



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 193935 Report

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

Pham number 193935 has 83 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Ranunculus\_20
- Track 2 : Tank\_20, Wilde\_20
- Track 3 : Rizwana\_19
- Track 4 : MellowYellow\_23
- Track 5 : Pureglobe5\_28, Beagle\_27, Pointis\_26
- Track 6 : Odyssey395\_28
- Track 7 : NyleyClemson\_22
- Track 8 : BruhMoment\_21
- Track 9 : AWGoat\_19
- Track 10 : SilentRX\_21
- Track 11 : Maih\_13, Salete\_13, BayC\_13
- Track 12 : RainyPolka\_13
- Track 13 : YDN12\_14
- Track 14 : Mischief19\_14
- Track 15 : Abt2graduatex2\_13
- Track 16 : Xkcd426\_14
- Track 17 : Asis\_13, TP1604\_13, BabyGotBac\_13
- Track 18 : Onika\_26, Quhwah\_30, Shotgun\_26, Ganandorf\_26, Hermeonysus\_26, CrazyRich\_26, Busephilis\_26, Savannah\_26, Jefe\_27, Phorgeous\_26, BrazzalePHS\_26, PierreOrion\_27, Pulchra\_28, Cranjis\_28, Yeti\_27, Scumberland\_28, Selwyn23\_28, Honeyfin\_28, Piperis\_27, Antares\_27, Jollipop\_27, PiperSansNom\_27
- Track 19 : ClearAsMud\_29
- Track 20 : Jayden\_28
- Track 21 : LittleFortune\_28
- Track 22 : Gina\_28, Teamocil\_28
- Track 23 : Metamorphoo\_27
- Track 24 : Tyumbra\_25, Fireman\_27
- Track 25 : Crisis\_28, KaiHaiDragon\_27, EarickHC\_27, Phrancesco\_27
- Track 26 : RobsFeet\_28
- Track 27 : Sunny\_27
- Track 28 : Ariadne\_35, Smarties\_35
- Track 29 : Paschalis\_26, Ramiel05\_26, Kowalski\_26
- Track 30 : Nicole72\_22
- Track 31 : Merry\_27
- Track 32 : NoodlelyBoi\_27
- Track 33 : Megan\_21

- Track 34 : Matzah\_23, Cinna\_22
- Track 35 : MementoMori\_23
- Track 36 : Kozie\_23
- Track 37 : Terij\_23
- Track 38 : Margaery\_22
- Track 39 : Cressida\_24
- Track 40 : Rasputia\_56
- Track 41 : Hendrix\_57
- Track 42 : Leaf\_60, Dewdrop\_60
- Track 43 : TurkishDelight\_17
- Track 44 : FuzzBuster\_31
- Track 45 : RomansRevenge\_16

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

The start number called the most often in the published annotations is 17, it was called in 53 of the 77 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Antares\_27, Ariadne\_35, BrazzalePHS\_26, Busephilis\_26, Cinna\_22, ClearAsMud\_29, Cranjis\_28, CrazyRich\_26, Cressida\_24, Crisis\_28, Dewdrop\_60, EarickHC\_27, Fireman\_27, Ganandorf\_26, Gina\_28, Hendrix\_57, Hermeonysus\_26, Honeyfin\_28, Jayden\_28, Jefe\_27, Jollipop\_27, KaiHaiDragon\_27, Kowalski\_26, Kozie\_23, Leaf\_60, LittleFortune\_28, Margaery\_22, Matzah\_23, Megan\_21, MementoMori\_23, Metamorphoo\_27, Nicole72\_22, NoodlelyBoi\_27, Onika\_26, Paschalis\_26, Phorgeous\_26, Phrancesco\_27, PierreOrion\_27, PiperSansNom\_27, Piperis\_27, Pulchra\_28, Quhwah\_30, Ramiel05\_26, Rasputia\_56, RobsFeet\_28, Savannah\_26, Scumberland\_28, Selwyn23\_28, Shotgun\_26, Smarties\_35, Sunny\_27, Teamocil\_28, Terij\_23, Tyrumbra\_25, Yeti\_27,

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

- Merry\_27,

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

- AWGoat\_19, Abt2graduatex2\_13, Asis\_13, BabyGotBac\_13, BayC\_13, Beagle\_27, BruhMoment\_21, FuzzBuster\_31, Maih\_13, MellowYellow\_23, Mischief19\_14, NyleyClemson\_22, Odyssey395\_28, Pointis\_26, Pureglobe5\_28, RainyPolka\_13, Ranunculus\_20, Rizwana\_19, RomansRevenge\_16, Salete\_13, SilentRX\_21, TP1604\_13, Tank\_20, TurkishDelight\_17, Wilde\_20, Xkcd426\_14, YDN12\_14,

**Summary by start number:**

Start 10:

- Found in 1 of 83 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 77
- Called 100.0% of time when present
- Phage (with cluster) where this start called: FuzzBuster\_31 (singleton),

Start 15:

- Found in 2 of 83 ( 2.4% ) of genes in pham

- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Merry\_27 (EC),

Start 17:

- Found in 56 of 83 ( 67.5% ) of genes in pham
- Manual Annotations of this start: 53 of 77
- Called 98.2% of time when present
- Phage (with cluster) where this start called: Antares\_27 (EC), Ariadne\_35 (EC), BrazzalePHS\_26 (EC), Busephilis\_26 (EC), Cinna\_22 (EI), ClearAsMud\_29 (EC), Cranjis\_28 (EC), CrazyRich\_26 (EC), Cressida\_24 (EI), Crisis\_28 (EC), Dewdrop\_60 (GC), EarickHC\_27 (EC), Fireman\_27 (EC), Ganandorf\_26 (EC), Gina\_28 (EC), Hendrix\_57 (GC), Hermeonysus\_26 (EC), Honeyfin\_28 (EC), Jayden\_28 (EC), Jefe\_27 (EC), Jollipop\_27 (EC), KaiHaiDragon\_27 (EC), Kowalski\_26 (EC), Kozie\_23 (EI), Leaf\_60 (GC), LittleFortune\_28 (EC), Margaery\_22 (EI), Matzah\_23 (EI), Megan\_21 (EC), MementoMori\_23 (EI), Metamorphoo\_27 (EC), Nicole72\_22 (EC), NoodlelyBoi\_27 (EC), Onika\_26 (EC), Paschalis\_26 (EC), Phorgeous\_26 (EC), Phrancesco\_27 (EC), PierreOrion\_27 (EC), PiperSansNom\_27 (EC), Piperis\_27 (EC), Pulchra\_28 (EC), Quhwah\_30 (EC), Ramiel05\_26 (EC), Rasputia\_56 (GC), RobsFeet\_28 (EC), Savannah\_26 (EC), Scumberland\_28 (EC), Selwyn23\_28 (EC), Shotgun\_26 (EC), Smarties\_35 (EC), Sunny\_27 (EC), Teamocil\_28 (EC), Terij\_23 (EI), Tyumbra\_25 (EC), Yeti\_27 (EC),

Start 22:

- Found in 1 of 83 ( 1.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: RomansRevenge\_16 (singleton),

Start 26:

- Found in 26 of 83 ( 31.3% ) of genes in pham
- Manual Annotations of this start: 23 of 77
- Called 96.2% of time when present
- Phage (with cluster) where this start called: AWGoat\_19 (AP4), Abt2graduatex2\_13 (BG), Asis\_13 (BG), BabyGotBac\_13 (BG), BayC\_13 (BG), Beagle\_27 (AP2), BruhMoment\_21 (AP3), Maih\_13 (BG), MellowYellow\_23 (AP2), Mischief19\_14 (BG), NyleyClemson\_22 (AP2), Odyssey395\_28 (AP2), Pointis\_26 (AP2), Pureglobe5\_28 (AP2), RainyPolka\_13 (BG), Ranunculus\_20 (AP), Rizwana\_19 (AP1), Salet\_13 (BG), SilentRX\_21 (AP4), TP1604\_13 (BG), Tank\_20 (AP1), TurkishDelight\_17 (singleton), Wilde\_20 (AP1), Xkcd426\_14 (BG), YDN12\_14 (BG),

### Summary by clusters:

There are 10 clusters represented in this pham: singleton, BG, EI, AP2, AP3, AP1, EC, AP, GC, AP4,

Info for manual annotations of cluster AP:

- Start number 26 was manually annotated 1 time for cluster AP.

Info for manual annotations of cluster AP1:

- Start number 26 was manually annotated 3 times for cluster AP1.

Info for manual annotations of cluster AP2:

- Start number 26 was manually annotated 5 times for cluster AP2.

Info for manual annotations of cluster AP3:

- Start number 26 was manually annotated 1 time for cluster AP3.

Info for manual annotations of cluster AP4:

- Start number 26 was manually annotated 2 times for cluster AP4.

Info for manual annotations of cluster BG:

- Start number 26 was manually annotated 10 times for cluster BG.

Info for manual annotations of cluster EC:

- Start number 17 was manually annotated 42 times for cluster EC.

Info for manual annotations of cluster EI:

- Start number 17 was manually annotated 7 times for cluster EI.

Info for manual annotations of cluster GC:

- Start number 17 was manually annotated 4 times for cluster GC.

### ***Gene Information:***

Gene: AWGoat\_19 Start: 13739, Stop: 15430, Start Num: 26

Candidate Starts for AWGoat\_19:

(19, 13679), (20, 13691), (21, 13694), (Start: 26 @13739 has 23 MA's), (104, 14555), (111, 14609), (114, 14639), (115, 14651), (131, 14735), (132, 14738), (133, 14741), (143, 14810), (153, 14882), (158, 14930), (171, 15047), (178, 15113), (192, 15230), (203, 15317), (205, 15323),

Gene: Abt2graduatex2\_13 Start: 13868, Stop: 15571, Start Num: 26

Candidate Starts for Abt2graduatex2\_13:

(Start: 26 @13868 has 23 MA's), (27, 13877), (30, 13964), (40, 14111), (41, 14135), (56, 14318), (65, 14372), (67, 14402), (72, 14432), (73, 14435), (80, 14483), (86, 14519), (93, 14564), (95, 14606), (101, 14675), (130, 14855), (142, 14933), (143, 14936), (160, 15086), (162, 15128), (171, 15188), (174, 15209), (187, 15341), (196, 15398), (200, 15419), (204, 15461), (206, 15467), (220, 15542),

Gene: Antares\_27 Start: 14003, Stop: 15859, Start Num: 17

Candidate Starts for Antares\_27:

(Start: 17 @14003 has 53 MA's), (57, 14579), (64, 14624), (67, 14660), (76, 14729), (81, 14750), (82, 14753), (86, 14783), (97, 14903), (108, 14984), (126, 15098), (127, 15125), (152, 15314), (164, 15440), (179, 15554), (181, 15569), (188, 15617), (192, 15647), (194, 15659), (197, 15674), (199, 15689), (205, 15740), (209, 15758), (212, 15776),

Gene: Ariadne\_35 Start: 15581, Stop: 17596, Start Num: 17

Candidate Starts for Ariadne\_35:

(Start: 17 @15581 has 53 MA's), (57, 16160), (64, 16205), (67, 16241), (71, 16265), (76, 16310), (81, 16331), (84, 16349), (97, 16484), (124, 16814), (125, 16817), (127, 16874), (128, 16898), (147, 17036), (152, 17063), (163, 17174), (179, 17303), (181, 17318), (182, 17327), (185, 17354), (188, 17366), (192, 17396), (197, 17423), (209, 17507), (212, 17525),

Gene: Asis\_13 Start: 13751, Stop: 15445, Start Num: 26

Candidate Starts for Asis\_13:

(Start: 26 @13751 has 23 MA's), (27, 13760), (31, 13862), (40, 13994), (41, 14018), (46, 14114), (56, 14195), (63, 14240), (65, 14249), (68, 14282), (72, 14309), (73, 14312), (80, 14360), (85, 14393), (86, 14396), (91, 14435), (93, 14441), (97, 14519), (101, 14552), (113, 14642), (128, 14717), (130, 14732), (139, 14798), (142, 14810), (143, 14813), (156, 14930), (160, 14963), (162, 15005), (176, 15122), (187, 15218), (196, 15275), (200, 15296), (204, 15338), (206, 15344), (212, 15377), (214, 15401), (220, 15419), (221, 15434),

Gene: BabyGotBac\_13 Start: 13751, Stop: 15445, Start Num: 26

Candidate Starts for BabyGotBac\_13:

(Start: 26 @13751 has 23 MA's), (27, 13760), (31, 13862), (40, 13994), (41, 14018), (46, 14114), (56, 14195), (63, 14240), (65, 14249), (68, 14282), (72, 14309), (73, 14312), (80, 14360), (85, 14393), (86, 14396), (91, 14435), (93, 14441), (97, 14519), (101, 14552), (113, 14642), (128, 14717), (130, 14732), (139, 14798), (142, 14810), (143, 14813), (156, 14930), (160, 14963), (162, 15005), (176, 15122), (187, 15218), (196, 15275), (200, 15296), (204, 15338), (206, 15344), (212, 15377), (214, 15401), (220, 15419), (221, 15434),

Gene: BayC\_13 Start: 13751, Stop: 15445, Start Num: 26

Candidate Starts for BayC\_13:

(Start: 26 @13751 has 23 MA's), (27, 13760), (31, 13862), (40, 13994), (41, 14018), (46, 14114), (56, 14195), (63, 14240), (65, 14249), (68, 14282), (72, 14309), (73, 14312), (80, 14360), (85, 14393), (86, 14396), (91, 14435), (93, 14441), (97, 14519), (101, 14552), (113, 14642), (130, 14732), (139, 14798), (142, 14810), (143, 14813), (156, 14930), (160, 14963), (162, 15005), (176, 15122), (187, 15218), (196, 15275), (204, 15338), (206, 15344), (212, 15377), (214, 15401), (220, 15419), (221, 15434),

Gene: Beagle\_27 Start: 14234, Stop: 15961, Start Num: 26

Candidate Starts for Beagle\_27:

(18, 14171), (Start: 26 @14234 has 23 MA's), (74, 14843), (109, 15131), (111, 15143), (114, 15173), (131, 15269), (132, 15272), (133, 15275), (140, 15335), (161, 15497), (167, 15557), (168, 15563), (171, 15581), (178, 15644), (190, 15755), (205, 15854),

Gene: BrazzalePHS\_26 Start: 13795, Stop: 15654, Start Num: 17

Candidate Starts for BrazzalePHS\_26:

(Start: 17 @13795 has 53 MA's), (57, 14374), (64, 14419), (67, 14455), (76, 14524), (81, 14545), (82, 14548), (86, 14578), (97, 14698), (108, 14779), (126, 14893), (127, 14920), (152, 15109), (164, 15235), (179, 15349), (181, 15364), (188, 15412), (192, 15442), (194, 15454), (197, 15469), (199, 15484), (205, 15535), (209, 15553), (212, 15571),

Gene: BruhMoment\_21 Start: 13658, Stop: 15379, Start Num: 26

Candidate Starts for BruhMoment\_21:

(19, 13598), (Start: 26 @13658 has 23 MA's), (64, 14171), (74, 14249), (75, 14264), (111, 14558), (114, 14588), (131, 14684), (132, 14687), (133, 14690), (143, 14759), (158, 14879), (162, 14936), (165, 14963), (171, 14996), (183, 15116), (189, 15170), (193, 15188), (201, 15254), (205, 15272), (211, 15302),

Gene: Busephilis\_26 Start: 13734, Stop: 15590, Start Num: 17

Candidate Starts for Busephilis\_26:

(Start: 17 @13734 has 53 MA's), (57, 14310), (64, 14355), (67, 14391), (76, 14460), (81, 14481), (82, 14484), (86, 14514), (97, 14634), (108, 14715), (126, 14829), (127, 14856), (152, 15045), (164, 15171), (179, 15285), (181, 15300), (188, 15348), (192, 15378), (194, 15390), (197, 15405), (199, 15420), (205, 15471), (209, 15489), (212, 15507),

Gene: Cinna\_22 Start: 13276, Stop: 15141, Start Num: 17

Candidate Starts for Cinna\_22:

(Start: 17 @13276 has 53 MA's), (42, 13630), (49, 13756), (62, 13894), (67, 13936), (78, 14017), (81, 14026), (90, 14083), (92, 14095), (104, 14227), (107, 14248), (108, 14254), (126, 14368), (135, 14467), (136, 14485), (152, 14584), (154, 14599), (159, 14641), (163, 14695), (164, 14710), (171, 14752), (173, 14767), (175, 14779), (179, 14824), (185, 14887), (189, 14920),

Gene: ClearAsMud\_29 Start: 14527, Stop: 16377, Start Num: 17

Candidate Starts for ClearAsMud\_29:

(Start: 17 @14527 has 53 MA's), (57, 15103), (64, 15148), (67, 15184), (76, 15253), (81, 15274), (82, 15277), (86, 15307), (97, 15427), (127, 15649), (131, 15694), (152, 15838), (169, 15994), (179, 16078), (188, 16141), (192, 16171), (194, 16183), (197, 16198), (199, 16213), (205, 16264), (209, 16282),

Gene: Cranjjs\_28 Start: 13958, Stop: 15814, Start Num: 17

Candidate Starts for Cranjjs\_28:

(Start: 17 @13958 has 53 MA's), (57, 14534), (64, 14579), (67, 14615), (76, 14684), (81, 14705), (82, 14708), (86, 14738), (97, 14858), (108, 14939), (126, 15053), (127, 15080), (152, 15269), (164, 15395), (179, 15509), (181, 15524), (188, 15572), (192, 15602), (194, 15614), (197, 15629), (199, 15644), (205, 15695), (209, 15713), (212, 15731),

Gene: CrazyRich\_26 Start: 13768, Stop: 15624, Start Num: 17

Candidate Starts for CrazyRich\_26:

(Start: 17 @13768 has 53 MA's), (57, 14344), (64, 14389), (67, 14425), (76, 14494), (81, 14515), (82, 14518), (86, 14548), (97, 14668), (108, 14749), (126, 14863), (127, 14890), (152, 15079), (164, 15205), (179, 15319), (181, 15334), (188, 15382), (192, 15412), (194, 15424), (197, 15439), (199, 15454), (205, 15505), (209, 15523), (212, 15541),

Gene: Cressida\_24 Start: 13311, Stop: 15185, Start Num: 17

Candidate Starts for Cressida\_24:

(Start: 17 @13311 has 53 MA's), (49, 13797), (55, 13836), (62, 13935), (67, 13977), (78, 14058), (81, 14067), (90, 14124), (92, 14136), (104, 14268), (107, 14289), (108, 14295), (126, 14409), (135, 14508), (136, 14526), (152, 14625), (154, 14640), (159, 14682), (163, 14736), (164, 14751), (171, 14793), (173, 14808), (175, 14820), (179, 14865), (185, 14928), (192, 14970), (198, 15009), (199, 15012), (212, 15099),

Gene: Crisis\_28 Start: 13753, Stop: 15609, Start Num: 17

Candidate Starts for Crisis\_28:

(Start: 17 @13753 has 53 MA's), (57, 14329), (64, 14374), (67, 14410), (76, 14479), (81, 14500), (82, 14503), (86, 14533), (97, 14653), (108, 14734), (126, 14848), (127, 14875), (152, 15064), (164, 15190), (168, 15214), (179, 15304), (181, 15319), (188, 15367), (192, 15397), (194, 15409), (197, 15424), (199, 15439), (205, 15490), (209, 15508), (212, 15526),

Gene: Dewdrop\_60 Start: 29654, Stop: 31561, Start Num: 17

Candidate Starts for Dewdrop\_60:

(1, 29438), (4, 29510), (7, 29543), (8, 29546), (Start: 17 @29654 has 53 MA's), (40, 29993), (48, 30131), (51, 30161), (60, 30269), (66, 30314), (117, 30755), (143, 30929), (146, 30959), (147, 30971), (152, 30998), (159, 31055), (161, 31082), (163, 31109), (166, 31136), (170, 31160), (175, 31202), (176, 31232), (179, 31247), (198, 31391), (211, 31475), (217, 31517),

Gene: EarickHC\_27 Start: 13679, Stop: 15535, Start Num: 17

Candidate Starts for EarickHC\_27:

(Start: 17 @13679 has 53 MA's), (57, 14255), (64, 14300), (67, 14336), (76, 14405), (81, 14426), (82, 14429), (86, 14459), (97, 14579), (108, 14660), (126, 14774), (127, 14801), (152, 14990), (164, 15116), (168, 15140), (179, 15230), (181, 15245), (188, 15293), (192, 15323), (194, 15335), (197,

15350), (199, 15365), (205, 15416), (209, 15434), (212, 15452),

Gene: Fireman\_27 Start: 13483, Stop: 15504, Start Num: 17

Candidate Starts for Fireman\_27:

(Start: 17 @13483 has 53 MA's), (57, 14068), (67, 14149), (71, 14173), (76, 14218), (81, 14239), (97, 14392), (122, 14650), (124, 14722), (127, 14782), (128, 14806), (147, 14944), (151, 14968), (152, 14971), (163, 15082), (179, 15211), (181, 15226), (182, 15235), (185, 15262), (188, 15274), (192, 15304), (197, 15331), (212, 15433),

Gene: FuzzBuster\_31 Start: 13864, Stop: 15825, Start Num: 10

Candidate Starts for FuzzBuster\_31:

(Start: 10 @13864 has 1 MA's), (13, 13891), (18, 13975), (24, 14026), (40, 14296), (60, 14533), (87, 14728), (96, 14842), (129, 15121), (134, 15148), (136, 15175), (141, 15199), (144, 15223), (147, 15247), (148, 15250), (150, 15268), (156, 15307), (163, 15385), (195, 15637), (198, 15658), (213, 15769), (215, 15778),

Gene: Ganandorf\_26 Start: 13815, Stop: 15671, Start Num: 17

Candidate Starts for Ganandorf\_26:

(Start: 17 @13815 has 53 MA's), (57, 14391), (64, 14436), (67, 14472), (76, 14541), (81, 14562), (82, 14565), (86, 14595), (97, 14715), (108, 14796), (126, 14910), (127, 14937), (152, 15126), (164, 15252), (179, 15366), (181, 15381), (188, 15429), (192, 15459), (194, 15471), (197, 15486), (199, 15501), (205, 15552), (209, 15570), (212, 15588),

Gene: Gina\_28 Start: 13149, Stop: 15167, Start Num: 17

Candidate Starts for Gina\_28:

(Start: 17 @13149 has 53 MA's), (47, 13617), (57, 13731), (62, 13770), (67, 13812), (71, 13836), (76, 13881), (81, 13902), (82, 13905), (84, 13920), (91, 13974), (97, 14055), (106, 14115), (118, 14259), (120, 14277), (127, 14445), (128, 14469), (147, 14607), (152, 14634), (163, 14745), (179, 14874), (181, 14889), (185, 14925), (188, 14937), (192, 14967), (197, 14994), (212, 15096),

Gene: Hendrix\_57 Start: 29698, Stop: 31632, Start Num: 17

Candidate Starts for Hendrix\_57:

(Start: 17 @29698 has 53 MA's), (35, 29935), (51, 30232), (60, 30343), (82, 30505), (95, 30619), (146, 31033), (147, 31045), (152, 31072), (159, 31129), (161, 31156), (163, 31183), (164, 31198), (173, 31264), (217, 31591),

Gene: Hermeonysus\_26 Start: 13684, Stop: 15543, Start Num: 17

Candidate Starts for Hermeonysus\_26:

(Start: 17 @13684 has 53 MA's), (57, 14263), (64, 14308), (67, 14344), (76, 14413), (81, 14434), (82, 14437), (86, 14467), (97, 14587), (108, 14668), (126, 14782), (127, 14809), (152, 14998), (164, 15124), (179, 15238), (181, 15253), (188, 15301), (192, 15331), (194, 15343), (197, 15358), (199, 15373), (205, 15424), (209, 15442), (212, 15460),

Gene: Honeyfin\_28 Start: 14000, Stop: 15859, Start Num: 17

Candidate Starts for Honeyfin\_28:

(Start: 17 @14000 has 53 MA's), (57, 14579), (64, 14624), (67, 14660), (76, 14729), (81, 14750), (82, 14753), (86, 14783), (97, 14903), (108, 14984), (126, 15098), (127, 15125), (152, 15314), (164, 15440), (179, 15554), (181, 15569), (188, 15617), (192, 15647), (194, 15659), (197, 15674), (199, 15689), (205, 15740), (209, 15758), (212, 15776),

Gene: Jayden\_28 Start: 13519, Stop: 15375, Start Num: 17

Candidate Starts for Jayden\_28:



(Start: 17 @13519 has 53 MA's), (32, 13699), (57, 14092), (62, 14131), (64, 14137), (67, 14173), (76, 14242), (81, 14263), (82, 14266), (97, 14416), (127, 14638), (128, 14662), (147, 14800), (152, 14827), (163, 14938), (164, 14953), (179, 15067), (181, 15082), (182, 15091), (185, 15118), (188, 15130), (191, 15157), (192, 15160), (199, 15202),

Gene: Jefe\_27 Start: 13737, Stop: 15596, Start Num: 17

Candidate Starts for Jefe\_27:

(Start: 17 @13737 has 53 MA's), (57, 14316), (64, 14361), (67, 14397), (76, 14466), (81, 14487), (82, 14490), (86, 14520), (97, 14640), (108, 14721), (126, 14835), (127, 14862), (152, 15051), (164, 15177), (179, 15291), (181, 15306), (188, 15354), (192, 15384), (194, 15396), (197, 15411), (199, 15426), (205, 15477), (209, 15495), (212, 15513),

Gene: Jollipop\_27 Start: 14085, Stop: 15941, Start Num: 17

Candidate Starts for Jollipop\_27:

(Start: 17 @14085 has 53 MA's), (57, 14661), (64, 14706), (67, 14742), (76, 14811), (81, 14832), (82, 14835), (86, 14865), (97, 14985), (108, 15066), (126, 15180), (127, 15207), (152, 15396), (164, 15522), (179, 15636), (181, 15651), (188, 15699), (192, 15729), (194, 15741), (197, 15756), (199, 15771), (205, 15822), (209, 15840), (212, 15858),

Gene: KaiHaiDragon\_27 Start: 13679, Stop: 15535, Start Num: 17

Candidate Starts for KaiHaiDragon\_27:

(Start: 17 @13679 has 53 MA's), (57, 14255), (64, 14300), (67, 14336), (76, 14405), (81, 14426), (82, 14429), (86, 14459), (97, 14579), (108, 14660), (126, 14774), (127, 14801), (152, 14990), (164, 15116), (168, 15140), (179, 15230), (181, 15245), (188, 15293), (192, 15323), (194, 15335), (197, 15350), (199, 15365), (205, 15416), (209, 15434), (212, 15452),

Gene: Kowalski\_26 Start: 13795, Stop: 15651, Start Num: 17

Candidate Starts for Kowalski\_26:

(Start: 17 @13795 has 53 MA's), (57, 14371), (64, 14416), (67, 14452), (76, 14521), (81, 14542), (82, 14545), (86, 14575), (97, 14695), (108, 14776), (126, 14890), (127, 14917), (152, 15106), (179, 15346), (181, 15361), (188, 15409), (192, 15439), (194, 15451), (197, 15466), (199, 15481), (205, 15532), (209, 15550), (212, 15568),

Gene: Kozie\_23 Start: 13272, Stop: 15131, Start Num: 17

Candidate Starts for Kozie\_23:

(Start: 17 @13272 has 53 MA's), (50, 13767), (67, 13923), (81, 14013), (106, 14220), (126, 14355), (131, 14427), (136, 14472), (147, 14544), (150, 14565), (152, 14571), (159, 14628), (163, 14682), (168, 14721), (169, 14727), (175, 14766), (177, 14799), (212, 15045),

Gene: Leaf\_60 Start: 29654, Stop: 31561, Start Num: 17

Candidate Starts for Leaf\_60:

(1, 29438), (4, 29510), (7, 29543), (8, 29546), (Start: 17 @29654 has 53 MA's), (40, 29993), (48, 30131), (51, 30161), (60, 30269), (66, 30314), (117, 30755), (143, 30929), (146, 30959), (147, 30971), (152, 30998), (159, 31055), (161, 31082), (163, 31109), (166, 31136), (170, 31160), (175, 31202), (176, 31232), (179, 31247), (198, 31391), (211, 31475), (217, 31517),

Gene: LittleFortune\_28 Start: 14042, Stop: 15901, Start Num: 17

Candidate Starts for LittleFortune\_28:

(Start: 17 @14042 has 53 MA's), (57, 14621), (64, 14666), (67, 14702), (76, 14771), (81, 14792), (82, 14795), (86, 14825), (97, 14945), (108, 15026), (126, 15140), (127, 15167), (152, 15356), (164, 15482), (179, 15596), (181, 15611), (188, 15659), (192, 15689), (197, 15716), (199, 15731), (205, 15782), (209, 15800), (212, 15818),

Gene: Maih\_13 Start: 13750, Stop: 15444, Start Num: 26

Candidate Starts for Maih\_13:

(Start: 26 @13750 has 23 MA's), (27, 13759), (31, 13861), (40, 13993), (41, 14017), (46, 14113), (56, 14194), (63, 14239), (65, 14248), (68, 14281), (72, 14308), (73, 14311), (80, 14359), (85, 14392), (86, 14395), (91, 14434), (93, 14440), (97, 14518), (101, 14551), (113, 14641), (130, 14731), (139, 14797), (142, 14809), (143, 14812), (156, 14929), (160, 14962), (162, 15004), (176, 15121), (187, 15217), (196, 15274), (204, 15337), (206, 15343), (212, 15376), (214, 15400), (220, 15418), (221, 15433),

Gene: Margaery\_22 Start: 13234, Stop: 15096, Start Num: 17

Candidate Starts for Margaery\_22:

(9, 13135), (Start: 17 @13234 has 53 MA's), (42, 13588), (57, 13807), (62, 13846), (67, 13888), (81, 13978), (92, 14047), (107, 14200), (126, 14320), (136, 14437), (152, 14536), (154, 14551), (159, 14593), (163, 14647), (169, 14692), (171, 14704), (173, 14719), (175, 14731), (185, 14839), (189, 14872), (199, 14923), (208, 14989),

Gene: Matzah\_23 Start: 13253, Stop: 15118, Start Num: 17

Candidate Starts for Matzah\_23:

(Start: 17 @13253 has 53 MA's), (42, 13607), (49, 13733), (62, 13871), (67, 13913), (78, 13994), (81, 14003), (90, 14060), (92, 14072), (104, 14204), (107, 14225), (108, 14231), (126, 14345), (135, 14444), (136, 14462), (152, 14561), (154, 14576), (159, 14618), (163, 14672), (164, 14687), (171, 14729), (173, 14744), (175, 14756), (179, 14801), (185, 14864), (189, 14897),

Gene: Megan\_21 Start: 14855, Stop: 16870, Start Num: 17

Candidate Starts for Megan\_21:

(2, 14651), (3, 14660), (5, 14723), (6, 14741), (16, 14843), (Start: 17 @14855 has 53 MA's), (33, 15056), (57, 15434), (64, 15479), (67, 15515), (76, 15584), (81, 15605), (82, 15608), (84, 15623), (97, 15758), (99, 15773), (121, 16007), (123, 16076), (127, 16148), (147, 16310), (148, 16313), (151, 16334), (158, 16388), (163, 16448), (169, 16493), (171, 16505), (177, 16565), (179, 16577), (188, 16640), (192, 16670), (197, 16697), (210, 16790), (211, 16793), (212, 16799), (218, 16838),

Gene: MellowYellow\_23 Start: 12969, Stop: 14696, Start Num: 26

Candidate Starts for MellowYellow\_23:

(18, 12906), (Start: 26 @12969 has 23 MA's), (74, 13578), (102, 13806), (109, 13866), (111, 13878), (114, 13908), (131, 14004), (132, 14007), (133, 14010), (140, 14070), (161, 14232), (165, 14283), (167, 14292), (171, 14316), (178, 14379), (185, 14454), (186, 14460), (188, 14466), (189, 14487), (205, 14589),

Gene: MementoMori\_23 Start: 12969, Stop: 14840, Start Num: 17

Candidate Starts for MementoMori\_23:

(Start: 17 @12969 has 53 MA's), (49, 13452), (59, 13560), (62, 13590), (67, 13632), (78, 13713), (81, 13722), (90, 13779), (92, 13791), (104, 13923), (107, 13944), (108, 13950), (126, 14064), (135, 14163), (136, 14181), (152, 14280), (154, 14295), (159, 14337), (163, 14391), (164, 14406), (171, 14448), (173, 14463), (175, 14475), (179, 14520), (185, 14583), (189, 14616), (212, 14754),

Gene: Merry\_27 Start: 13998, Stop: 15890, Start Num: 15

Candidate Starts for Merry\_27:

(11, 13962), (12, 13968), (14, 13995), (15, 13998), (Start: 17 @14052 has 53 MA's), (40, 14373), (57, 14610), (64, 14655), (67, 14691), (76, 14760), (81, 14781), (82, 14784), (89, 14835), (94, 14868), (97, 14934), (108, 15015), (127, 15156), (148, 15321), (152, 15345), (164, 15471), (179, 15585), (181, 15600), (185, 15636), (188, 15648), (192, 15678), (194, 15690), (197, 15705), (214, 15831),

Gene: Metamorphoo\_27 Start: 13469, Stop: 15490, Start Num: 17

Candidate Starts for Metamorphoo\_27:

(Start: 17 @13469 has 53 MA's), (57, 14054), (67, 14135), (71, 14159), (76, 14204), (81, 14225), (82, 14228), (97, 14378), (119, 14588), (122, 14636), (124, 14708), (127, 14768), (128, 14792), (147, 14930), (151, 14954), (152, 14957), (163, 15068), (179, 15197), (181, 15212), (182, 15221), (185, 15248), (188, 15260), (192, 15290), (197, 15317), (209, 15401), (212, 15419),

Gene: Mischief19\_14 Start: 15652, Stop: 17313, Start Num: 26

Candidate Starts for Mischief19\_14:

(Start: 26 @15652 has 23 MA's), (28, 15730), (40, 15895), (44, 15976), (55, 16060), (66, 16147), (70, 16189), (73, 16204), (77, 16243), (79, 16249), (80, 16252), (85, 16285), (97, 16411), (101, 16444), (104, 16465), (112, 16525), (128, 16609), (138, 16684), (142, 16702), (160, 16837), (162, 16879), (176, 16996), (184, 17065), (188, 17095),

Gene: Nicole72\_22 Start: 15232, Stop: 17253, Start Num: 17

Candidate Starts for Nicole72\_22:

(16, 15220), (Start: 17 @15232 has 53 MA's), (33, 15433), (37, 15505), (57, 15817), (64, 15862), (67, 15898), (76, 15967), (81, 15988), (87, 16024), (97, 16141), (103, 16186), (106, 16201), (127, 16531), (147, 16693), (148, 16696), (151, 16717), (163, 16831), (171, 16888), (177, 16948), (179, 16960), (188, 17023), (192, 17053), (210, 17173), (211, 17176), (212, 17182), (218, 17221),

Gene: NoodlelyBoi\_27 Start: 14134, Stop: 15984, Start Num: 17

Candidate Starts for NoodlelyBoi\_27:

(Start: 17 @14134 has 53 MA's), (57, 14710), (64, 14755), (67, 14791), (76, 14860), (81, 14881), (82, 14884), (86, 14914), (97, 15034), (126, 15229), (127, 15256), (131, 15301), (152, 15445), (169, 15601), (179, 15685), (188, 15748), (192, 15778), (194, 15790), (197, 15805), (199, 15820), (205, 15871), (209, 15889),

Gene: NyleyClemson\_22 Start: 12914, Stop: 14641, Start Num: 26

Candidate Starts for NyleyClemson\_22:

(18, 12851), (Start: 26 @12914 has 23 MA's), (74, 13523), (109, 13811), (111, 13823), (114, 13853), (131, 13949), (132, 13952), (133, 13955), (140, 14015), (161, 14177), (165, 14228), (167, 14237), (171, 14261), (178, 14324), (185, 14399), (186, 14405), (188, 14411), (189, 14432), (205, 14534),

Gene: Odyssey395\_28 Start: 14429, Stop: 16156, Start Num: 26

Candidate Starts for Odyssey395\_28:

(18, 14366), (Start: 26 @14429 has 23 MA's), (74, 15038), (103, 15275), (109, 15326), (111, 15338), (114, 15368), (131, 15464), (132, 15467), (133, 15470), (140, 15530), (161, 15692), (167, 15752), (168, 15758), (171, 15776), (178, 15839), (190, 15950), (205, 16049),

Gene: Onika\_26 Start: 13769, Stop: 15625, Start Num: 17

Candidate Starts for Onika\_26:

(Start: 17 @13769 has 53 MA's), (57, 14345), (64, 14390), (67, 14426), (76, 14495), (81, 14516), (82, 14519), (86, 14549), (97, 14669), (108, 14750), (126, 14864), (127, 14891), (152, 15080), (164, 15206), (179, 15320), (181, 15335), (188, 15383), (192, 15413), (194, 15425), (197, 15440), (199, 15455), (205, 15506), (209, 15524), (212, 15542),

Gene: Paschalis\_26 Start: 13783, Stop: 15639, Start Num: 17

Candidate Starts for Paschalis\_26:

(Start: 17 @13783 has 53 MA's), (57, 14359), (64, 14404), (67, 14440), (76, 14509), (81, 14530), (82, 14533), (86, 14563), (97, 14683), (108, 14764), (126, 14878), (127, 14905), (152, 15094), (179, 15334), (181, 15349), (188, 15397), (192, 15427), (194, 15439), (197, 15454), (199, 15469), (205, 15520), (209, 15538), (212, 15556),

Gene: Phorgeous\_26 Start: 13636, Stop: 15492, Start Num: 17

Candidate Starts for Phorgeous\_26:

(Start: 17 @13636 has 53 MA's), (57, 14212), (64, 14257), (67, 14293), (76, 14362), (81, 14383), (82, 14386), (86, 14416), (97, 14536), (108, 14617), (126, 14731), (127, 14758), (152, 14947), (164, 15073), (179, 15187), (181, 15202), (188, 15250), (192, 15280), (194, 15292), (197, 15307), (199, 15322), (205, 15373), (209, 15391), (212, 15409),

Gene: Phrancesco\_27 Start: 13914, Stop: 15770, Start Num: 17

Candidate Starts for Phrancesco\_27:

(Start: 17 @13914 has 53 MA's), (57, 14490), (64, 14535), (67, 14571), (76, 14640), (81, 14661), (82, 14664), (86, 14694), (97, 14814), (108, 14895), (126, 15009), (127, 15036), (152, 15225), (164, 15351), (168, 15375), (179, 15465), (181, 15480), (188, 15528), (192, 15558), (194, 15570), (197, 15585), (199, 15600), (205, 15651), (209, 15669), (212, 15687),

Gene: PierreOrion\_27 Start: 13938, Stop: 15794, Start Num: 17

Candidate Starts for PierreOrion\_27:

(Start: 17 @13938 has 53 MA's), (57, 14514), (64, 14559), (67, 14595), (76, 14664), (81, 14685), (82, 14688), (86, 14718), (97, 14838), (108, 14919), (126, 15033), (127, 15060), (152, 15249), (164, 15375), (179, 15489), (181, 15504), (188, 15552), (192, 15582), (194, 15594), (197, 15609), (199, 15624), (205, 15675), (209, 15693), (212, 15711),

Gene: PiperSansNom\_27 Start: 14090, Stop: 15946, Start Num: 17

Candidate Starts for PiperSansNom\_27:

(Start: 17 @14090 has 53 MA's), (57, 14666), (64, 14711), (67, 14747), (76, 14816), (81, 14837), (82, 14840), (86, 14870), (97, 14990), (108, 15071), (126, 15185), (127, 15212), (152, 15401), (164, 15527), (179, 15641), (181, 15656), (188, 15704), (192, 15734), (194, 15746), (197, 15761), (199, 15776), (205, 15827), (209, 15845), (212, 15863),

Gene: Piperis\_27 Start: 13760, Stop: 15616, Start Num: 17

Candidate Starts for Piperis\_27:

(Start: 17 @13760 has 53 MA's), (57, 14336), (64, 14381), (67, 14417), (76, 14486), (81, 14507), (82, 14510), (86, 14540), (97, 14660), (108, 14741), (126, 14855), (127, 14882), (152, 15071), (164, 15197), (179, 15311), (181, 15326), (188, 15374), (192, 15404), (194, 15416), (197, 15431), (199, 15446), (205, 15497), (209, 15515), (212, 15533),

Gene: Pointis\_26 Start: 14433, Stop: 16160, Start Num: 26

Candidate Starts for Pointis\_26:

(18, 14370), (Start: 26 @14433 has 23 MA's), (74, 15042), (109, 15330), (111, 15342), (114, 15372), (131, 15468), (132, 15471), (133, 15474), (140, 15534), (161, 15696), (167, 15756), (168, 15762), (171, 15780), (178, 15843), (190, 15954), (205, 16053),

Gene: Pulchra\_28 Start: 14160, Stop: 16016, Start Num: 17

Candidate Starts for Pulchra\_28:

(Start: 17 @14160 has 53 MA's), (57, 14736), (64, 14781), (67, 14817), (76, 14886), (81, 14907), (82, 14910), (86, 14940), (97, 15060), (108, 15141), (126, 15255), (127, 15282), (152, 15471), (164, 15597), (179, 15711), (181, 15726), (188, 15774), (192, 15804), (194, 15816), (197, 15831), (199, 15846), (205, 15897), (209, 15915), (212, 15933),

Gene: Pureglobe5\_28 Start: 14443, Stop: 16170, Start Num: 26

Candidate Starts for Pureglobe5\_28:

(18, 14380), (Start: 26 @14443 has 23 MA's), (74, 15052), (109, 15340), (111, 15352), (114, 15382), (131, 15478), (132, 15481), (133, 15484), (140, 15544), (161, 15706), (167, 15766), (168, 15772), (171, 15790), (178, 15853), (190, 15964), (205, 16063),

Gene: Quhwah\_30 Start: 14383, Stop: 16242, Start Num: 17

Candidate Starts for Quhwah\_30:

(Start: 17 @14383 has 53 MA's), (57, 14962), (64, 15007), (67, 15043), (76, 15112), (81, 15133), (82, 15136), (86, 15166), (97, 15286), (108, 15367), (126, 15481), (127, 15508), (152, 15697), (164, 15823), (179, 15937), (181, 15952), (188, 16000), (192, 16030), (194, 16042), (197, 16057), (199, 16072), (205, 16123), (209, 16141), (212, 16159),

Gene: RainyPolka\_13 Start: 13679, Stop: 15376, Start Num: 26

Candidate Starts for RainyPolka\_13:

(Start: 26 @13679 has 23 MA's), (27, 13688), (28, 13757), (30, 13775), (31, 13790), (40, 13922), (41, 13946), (46, 14045), (56, 14126), (65, 14180), (67, 14210), (68, 14213), (72, 14240), (73, 14243), (80, 14291), (93, 14372), (95, 14414), (101, 14483), (113, 14573), (130, 14663), (139, 14729), (142, 14741), (143, 14744), (149, 14810), (160, 14894), (162, 14936), (171, 14996), (187, 15149), (196, 15206), (202, 15266), (204, 15269), (212, 15308), (214, 15332), (220, 15350),

Gene: Ramiel05\_26 Start: 13795, Stop: 15651, Start Num: 17

Candidate Starts for Ramiel05\_26:

(Start: 17 @13795 has 53 MA's), (57, 14371), (64, 14416), (67, 14452), (76, 14521), (81, 14542), (82, 14545), (86, 14575), (97, 14695), (108, 14776), (126, 14890), (127, 14917), (152, 15106), (179, 15346), (181, 15361), (188, 15409), (192, 15439), (194, 15451), (197, 15466), (199, 15481), (205, 15532), (209, 15550), (212, 15568),

Gene: Ranunculus\_20 Start: 13327, Stop: 15048, Start Num: 26

Candidate Starts for Ranunculus\_20:

(19, 13264), (Start: 26 @13327 has 23 MA's), (74, 13921), (76, 13942), (93, 14044), (109, 14218), (111, 14230), (114, 14260), (132, 14359), (133, 14362), (155, 14527), (161, 14584), (164, 14626), (165, 14635), (167, 14644), (171, 14668), (178, 14731), (188, 14818), (193, 14857), (197, 14875),

Gene: Rasputia\_56 Start: 29361, Stop: 31292, Start Num: 17

Candidate Starts for Rasputia\_56:

(Start: 17 @29361 has 53 MA's), (30, 29544), (36, 29628), (40, 29697), (51, 29895), (52, 29904), (60, 30003), (66, 30048), (82, 30165), (143, 30663), (146, 30693), (147, 30705), (152, 30732), (157, 30777), (161, 30816), (164, 30858), (185, 31044), (217, 31251),

Gene: Rizwana\_19 Start: 13218, Stop: 14954, Start Num: 26

Candidate Starts for Rizwana\_19:

(18, 13155), (Start: 26 @13218 has 23 MA's), (48, 13608), (54, 13644), (83, 13878), (95, 13986), (100, 14049), (102, 14058), (105, 14079), (114, 14160), (132, 14259), (133, 14262), (137, 14304), (142, 14328), (144, 14349), (145, 14355), (161, 14484), (167, 14544), (173, 14583), (176, 14625), (188, 14718), (205, 14841), (211, 14871),

Gene: RobsFeet\_28 Start: 13750, Stop: 15771, Start Num: 17

Candidate Starts for RobsFeet\_28:

(Start: 17 @13750 has 53 MA's), (57, 14335), (67, 14416), (71, 14440), (76, 14485), (81, 14506), (82, 14509), (97, 14659), (122, 14917), (124, 14989), (127, 15049), (128, 15073), (147, 15211), (151, 15235), (152, 15238), (163, 15349), (179, 15478), (181, 15493), (182, 15502), (185, 15529), (188, 15541), (192, 15571), (197, 15598), (212, 15700),

Gene: RomansRevenge\_16 Start: 11444, Stop: 13249, Start Num: 22

Candidate Starts for RomansRevenge\_16:

(22, 11444), (Start: 26 @11492 has 23 MA's), (29, 11582), (43, 11834), (44, 11849), (54, 11942), (64, 12053), (66, 12062), (74, 12131), (82, 12176), (88, 12218), (98, 12323), (106, 12380), (114, 12458), (130, 12548), (132, 12557), (144, 12647), (158, 12749), (171, 12866), (178, 12929), (188, 13013),

(197, 13070), (198, 13082), (205, 13136),

Gene: Salete\_13 Start: 13751, Stop: 15445, Start Num: 26

Candidate Starts for Salete\_13:

(Start: 26 @13751 has 23 MA's), (27, 13760), (31, 13862), (40, 13994), (41, 14018), (46, 14114), (56, 14195), (63, 14240), (65, 14249), (68, 14282), (72, 14309), (73, 14312), (80, 14360), (85, 14393), (86, 14396), (91, 14435), (93, 14441), (97, 14519), (101, 14552), (113, 14642), (130, 14732), (139, 14798), (142, 14810), (143, 14813), (156, 14930), (160, 14963), (162, 15005), (176, 15122), (187, 15218), (196, 15275), (204, 15338), (206, 15344), (212, 15377), (214, 15401), (220, 15419), (221, 15434),

Gene: Savannah\_26 Start: 13819, Stop: 15678, Start Num: 17

Candidate Starts for Savannah\_26:

(Start: 17 @13819 has 53 MA's), (57, 14398), (64, 14443), (67, 14479), (76, 14548), (81, 14569), (82, 14572), (86, 14602), (97, 14722), (108, 14803), (126, 14917), (127, 14944), (152, 15133), (164, 15259), (179, 15373), (181, 15388), (188, 15436), (192, 15466), (194, 15478), (197, 15493), (199, 15508), (205, 15559), (209, 15577), (212, 15595),

Gene: Scumberland\_28 Start: 14010, Stop: 15866, Start Num: 17

Candidate Starts for Scumberland\_28:

(Start: 17 @14010 has 53 MA's), (57, 14586), (64, 14631), (67, 14667), (76, 14736), (81, 14757), (82, 14760), (86, 14790), (97, 14910), (108, 14991), (126, 15105), (127, 15132), (152, 15321), (164, 15447), (179, 15561), (181, 15576), (188, 15624), (192, 15654), (194, 15666), (197, 15681), (199, 15696), (205, 15747), (209, 15765), (212, 15783),

Gene: Selwyn23\_28 Start: 13988, Stop: 15844, Start Num: 17

Candidate Starts for Selwyn23\_28:

(Start: 17 @13988 has 53 MA's), (57, 14564), (64, 14609), (67, 14645), (76, 14714), (81, 14735), (82, 14738), (86, 14768), (97, 14888), (108, 14969), (126, 15083), (127, 15110), (152, 15299), (164, 15425), (179, 15539), (181, 15554), (188, 15602), (192, 15632), (194, 15644), (197, 15659), (199, 15674), (205, 15725), (209, 15743), (212, 15761),

Gene: Shotgun\_26 Start: 13617, Stop: 15476, Start Num: 17

Candidate Starts for Shotgun\_26:

(Start: 17 @13617 has 53 MA's), (57, 14196), (64, 14241), (67, 14277), (76, 14346), (81, 14367), (82, 14370), (86, 14400), (97, 14520), (108, 14601), (126, 14715), (127, 14742), (152, 14931), (164, 15057), (179, 15171), (181, 15186), (188, 15234), (192, 15264), (194, 15276), (197, 15291), (199, 15306), (205, 15357), (209, 15375), (212, 15393),

Gene: SilentRX\_21 Start: 13505, Stop: 15193, Start Num: 26

Candidate Starts for SilentRX\_21:

(19, 13445), (20, 13457), (21, 13460), (Start: 26 @13505 has 23 MA's), (111, 14372), (114, 14402), (115, 14414), (131, 14498), (132, 14501), (133, 14504), (143, 14573), (153, 14645), (158, 14693), (171, 14810), (178, 14876), (192, 14993), (203, 15080), (205, 15086),

Gene: Smarties\_35 Start: 15581, Stop: 17596, Start Num: 17

Candidate Starts for Smarties\_35:

(Start: 17 @15581 has 53 MA's), (57, 16160), (64, 16205), (67, 16241), (71, 16265), (76, 16310), (81, 16331), (84, 16349), (97, 16484), (124, 16814), (125, 16817), (127, 16874), (128, 16898), (147, 17036), (152, 17063), (163, 17174), (179, 17303), (181, 17318), (182, 17327), (185, 17354), (188, 17366), (192, 17396), (197, 17423), (209, 17507), (212, 17525),

Gene: Sunny\_27 Start: 14052, Stop: 15890, Start Num: 17

Candidate Starts for Sunny\_27:

(11, 13962), (12, 13968), (14, 13995), (15, 13998), (Start: 17 @14052 has 53 MA's), (40, 14373), (57, 14610), (64, 14655), (67, 14691), (76, 14760), (81, 14781), (82, 14784), (89, 14835), (94, 14868), (97, 14934), (108, 15015), (127, 15156), (148, 15321), (152, 15345), (164, 15471), (179, 15585), (181, 15600), (185, 15636), (188, 15648), (192, 15678), (194, 15690), (197, 15705), (214, 15831),

Gene: TP1604\_13 Start: 13751, Stop: 15445, Start Num: 26

Candidate Starts for TP1604\_13:

(Start: 26 @13751 has 23 MA's), (27, 13760), (31, 13862), (40, 13994), (41, 14018), (46, 14114), (56, 14195), (63, 14240), (65, 14249), (68, 14282), (72, 14309), (73, 14312), (80, 14360), (85, 14393), (86, 14396), (91, 14435), (93, 14441), (97, 14519), (101, 14552), (113, 14642), (128, 14717), (130, 14732), (139, 14798), (142, 14810), (143, 14813), (156, 14930), (160, 14963), (162, 15005), (176, 15122), (187, 15218), (196, 15275), (200, 15296), (204, 15338), (206, 15344), (212, 15377), (214, 15401), (220, 15419), (221, 15434),

Gene: Tank\_20 Start: 13083, Stop: 14846, Start Num: 26

Candidate Starts for Tank\_20:

(18, 13017), (Start: 26 @13083 has 23 MA's), (54, 13521), (58, 13590), (61, 13614), (69, 13683), (83, 13764), (95, 13872), (99, 13923), (100, 13935), (102, 13944), (130, 14136), (132, 14145), (133, 14148), (142, 14214), (144, 14235), (145, 14241), (147, 14259), (161, 14370), (167, 14430), (173, 14469), (176, 14511), (188, 14604), (193, 14643), (216, 14796),

Gene: Teamocil\_28 Start: 13248, Stop: 15266, Start Num: 17

Candidate Starts for Teamocil\_28:

(Start: 17 @13248 has 53 MA's), (47, 13716), (57, 13830), (62, 13869), (67, 13911), (71, 13935), (76, 13980), (81, 14001), (82, 14004), (84, 14019), (91, 14073), (97, 14154), (106, 14214), (118, 14358), (120, 14376), (127, 14544), (128, 14568), (147, 14706), (152, 14733), (163, 14844), (179, 14973), (181, 14988), (185, 15024), (188, 15036), (192, 15066), (197, 15093), (212, 15195),

Gene: Terij\_23 Start: 13292, Stop: 15169, Start Num: 17

Candidate Starts for Terij\_23:

(Start: 17 @13292 has 53 MA's), (57, 13889), (62, 13928), (67, 13970), (81, 14060), (92, 14129), (107, 14282), (126, 14402), (136, 14519), (152, 14618), (154, 14633), (158, 14669), (159, 14675), (163, 14729), (171, 14786), (173, 14801), (175, 14813), (179, 14858), (185, 14921), (192, 14963), (208, 15071),

Gene: TurkishDelight\_17 Start: 12983, Stop: 14710, Start Num: 26

Candidate Starts for TurkishDelight\_17:

(23, 12944), (Start: 26 @12983 has 23 MA's), (29, 13091), (33, 13139), (34, 13148), (38, 13241), (53, 13418), (65, 13514), (80, 13625), (110, 13889), (112, 13898), (116, 13940), (131, 14003), (142, 14075), (143, 14078), (144, 14096), (156, 14177), (157, 14189), (160, 14210), (163, 14255), (176, 14369), (180, 14405), (195, 14516), (196, 14522), (206, 14594), (208, 14606), (219, 14669),

Gene: Tyrumbra\_25 Start: 12826, Stop: 14847, Start Num: 17

Candidate Starts for Tyrumbra\_25:

(Start: 17 @12826 has 53 MA's), (57, 13411), (67, 13492), (71, 13516), (76, 13561), (81, 13582), (97, 13735), (122, 13993), (124, 14065), (127, 14125), (128, 14149), (147, 14287), (151, 14311), (152, 14314), (163, 14425), (179, 14554), (181, 14569), (182, 14578), (185, 14605), (188, 14617), (192, 14647), (197, 14674), (212, 14776),

Gene: Wilde\_20 Start: 13011, Stop: 14774, Start Num: 26

Candidate Starts for Wilde\_20:

(18, 12945), (Start: 26 @13011 has 23 MA's), (54, 13449), (58, 13518), (61, 13542), (69, 13611), (83, 13692), (95, 13800), (99, 13851), (100, 13863), (102, 13872), (130, 14064), (132, 14073), (133,

14076), (142, 14142), (144, 14163), (145, 14169), (147, 14187), (161, 14298), (167, 14358), (173, 14397), (176, 14439), (188, 14532), (193, 14571), (216, 14724),

Gene: Xkcd426\_14 Start: 14736, Stop: 16433, Start Num: 26

Candidate Starts for Xkcd426\_14:

(25, 14721), (Start: 26 @14736 has 23 MA's), (29, 14823), (39, 14970), (45, 15072), (52, 15117), (63, 15210), (65, 15219), (66, 15225), (73, 15282), (79, 15327), (80, 15330), (87, 15369), (93, 15411), (101, 15522), (136, 15771), (137, 15774), (142, 15798), (146, 15831), (151, 15870), (153, 15876), (160, 15939), (162, 15981), (165, 16008), (166, 16011), (172, 16047), (196, 16257), (204, 16320), (207, 16335), (211, 16353),

Gene: YDN12\_14 Start: 13688, Stop: 15382, Start Num: 26

Candidate Starts for YDN12\_14:

(Start: 26 @13688 has 23 MA's), (27, 13697), (31, 13799), (41, 13955), (46, 14051), (56, 14132), (63, 14177), (65, 14186), (68, 14219), (72, 14246), (73, 14249), (80, 14297), (85, 14330), (86, 14333), (91, 14372), (93, 14378), (95, 14420), (101, 14489), (130, 14669), (139, 14735), (142, 14747), (156, 14867), (160, 14900), (162, 14942), (176, 15059), (187, 15155), (196, 15212), (204, 15275), (206, 15281), (212, 15314), (214, 15338), (220, 15356), (221, 15371),

Gene: Yeti\_27 Start: 13790, Stop: 15646, Start Num: 17

Candidate Starts for Yeti\_27:

(Start: 17 @13790 has 53 MA's), (57, 14366), (64, 14411), (67, 14447), (76, 14516), (81, 14537), (82, 14540), (86, 14570), (97, 14690), (108, 14771), (126, 14885), (127, 14912), (152, 15101), (164, 15227), (179, 15341), (181, 15356), (188, 15404), (192, 15434), (194, 15446), (197, 15461), (199, 15476), (205, 15527), (209, 15545), (212, 15563),