 @15607 has 2 MA's), (54, 15679), (62, 15742), (75, 15826), (77, 15859), (79, 15880), (85, 15919), (87, 15928), (100, 16000), (104, 16036), (106, 16066), (109, 16090), (123, 16228), (125, 16258), (126, 16261), (129, 16279), (130, 16297), (137, 16336), (143, 16363),

Gene: Yeti_28 Start: 15679, Stop: 16509, Start Num: 29

Candidate Starts for Yeti_28:

(Start: 29 @15679 has 45 MA's), (Start: 44 @15790 has 2 MA's), (55, 15862), (64, 15922), (84, 16072), (86, 16099), (89, 16123), (92, 16138), (98, 16177), (99, 16186), (101, 16198), (128, 16420), (134, 16474),