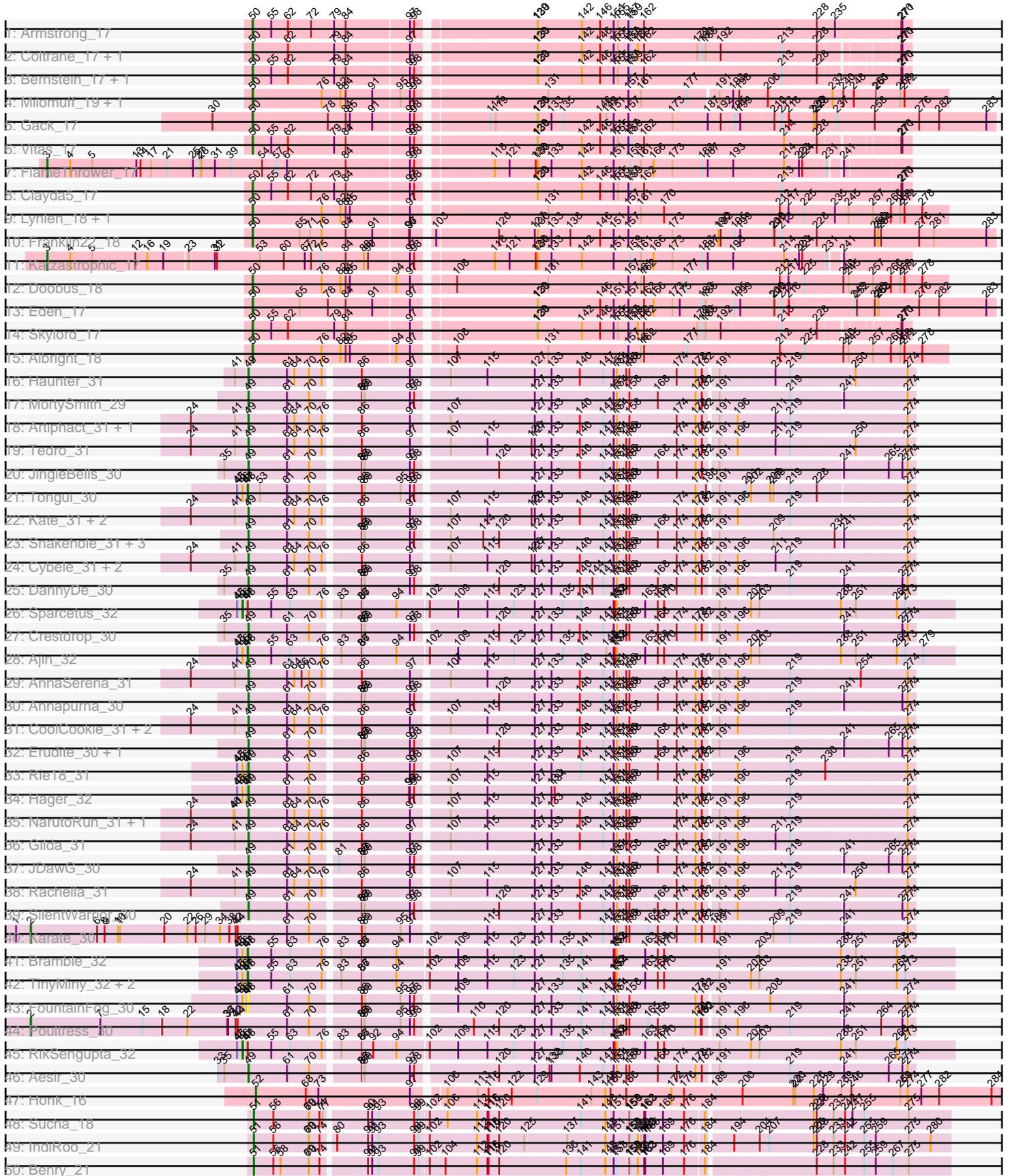
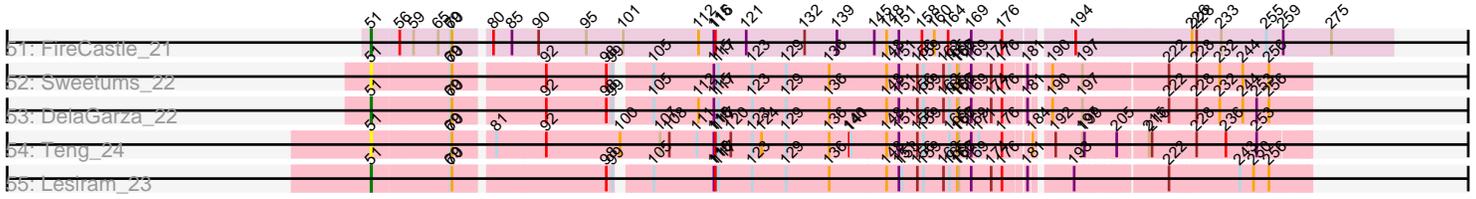


Pham 283756



Pham 283756



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 283756 Report

This analysis was run 02/23/26 on database version 636.

Pham number 283756 has 73 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Armstrong\_17
- Track 2 : Coltrane\_17, Brahms\_17
- Track 3 : Bernstein\_17, Rollins\_17
- Track 4 : Milomuff\_19, Solea\_20
- Track 5 : Gack\_17
- Track 6 : Vitas\_17
- Track 7 : FlameThrower\_17
- Track 8 : Clayda5\_17
- Track 9 : Lynlen\_18, Kenzers\_18
- Track 10 : Franklin22\_18
- Track 11 : Katzastrophic\_17
- Track 12 : Doobus\_18
- Track 13 : Eden\_17
- Track 14 : Skylord\_17
- Track 15 : Albright\_18
- Track 16 : Haunter\_31
- Track 17 : MortySmith\_29
- Track 18 : Artiphact\_31, Pharpay\_31
- Track 19 : Tedro\_31
- Track 20 : JingleBells\_30
- Track 21 : Tongui\_30
- Track 22 : Kate\_31, OverHedge\_31, OhDear\_31
- Track 23 : Snakehole\_31, Hiddenleaf\_30, FreddieHg\_30, Chivey\_30
- Track 24 : Cybele\_31, Neptune\_31, PhunaPhoke\_31
- Track 25 : DannyDe\_30
- Track 26 : Sparcetus\_32
- Track 27 : Crestdrop\_30
- Track 28 : Ajin\_32
- Track 29 : AnnaSerena\_31
- Track 30 : Annapurna\_30
- Track 31 : CoolCookie\_31, Potty\_31, Krampus\_31
- Track 32 : Erudite\_30, Dauntless\_30
- Track 33 : Rie18\_31
- Track 34 : Hager\_32
- Track 35 : NarutoRun\_31, Anakin\_31
- Track 36 : Gilda\_31
- Track 37 : JDawG\_30

- Track 38 : Rachella\_31
- Track 39 : SilentWarrior\_30
- Track 40 : Karate\_30
- Track 41 : Bramble\_32
- Track 42 : TinyMiny\_32, Kors\_32, LordBart\_32
- Track 43 : FountainFog\_30
- Track 44 : Poultruss\_30
- Track 45 : RikSengupta\_32
- Track 46 : Aesir\_30
- Track 47 : Honk\_16
- Track 48 : Sucha\_18
- Track 49 : IndiRoo\_21
- Track 50 : Benry\_21
- Track 51 : FireCastle\_21
- Track 52 : Sweetums\_22
- Track 53 : DelaGarza\_22
- Track 54 : Teng\_24
- Track 55 : Lesiram\_23

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

The start number called the most often in the published annotations is 49, it was called in 31 of the 66 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aesir\_30, Anakin\_31, AnnaSerena\_31, Annapurna\_30, Artiphact\_31, Chivey\_30, CoolCookie\_31, Crestdrop\_30, Cybele\_31, DannyDe\_30, Dauntless\_30, Erudite\_30, FreddieHg\_30, Gilda\_31, Hager\_32, Haunter\_31, Hiddenleaf\_30, JDawG\_30, JingleBells\_30, Kate\_31, Krampus\_31, MortySmith\_29, NarutoRun\_31, Neptune\_31, OhDear\_31, OverHedge\_31, Pharpay\_31, PhunaPhoke\_31, Potty\_31, Rachella\_31, Rie18\_31, SilentWarrior\_30, Snakehole\_31, Tedro\_31,

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

- 

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

- Ajin\_32, Albright\_18, Armstrong\_17, Benry\_21, Bernstein\_17, Brahms\_17, Bramble\_32, Clayda5\_17, Coltrane\_17, DelaGarza\_22, Doobus\_18, Eden\_17, FireCastle\_21, FlameThrower\_17, FountainFog\_30, Franklin22\_18, Gack\_17, Honk\_16, IndiRoo\_21, Karate\_30, Katzastrophic\_17, Kenzers\_18, Kors\_32, Lesiram\_23, LordBart\_32, Lynlen\_18, Milomuff\_19, Poultruss\_30, RikSengupta\_32, Rollins\_17, Skylord\_17, Solea\_20, Sparcetus\_32, Sucha\_18, Sweetums\_22, Teng\_24, TinyMiny\_32, Tongui\_30, Vitas\_17,

**Summary by start number:**

Start 2:

- Found in 2 of 73 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 66
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Karate\_30 (EF), Poultruss\_30 (EF),

#### Start 3:

- Found in 2 of 73 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 66
- Called 100.0% of time when present
- Phage (with cluster) where this start called: FlameThrower\_17 (EB), Katzastrophic\_17 (EB),

#### Start 46:

- Found in 11 of 73 ( 15.1% ) of genes in pham
- Manual Annotations of this start: 2 of 66
- Called 18.2% of time when present
- Phage (with cluster) where this start called: RikSengupta\_32 (EF), Sparcetus\_32 (EF),

#### Start 48:

- Found in 9 of 73 ( 12.3% ) of genes in pham
- Manual Annotations of this start: 6 of 66
- Called 77.8% of time when present
- Phage (with cluster) where this start called: Ajin\_32 (EF), Bramble\_32 (EF), FountainFog\_30 (EF), Kors\_32 (EF), LordBart\_32 (EF), TinyMiny\_32 (EF), Tongui\_30 (EF),

#### Start 49:

- Found in 34 of 73 ( 46.6% ) of genes in pham
- Manual Annotations of this start: 31 of 66
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aesir\_30 (EF), Anakin\_31 (EF), AnnaSerena\_31 (EF), Annapurna\_30 (EF), Artiphact\_31 (EF), Chivey\_30 (EF), CoolCookie\_31 (EF), Crestdrop\_30 (EF), Cybele\_31 (EF), DannyDe\_30 (EF), Dauntless\_30 (EF), Erudite\_30 (EF), FreddieHg\_30 (EF), Gilda\_31 (EF), Hager\_32 (EF), Haunter\_31 (EF), Hiddenleaf\_30 (EF), JDawG\_30 (EF), JingleBells\_30 (EF), Kate\_31 (EF), Krampus\_31 (EF), MortySmith\_29 (EF), NarutoRun\_31 (EF), Neptune\_31 (EF), OhDear\_31 (EF), OverHedge\_31 (EF), Pharpay\_31 (EF), PhunaPhoke\_31 (EF), Potty\_31 (EF), Rachella\_31 (EF), Rie18\_31 (EF), SilentWarrior\_30 (EF), Snakehole\_31 (EF), Tedro\_31 (EF),

#### Start 50:

- Found in 17 of 73 ( 23.3% ) of genes in pham
- Manual Annotations of this start: 16 of 66
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Albright\_18 (EB), Armstrong\_17 (EB), Bernstein\_17 (EB), Brahms\_17 (EB), Clayda5\_17 (EB), Coltrane\_17 (EB), Doobus\_18 (EB), Eden\_17 (EB), Franklin22\_18 (EB), Gack\_17 (EB), Kenzers\_18 (EB), Lynlen\_18 (EB), Milomuff\_19 (EB), Rollins\_17 (EB), Skylord\_17 (EB), Solea\_20 (EB), Vitas\_17 (EB),

#### Start 51:

- Found in 8 of 73 ( 11.0% ) of genes in pham
- Manual Annotations of this start: 6 of 66
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Benry\_21 (EJ), DelaGarza\_22 (GF), FireCastle\_21 (EJ), IndiRoo\_21 (EJ), Lesiram\_23 (GF), Sucha\_18 (EJ), Sweetums\_22 (GF), Teng\_24 (GF),

Start 52:

- Found in 1 of 73 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 66
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Honk\_16 (EH),

### **Summary by clusters:**

There are 5 clusters represented in this pham: GF, EF, EH, EJ, EB,

Info for manual annotations of cluster EB:

- Start number 3 was manually annotated 2 times for cluster EB.
- Start number 50 was manually annotated 16 times for cluster EB.

Info for manual annotations of cluster EF:

- Start number 2 was manually annotated 2 times for cluster EF.
- Start number 46 was manually annotated 2 times for cluster EF.
- Start number 48 was manually annotated 6 times for cluster EF.
- Start number 49 was manually annotated 31 times for cluster EF.

Info for manual annotations of cluster EH:

- Start number 52 was manually annotated 1 time for cluster EH.

Info for manual annotations of cluster EJ:

- Start number 51 was manually annotated 4 times for cluster EJ.

Info for manual annotations of cluster GF:

- Start number 51 was manually annotated 2 times for cluster GF.

### **Gene Information:**

Gene: Aesir\_30 Start: 18424, Stop: 20193, Start Num: 49

Candidate Starts for Aesir\_30:

(33, 18337), (35, 18355), (Start: 49 @18424 has 31 MA's), (61, 18526), (70, 18589), (86, 18712), (87, 18715), (89, 18721), (97, 18850), (98, 18862), (120, 19075), (127, 19177), (132, 19219), (133, 19225), (140, 19306), (147, 19372), (151, 19402), (154, 19411), (156, 19438), (158, 19447), (168, 19528), (174, 19582), (178, 19633), (182, 19648), (191, 19684), (219, 19867), (241, 19996), (265, 20122), (271, 20161), (274, 20173),

Gene: Ajin\_32 Start: 18502, Stop: 20436, Start Num: 48

Candidate Starts for Ajin\_32:

(43, 18472), (45, 18475), (Start: 46 @18487 has 2 MA's), (47, 18499), (Start: 48 @18502 has 6 MA's), (55, 18562), (63, 18613), (76, 18703), (83, 18733), (86, 18790), (87, 18793), (94, 18883), (102, 18970), (109, 19051), (115, 19135), (123, 19210), (127, 19270), (135, 19351), (141, 19402), (149, 19474), (151, 19495), (152, 19498), (154, 19504), (163, 19582), (168, 19618), (170, 19636), (191, 19792), (202, 19876), (203, 19900), (238, 20116), (251, 20158), (268, 20275), (273, 20296), (279, 20347),

Gene: Albright\_18 Start: 13896, Stop: 15746, Start Num: 50

Candidate Starts for Albright\_18:

(Start: 50 @13896 has 16 MA's), (76, 14085), (82, 14127), (84, 14142), (85, 14154), (94, 14277), (97, 14316), (108, 14409), (131, 14667), (157, 14895), (161, 14928), (162, 14937), (177, 15060), (212, 15285), (225, 15351), (240, 15453), (245, 15468), (257, 15537), (266, 15585), (269, 15612), (272, 15621), (278, 15672),

Gene: Anakin\_31 Start: 18678, Stop: 20456, Start Num: 49

Candidate Starts for Anakin\_31:

(24, 18513), (40, 18636), (41, 18639), (Start: 49 @18678 has 31 MA's), (61, 18780), (64, 18801), (70, 18843), (76, 18879), (86, 18966), (97, 19104), (107, 19194), (115, 19296), (127, 19431), (133, 19479), (140, 19560), (147, 19626), (151, 19656), (154, 19665), (156, 19692), (158, 19701), (174, 19836), (178, 19887), (182, 19902), (191, 19938), (196, 19986), (219, 20121), (274, 20436),

Gene: AnnaSerena\_31 Start: 18687, Stop: 20465, Start Num: 49

Candidate Starts for AnnaSerena\_31:

(24, 18522), (41, 18648), (Start: 49 @18687 has 31 MA's), (61, 18789), (64, 18810), (66, 18831), (70, 18852), (76, 18888), (86, 18975), (97, 19113), (107, 19203), (115, 19305), (127, 19440), (133, 19488), (140, 19569), (147, 19635), (151, 19665), (154, 19674), (156, 19701), (158, 19710), (174, 19845), (178, 19896), (182, 19911), (191, 19947), (196, 19995), (219, 20130), (254, 20316), (274, 20445),

Gene: Annapurna\_30 Start: 17886, Stop: 19655, Start Num: 49

Candidate Starts for Annapurna\_30:

(Start: 49 @17886 has 31 MA's), (61, 17988), (70, 18051), (86, 18174), (87, 18177), (89, 18183), (97, 18312), (98, 18324), (120, 18537), (127, 18639), (133, 18687), (140, 18768), (147, 18834), (151, 18864), (154, 18873), (156, 18900), (158, 18909), (168, 18990), (174, 19044), (178, 19095), (182, 19110), (191, 19146), (196, 19194), (219, 19329), (241, 19458), (271, 19623), (274, 19635),

Gene: Armstrong\_17 Start: 12466, Stop: 14193, Start Num: 50

Candidate Starts for Armstrong\_17:

(Start: 50 @12466 has 16 MA's), (55, 12514), (62, 12559), (72, 12625), (79, 12682), (84, 12712), (97, 12886), (98, 12898), (129, 13204), (130, 13207), (142, 13333), (146, 13384), (151, 13423), (155, 13435), (157, 13465), (159, 13471), (162, 13507), (228, 13963), (235, 14011), (270, 14167), (271, 14170),

Gene: Artiphact\_31 Start: 18679, Stop: 20457, Start Num: 49

Candidate Starts for Artiphact\_31:

(24, 18514), (41, 18640), (Start: 49 @18679 has 31 MA's), (61, 18781), (64, 18802), (70, 18844), (76, 18880), (86, 18967), (97, 19105), (107, 19195), (127, 19432), (133, 19480), (140, 19561), (147, 19627), (151, 19657), (154, 19666), (158, 19702), (174, 19837), (178, 19888), (182, 19903), (191, 19939), (196, 19987), (211, 20083), (219, 20122), (274, 20437),

Gene: Benry\_21 Start: 14670, Stop: 16571, Start Num: 51

Candidate Starts for Benry\_21:

(Start: 51 @14670 has 6 MA's), (56, 14721), (58, 14739), (69, 14817), (70, 14820), (74, 14850), (90, 14967), (91, 14979), (93, 14997), (98, 15099), (99, 15111), (102, 15138), (104, 15183), (112, 15273), (115, 15303), (116, 15306), (120, 15336), (136, 15528), (141, 15570), (148, 15636), (151, 15660), (153, 15666), (158, 15705), (159, 15708), (160, 15726), (162, 15744), (163, 15747), (169, 15798), (176, 15858), (184, 15906), (228, 16194), (233, 16242), (242, 16275), (255, 16329), (259, 16362), (267, 16410), (275, 16452),

Gene: Bernstein\_17 Start: 12526, Stop: 14229, Start Num: 50

Candidate Starts for Bernstein\_17:

(Start: 50 @12526 has 16 MA's), (55, 12574), (62, 12619), (79, 12742), (84, 12772), (97, 12946), (98, 12958), (129, 13264), (130, 13267), (142, 13393), (146, 13444), (151, 13483), (155, 13495), (157, 13525), (159, 13531), (162, 13567), (213, 13933), (228, 14023), (270, 14203), (271, 14206),

Gene: Brahms\_17 Start: 12466, Stop: 14169, Start Num: 50

Candidate Starts for Brahms\_17:

(Start: 50 @12466 has 16 MA's), (62, 12559), (79, 12682), (84, 12712), (97, 12886), (129, 13204), (130, 13207), (142, 13333), (146, 13384), (151, 13423), (155, 13435), (157, 13465), (159, 13471), (160, 13489), (162, 13507), (179, 13654), (183, 13669), (185, 13678), (192, 13717), (213, 13873), (228, 13963), (270, 14143), (271, 14146),

Gene: Bramble\_32 Start: 18468, Stop: 20402, Start Num: 48

Candidate Starts for Bramble\_32:

(43, 18438), (45, 18441), (Start: 46 @18453 has 2 MA's), (47, 18465), (Start: 48 @18468 has 6 MA's), (55, 18528), (63, 18579), (76, 18669), (83, 18699), (86, 18756), (87, 18759), (94, 18849), (102, 18936), (109, 19017), (115, 19101), (123, 19176), (127, 19236), (135, 19317), (141, 19368), (151, 19461), (152, 19464), (154, 19470), (163, 19548), (168, 19584), (170, 19602), (191, 19758), (203, 19866), (238, 20082), (251, 20124), (268, 20241), (273, 20262),

Gene: Chivey\_30 Start: 17840, Stop: 19609, Start Num: 49

Candidate Starts for Chivey\_30:

(Start: 49 @17840 has 31 MA's), (61, 17942), (70, 18005), (86, 18128), (87, 18131), (89, 18137), (97, 18266), (98, 18278), (107, 18356), (114, 18446), (120, 18491), (127, 18593), (133, 18641), (147, 18788), (151, 18818), (154, 18827), (156, 18854), (158, 18863), (168, 18944), (174, 18998), (178, 19049), (182, 19064), (191, 19100), (209, 19238), (234, 19394), (241, 19412), (274, 19589),

Gene: Clayda5\_17 Start: 12466, Stop: 14199, Start Num: 50

Candidate Starts for Clayda5\_17:

(Start: 50 @12466 has 16 MA's), (55, 12514), (62, 12559), (72, 12625), (79, 12682), (84, 12712), (97, 12886), (98, 12898), (129, 13204), (130, 13207), (142, 13333), (146, 13384), (151, 13423), (155, 13435), (157, 13465), (159, 13471), (162, 13507), (213, 13873), (270, 14173), (271, 14176),

Gene: Coltrane\_17 Start: 12466, Stop: 14169, Start Num: 50

Candidate Starts for Coltrane\_17:

(Start: 50 @12466 has 16 MA's), (62, 12559), (79, 12682), (84, 12712), (97, 12886), (129, 13204), (130, 13207), (142, 13333), (146, 13384), (151, 13423), (155, 13435), (157, 13465), (159, 13471), (160, 13489), (162, 13507), (179, 13654), (183, 13669), (185, 13678), (192, 13717), (213, 13873), (228, 13963), (270, 14143), (271, 14146),

Gene: CoolCookie\_31 Start: 18685, Stop: 20463, Start Num: 49

Candidate Starts for CoolCookie\_31:

(24, 18520), (41, 18646), (Start: 49 @18685 has 31 MA's), (61, 18787), (64, 18808), (70, 18850), (76, 18886), (86, 18973), (97, 19111), (107, 19201), (115, 19303), (127, 19438), (133, 19486), (140, 19567), (147, 19633), (151, 19663), (154, 19672), (158, 19708), (174, 19843), (178, 19894), (182, 19909), (191, 19945), (196, 19993), (219, 20128), (274, 20443),

Gene: Crestdrop\_30 Start: 17749, Stop: 19518, Start Num: 49

Candidate Starts for Crestdrop\_30:

(35, 17680), (Start: 49 @17749 has 31 MA's), (61, 17851), (70, 17914), (86, 18037), (87, 18040), (89, 18046), (97, 18175), (98, 18187), (120, 18400), (127, 18502), (133, 18550), (140, 18631), (147, 18697), (151, 18727), (154, 18736), (156, 18763), (158, 18772), (168, 18853), (174, 18907), (178, 18958), (182, 18973), (191, 19009), (196, 19057), (241, 19321), (271, 19486), (274, 19498),

Gene: Cybele\_31 Start: 18655, Stop: 20433, Start Num: 49

Candidate Starts for Cybele\_31:

(24, 18490), (41, 18616), (Start: 49 @18655 has 31 MA's), (61, 18757), (64, 18778), (70, 18820), (76, 18856), (86, 18943), (97, 19081), (107, 19171), (115, 19273), (126, 19399), (127, 19408), (133, 19456), (140, 19537), (147, 19603), (151, 19633), (154, 19642), (156, 19669), (158, 19678), (174, 19813), (178, 19864), (182, 19879), (191, 19915), (196, 19963), (211, 20059), (219, 20098), (274, 20413),

Gene: DannyDe\_30 Start: 17832, Stop: 19601, Start Num: 49

Candidate Starts for DannyDe\_30:

(35, 17763), (Start: 49 @17832 has 31 MA's), (61, 17934), (70, 17997), (86, 18120), (87, 18123), (89, 18129), (97, 18258), (98, 18270), (120, 18483), (127, 18585), (133, 18633), (140, 18714), (144, 18750), (147, 18780), (151, 18810), (154, 18819), (156, 18846), (158, 18855), (168, 18936), (174, 18990), (178, 19041), (182, 19056), (191, 19092), (196, 19140), (219, 19275), (241, 19404), (271, 19569), (274, 19581),

Gene: Dauntless\_30 Start: 18392, Stop: 20161, Start Num: 49

Candidate Starts for Dauntless\_30:

(Start: 49 @18392 has 31 MA's), (61, 18494), (70, 18557), (86, 18680), (87, 18683), (89, 18689), (97, 18818), (98, 18830), (120, 19043), (127, 19145), (133, 19193), (140, 19274), (147, 19340), (151, 19370), (154, 19379), (156, 19406), (158, 19415), (168, 19496), (174, 19550), (178, 19601), (182, 19616), (191, 19652), (241, 19964), (265, 20090), (271, 20129), (274, 20141),

Gene: DelaGarza\_22 Start: 15128, Stop: 16816, Start Num: 51

Candidate Starts for DelaGarza\_22:

(Start: 51 @15128 has 6 MA's), (69, 15275), (70, 15278), (92, 15440), (98, 15557), (99, 15569), (105, 15623), (112, 15710), (115, 15740), (117, 15749), (123, 15815), (129, 15881), (136, 15965), (148, 16073), (151, 16097), (156, 16133), (159, 16145), (162, 16181), (165, 16193), (166, 16208), (167, 16211), (169, 16235), (174, 16274), (176, 16295), (181, 16331), (190, 16352), (197, 16409), (222, 16556), (228, 16607), (232, 16652), (244, 16697), (253, 16721), (256, 16739),

Gene: Doobus\_18 Start: 14247, Stop: 16097, Start Num: 50

Candidate Starts for Doobus\_18:

(Start: 50 @14247 has 16 MA's), (76, 14436), (82, 14478), (84, 14493), (85, 14505), (94, 14628), (97, 14667), (108, 14760), (131, 15018), (157, 15246), (161, 15279), (162, 15288), (177, 15411), (212, 15636), (217, 15657), (225, 15702), (240, 15804), (245, 15819), (257, 15888), (266, 15936), (269, 15963), (272, 15972), (278, 16023),

Gene: Eden\_17 Start: 12590, Stop: 14578, Start Num: 50

Candidate Starts for Eden\_17:

(Start: 50 @12590 has 16 MA's), (65, 12713), (78, 12791), (84, 12833), (91, 12908), (97, 13007), (129, 13325), (130, 13328), (146, 13505), (151, 13544), (157, 13586), (162, 13628), (166, 13655), (173, 13709), (175, 13730), (183, 13790), (185, 13799), (195, 13877), (199, 13892), (209, 13976), (210, 13979), (213, 14000), (218, 14015), (249, 14192), (252, 14198), (258, 14240), (262, 14249), (263, 14252), (276, 14360), (282, 14417), (283, 14552),

Gene: Erudite\_30 Start: 18392, Stop: 20161, Start Num: 49

Candidate Starts for Erudite\_30:

(Start: 49 @18392 has 31 MA's), (61, 18494), (70, 18557), (86, 18680), (87, 18683), (89, 18689), (97, 18818), (98, 18830), (120, 19043), (127, 19145), (133, 19193), (140, 19274), (147, 19340), (151, 19370), (154, 19379), (156, 19406), (158, 19415), (168, 19496), (174, 19550), (178, 19601), (182, 19616), (191, 19652), (241, 19964), (265, 20090), (271, 20129), (274, 20141),

Gene: FireCastle\_21 Start: 16238, Stop: 18142, Start Num: 51

Candidate Starts for FireCastle\_21:

(Start: 51 @16238 has 6 MA's), (56, 16289), (59, 16313), (65, 16361), (69, 16385), (70, 16388), (80, 16448), (85, 16484), (90, 16535), (95, 16628), (101, 16694), (112, 16841), (115, 16871), (116, 16874), (121, 16934), (132, 17048), (139, 17111), (145, 17183), (148, 17204), (151, 17228), (158, 17273), (160, 17294), (164, 17321), (169, 17366), (176, 17426), (194, 17540), (226, 17756), (228, 17765), (233, 17813), (255, 17900), (259, 17933), (275, 18023),

Gene: FlameThrower\_17 Start: 13345, Stop: 15654, Start Num: 3

Candidate Starts for FlameThrower\_17:

(Start: 3 @13345 has 2 MA's), (4, 13411), (5, 13474), (13, 13600), (14, 13612), (17, 13642), (21, 13687), (25, 13762), (27, 13780), (28, 13786), (31, 13825), (39, 13870), (54, 13957), (57, 13996), (61, 14026), (84, 14194), (97, 14368), (98, 14380), (118, 14566), (121, 14608), (128, 14683), (130, 14689), (133, 14728), (142, 14815), (151, 14905), (159, 14953), (161, 14980), (166, 15016), (173, 15070), (183, 15151), (187, 15166), (193, 15235), (214, 15358), (223, 15394), (224, 15403), (231, 15463), (241, 15490),

Gene: FountainFog\_30 Start: 17995, Stop: 19764, Start Num: 48

Candidate Starts for FountainFog\_30:

(43, 17965), (45, 17968), (Start: 46 @17980 has 2 MA's), (47, 17992), (Start: 48 @17995 has 6 MA's), (61, 18097), (70, 18160), (86, 18283), (89, 18292), (95, 18394), (97, 18421), (98, 18433), (109, 18532), (127, 18748), (133, 18796), (141, 18880), (147, 18943), (151, 18973), (154, 18982), (158, 19018), (178, 19204), (182, 19219), (191, 19255), (208, 19384), (241, 19567), (274, 19744),

Gene: Franklin22\_18 Start: 12769, Stop: 14757, Start Num: 50

Candidate Starts for Franklin22\_18:

(Start: 50 @12769 has 16 MA's), (65, 12892), (71, 12922), (76, 12955), (84, 13015), (91, 13090), (96, 13186), (97, 13189), (103, 13234), (120, 13399), (127, 13501), (130, 13510), (133, 13549), (138, 13603), (146, 13687), (151, 13726), (157, 13768), (173, 13891), (190, 14014), (192, 14020), (195, 14059), (199, 14074), (209, 14158), (210, 14161), (213, 14182), (228, 14269), (258, 14419), (262, 14428), (264, 14437), (276, 14539), (281, 14581), (283, 14731),

Gene: FreddieHg\_30 Start: 17856, Stop: 19625, Start Num: 49

Candidate Starts for FreddieHg\_30:

(Start: 49 @17856 has 31 MA's), (61, 17958), (70, 18021), (86, 18144), (87, 18147), (89, 18153), (97, 18282), (98, 18294), (107, 18372), (114, 18462), (120, 18507), (127, 18609), (133, 18657), (147, 18804), (151, 18834), (154, 18843), (156, 18870), (158, 18879), (168, 18960), (174, 19014), (178, 19065), (182, 19080), (191, 19116), (209, 19254), (234, 19410), (241, 19428), (274, 19605),

Gene: Gack\_17 Start: 12658, Stop: 14643, Start Num: 50

Candidate Starts for Gack\_17:

(30, 12544), (Start: 50 @12658 has 16 MA's), (78, 12859), (84, 12901), (85, 12913), (91, 12976), (97, 13075), (98, 13087), (117, 13261), (119, 13276), (129, 13393), (130, 13396), (133, 13435), (135, 13468), (146, 13573), (149, 13591), (151, 13612), (157, 13654), (173, 13777), (187, 13873), (192, 13906), (195, 13945), (199, 13960), (210, 14047), (213, 14068), (218, 14083), (226, 14146), (227, 14152), (228, 14155), (237, 14209), (258, 14305), (276, 14425), (282, 14482), (283, 14617),

Gene: Gilda\_31 Start: 18679, Stop: 20457, Start Num: 49

Candidate Starts for Gilda\_31:

(24, 18514), (41, 18640), (Start: 49 @18679 has 31 MA's), (61, 18781), (64, 18802), (70, 18844), (76, 18880), (86, 18967), (97, 19105), (107, 19195), (115, 19297), (127, 19432), (133, 19480), (140, 19561), (147, 19627), (151, 19657), (154, 19666), (156, 19693), (158, 19702), (174, 19837), (178, 19888), (182, 19903), (191, 19939), (196, 19987), (211, 20083), (219, 20122), (274, 20437),

Gene: Hager\_32 Start: 18239, Stop: 20017, Start Num: 49

Candidate Starts for Hager\_32:

(43, 18209), (45, 18212), (Start: 46 @18224 has 2 MA's), (47, 18236), (Start: 49 @18239 has 31 MA's), (61, 18341), (70, 18404), (86, 18527), (96, 18662), (97, 18665), (98, 18677), (107, 18755), (115, 18857), (127, 18992), (133, 19040), (134, 19049), (147, 19187), (151, 19217), (154, 19226), (156, 19253), (158, 19262), (174, 19397), (178, 19448), (182, 19463), (196, 19547), (219, 19682), (274, 19997),

Gene: Haunter\_31 Start: 18092, Stop: 19870, Start Num: 49

Candidate Starts for Haunter\_31:

(41, 18053), (Start: 49 @18092 has 31 MA's), (61, 18194), (64, 18215), (70, 18257), (76, 18293), (86, 18380), (97, 18518), (107, 18608), (115, 18710), (127, 18845), (133, 18893), (140, 18974), (147, 19040), (151, 19070), (154, 19079), (156, 19106), (158, 19115), (174, 19250), (178, 19301), (182, 19316), (191, 19352), (211, 19496), (219, 19535), (250, 19706), (274, 19850),

Gene: Hiddenleaf\_30 Start: 17840, Stop: 19609, Start Num: 49

Candidate Starts for Hiddenleaf\_30:

(Start: 49 @17840 has 31 MA's), (61, 17942), (70, 18005), (86, 18128), (87, 18131), (89, 18137), (97, 18266), (98, 18278), (107, 18356), (114, 18446), (120, 18491), (127, 18593), (133, 18641), (147, 18788), (151, 18818), (154, 18827), (156, 18854), (158, 18863), (168, 18944), (174, 18998), (178, 19049), (182, 19064), (191, 19100), (209, 19238), (234, 19394), (241, 19412), (274, 19589),

Gene: Honk\_16 Start: 12148, Stop: 14262, Start Num: 52

Candidate Starts for Honk\_16:

(Start: 52 @12148 has 1 MA's), (68, 12286), (73, 12322), (97, 12580), (106, 12649), (113, 12733), (116, 12760), (122, 12826), (129, 12898), (143, 13054), (148, 13093), (150, 13108), (156, 13153), (172, 13279), (176, 13315), (189, 13405), (200, 13483), (220, 13627), (221, 13633), (226, 13684), (229, 13711), (239, 13762), (246, 13789), (269, 13927), (274, 13948), (277, 13987), (282, 14038), (284, 14188),

Gene: IndiRoo\_21 Start: 14680, Stop: 16581, Start Num: 51

Candidate Starts for IndiRoo\_21:

(Start: 51 @14680 has 6 MA's), (56, 14731), (69, 14827), (70, 14830), (74, 14860), (80, 14890), (90, 14977), (91, 14989), (93, 15007), (98, 15109), (99, 15121), (102, 15148), (112, 15283), (115, 15313), (116, 15316), (120, 15346), (125, 15418), (137, 15541), (148, 15646), (151, 15670), (158, 15715), (159, 15718), (160, 15736), (161, 15745), (162, 15754), (163, 15757), (165, 15766), (169, 15808), (176, 15868), (184, 15916), (194, 15982), (204, 16048), (207, 16072), (226, 16195), (228, 16204), (233, 16252), (242, 16285), (255, 16339), (259, 16372), (275, 16462), (280, 16525),

Gene: JDawG\_30 Start: 18422, Stop: 20188, Start Num: 49

Candidate Starts for JDawG\_30:

(Start: 49 @18422 has 31 MA's), (61, 18524), (70, 18587), (81, 18647), (86, 18710), (87, 18713), (89, 18719), (97, 18848), (98, 18860), (127, 19172), (133, 19220), (151, 19397), (154, 19406), (158, 19442), (168, 19523), (174, 19577), (178, 19628), (182, 19643), (191, 19679), (196, 19727), (219, 19862), (241, 19991), (265, 20117), (271, 20156), (274, 20168),

Gene: JingleBells\_30 Start: 17956, Stop: 19725, Start Num: 49

Candidate Starts for JingleBells\_30:

(35, 17887), (Start: 49 @17956 has 31 MA's), (61, 18058), (70, 18121), (86, 18244), (87, 18247), (89, 18253), (97, 18382), (98, 18394), (120, 18607), (127, 18709), (133, 18757), (140, 18838), (147, 18904), (151, 18934), (154, 18943), (156, 18970), (158, 18979), (168, 19060), (174, 19114), (178, 19165), (182, 19180), (191, 19216), (241, 19528), (265, 19654), (271, 19693), (274, 19705),

Gene: Karate\_30 Start: 18091, Stop: 20484, Start Num: 2

Candidate Starts for Karate\_30:

(1, 18049), (Start: 2 @18091 has 2 MA's), (6, 18280), (8, 18301), (9, 18307), (10, 18340), (11, 18346), (20, 18466), (22, 18532), (26, 18556), (29, 18583), (34, 18625), (38, 18652), (42, 18670), (44, 18676), (61, 18808), (70, 18871), (86, 18994), (89, 19003), (95, 19105), (97, 19132), (115, 19321), (127, 19456), (133, 19504), (147, 19651), (151, 19681), (154, 19690), (156, 19717), (158, 19726), (165, 19780), (168, 19807), (174, 19861), (178, 19912), (182, 19927), (188, 19960), (191, 19975), (209, 20113), (219, 20158), (241, 20287), (274, 20464),

Gene: Kate\_31 Start: 18687, Stop: 20465, Start Num: 49

Candidate Starts for Kate\_31:

(24, 18522), (41, 18648), (Start: 49 @18687 has 31 MA's), (61, 18789), (64, 18810), (70, 18852), (76, 18888), (86, 18975), (97, 19113), (107, 19203), (115, 19305), (126, 19431), (127, 19440), (133, 19488), (140, 19569), (147, 19635), (151, 19665), (154, 19674), (156, 19701), (158, 19710), (174, 19845), (178, 19896), (182, 19911), (191, 19947), (196, 19995), (219, 20130), (274, 20445),

Gene: Katzastrophic\_17 Start: 13520, Stop: 15796, Start Num: 3

Candidate Starts for Katzastrophic\_17:

(Start: 3 @13520 has 2 MA's), (4, 13586), (5, 13649), (12, 13772), (16, 13805), (19, 13847), (23, 13910), (31, 13976), (32, 13982), (53, 14102), (60, 14159), (67, 14219), (72, 14237), (75, 14264), (84, 14336), (88, 14387), (90, 14399), (97, 14510), (98, 14522), (118, 14708), (121, 14750), (128, 14825), (130, 14831), (133, 14870), (142, 14957), (151, 15047), (159, 15095), (161, 15122), (166, 15158), (173, 15212), (183, 15293), (187, 15308), (193, 15377), (214, 15500), (223, 15536), (224, 15545), (231, 15605), (241, 15632),

Gene: Kenzers\_18 Start: 13986, Stop: 15836, Start Num: 50

Candidate Starts for Kenzers\_18:

(Start: 50 @13986 has 16 MA's), (76, 14175), (82, 14217), (84, 14232), (85, 14244), (97, 14406), (131, 14757), (157, 14985), (161, 15018), (170, 15084), (212, 15375), (217, 15396), (225, 15441), (235, 15519), (245, 15558), (257, 15627), (266, 15675), (269, 15702), (272, 15711), (278, 15762),

Gene: Kors\_32 Start: 18548, Stop: 20482, Start Num: 48

Candidate Starts for Kors\_32:

(43, 18518), (45, 18521), (Start: 46 @18533 has 2 MA's), (47, 18545), (Start: 48 @18548 has 6 MA's), (55, 18608), (63, 18659), (76, 18749), (83, 18779), (86, 18836), (87, 18839), (94, 18929), (102, 19016), (109, 19097), (115, 19181), (123, 19256), (127, 19316), (135, 19397), (141, 19448), (151, 19541), (152, 19544), (154, 19550), (163, 19628), (168, 19664), (170, 19682), (191, 19838), (202, 19922), (203, 19946), (238, 20162), (251, 20204), (268, 20321), (273, 20342),

Gene: Krampus\_31 Start: 18685, Stop: 20463, Start Num: 49

Candidate Starts for Krampus\_31:

(24, 18520), (41, 18646), (Start: 49 @18685 has 31 MA's), (61, 18787), (64, 18808), (70, 18850), (76, 18886), (86, 18973), (97, 19111), (107, 19201), (115, 19303), (127, 19438), (133, 19486), (140, 19567), (147, 19633), (151, 19663), (154, 19672), (158, 19708), (174, 19843), (178, 19894), (182, 19909), (191, 19945), (196, 19993), (219, 20128), (274, 20443),

Gene: Lesiram\_23 Start: 15098, Stop: 16786, Start Num: 51

Candidate Starts for Lesiram\_23:

(Start: 51 @15098 has 6 MA's), (69, 15245), (70, 15248), (98, 15527), (99, 15539), (105, 15593), (115, 15710), (116, 15713), (117, 15719), (123, 15785), (129, 15851), (136, 15935), (148, 16043), (151, 16067), (153, 16073), (156, 16103), (159, 16115), (162, 16151), (165, 16163), (166, 16178), (167, 16181), (169, 16205), (174, 16244), (176, 16265), (181, 16301), (193, 16364), (222, 16526), (243,

16661), (250, 16688), (256, 16712),

Gene: LordBart\_32 Start: 18464, Stop: 20398, Start Num: 48

Candidate Starts for LordBart\_32:

(43, 18434), (45, 18437), (Start: 46 @18449 has 2 MA's), (47, 18461), (Start: 48 @18464 has 6 MA's), (55, 18524), (63, 18575), (76, 18665), (83, 18695), (86, 18752), (87, 18755), (94, 18845), (102, 18932), (109, 19013), (115, 19097), (123, 19172), (127, 19232), (135, 19313), (141, 19364), (151, 19457), (152, 19460), (154, 19466), (163, 19544), (168, 19580), (170, 19598), (191, 19754), (202, 19838), (203, 19862), (238, 20078), (251, 20120), (268, 20237), (273, 20258),

Gene: Lynlen\_18 Start: 13986, Stop: 15836, Start Num: 50

Candidate Starts for Lynlen\_18:

(Start: 50 @13986 has 16 MA's), (76, 14175), (82, 14217), (84, 14232), (85, 14244), (97, 14406), (131, 14757), (157, 14985), (161, 15018), (170, 15084), (212, 15375), (217, 15396), (225, 15441), (235, 15519), (245, 15558), (257, 15627), (266, 15675), (269, 15702), (272, 15711), (278, 15762),

Gene: Milomuff\_19 Start: 14384, Stop: 16222, Start Num: 50

Candidate Starts for Milomuff\_19:

(Start: 50 @14384 has 16 MA's), (76, 14573), (82, 14615), (84, 14630), (91, 14705), (95, 14777), (97, 14804), (98, 14816), (131, 15155), (157, 15383), (161, 15416), (177, 15548), (191, 15614), (193, 15653), (198, 15668), (206, 15737), (232, 15905), (240, 15932), (248, 15962), (260, 16022), (261, 16025), (269, 16088), (272, 16097),

Gene: MortySmith\_29 Start: 17815, Stop: 19581, Start Num: 49

Candidate Starts for MortySmith\_29:

(Start: 49 @17815 has 31 MA's), (61, 17917), (70, 17980), (86, 18103), (87, 18106), (89, 18112), (97, 18241), (98, 18253), (127, 18565), (133, 18613), (151, 18790), (154, 18799), (158, 18835), (168, 18916), (178, 19021), (182, 19036), (191, 19072), (219, 19255), (241, 19384), (274, 19561),

Gene: NarutoRun\_31 Start: 18678, Stop: 20456, Start Num: 49

Candidate Starts for NarutoRun\_31:

(24, 18513), (40, 18636), (41, 18639), (Start: 49 @18678 has 31 MA's), (61, 18780), (64, 18801), (70, 18843), (76, 18879), (86, 18966), (97, 19104), (107, 19194), (115, 19296), (127, 19431), (133, 19479), (140, 19560), (147, 19626), (151, 19656), (154, 19665), (156, 19692), (158, 19701), (174, 19836), (178, 19887), (182, 19902), (191, 19938), (196, 19986), (219, 20121), (274, 20436),

Gene: Neptune\_31 Start: 18655, Stop: 20433, Start Num: 49

Candidate Starts for Neptune\_31:

(24, 18490), (41, 18616), (Start: 49 @18655 has 31 MA's), (61, 18757), (64, 18778), (70, 18820), (76, 18856), (86, 18943), (97, 19081), (107, 19171), (115, 19273), (126, 19399), (127, 19408), (133, 19456), (140, 19537), (147, 19603), (151, 19633), (154, 19642), (156, 19669), (158, 19678), (174, 19813), (178, 19864), (182, 19879), (191, 19915), (196, 19963), (211, 20059), (219, 20098), (274, 20413),

Gene: OhDear\_31 Start: 18684, Stop: 20462, Start Num: 49

Candidate Starts for OhDear\_31:

(24, 18519), (41, 18645), (Start: 49 @18684 has 31 MA's), (61, 18786), (64, 18807), (70, 18849), (76, 18885), (86, 18972), (97, 19110), (107, 19200), (115, 19302), (126, 19428), (127, 19437), (133, 19485), (140, 19566), (147, 19632), (151, 19662), (154, 19671), (156, 19698), (158, 19707), (174, 19842), (178, 19893), (182, 19908), (191, 19944), (196, 19992), (219, 20127), (274, 20442),

Gene: OverHedge\_31 Start: 18645, Stop: 20423, Start Num: 49

Candidate Starts for OverHedge\_31:

(24, 18480), (41, 18606), (Start: 49 @18645 has 31 MA's), (61, 18747), (64, 18768), (70, 18810), (76, 18846), (86, 18933), (97, 19071), (107, 19161), (115, 19263), (126, 19389), (127, 19398), (133, 19446), (140, 19527), (147, 19593), (151, 19623), (154, 19632), (156, 19659), (158, 19668), (174, 19803), (178, 19854), (182, 19869), (191, 19905), (196, 19953), (219, 20088), (274, 20403),

Gene: Pharpay\_31 Start: 18700, Stop: 20478, Start Num: 49

Candidate Starts for Pharpay\_31:

(24, 18535), (41, 18661), (Start: 49 @18700 has 31 MA's), (61, 18802), (64, 18823), (70, 18865), (76, 18901), (86, 18988), (97, 19126), (107, 19216), (127, 19453), (133, 19501), (140, 19582), (147, 19648), (151, 19678), (154, 19687), (158, 19723), (174, 19858), (178, 19909), (182, 19924), (191, 19960), (196, 20008), (211, 20104), (219, 20143), (274, 20458),

Gene: PhunaPhoke\_31 Start: 18673, Stop: 20451, Start Num: 49

Candidate Starts for PhunaPhoke\_31:

(24, 18508), (41, 18634), (Start: 49 @18673 has 31 MA's), (61, 18775), (64, 18796), (70, 18838), (76, 18874), (86, 18961), (97, 19099), (107, 19189), (115, 19291), (126, 19417), (127, 19426), (133, 19474), (140, 19555), (147, 19621), (151, 19651), (154, 19660), (156, 19687), (158, 19696), (174, 19831), (178, 19882), (182, 19897), (191, 19933), (196, 19981), (211, 20077), (219, 20116), (274, 20431),

Gene: Potty\_31 Start: 18678, Stop: 20456, Start Num: 49

Candidate Starts for Potty\_31:

(24, 18513), (41, 18639), (Start: 49 @18678 has 31 MA's), (61, 18780), (64, 18801), (70, 18843), (76, 18879), (86, 18966), (97, 19104), (107, 19194), (115, 19296), (127, 19431), (133, 19479), (140, 19560), (147, 19626), (151, 19656), (154, 19665), (158, 19701), (174, 19836), (178, 19887), (182, 19902), (191, 19938), (196, 19986), (219, 20121), (274, 20436),

Gene: Poultruss\_30 Start: 18442, Stop: 20820, Start Num: 2

Candidate Starts for Poultruss\_30:

(Start: 2 @18442 has 2 MA's), (7, 18637), (15, 18751), (18, 18808), (22, 18880), (36, 18994), (37, 18997), (42, 19018), (44, 19024), (61, 19156), (70, 19219), (86, 19342), (87, 19345), (89, 19351), (95, 19453), (97, 19480), (98, 19492), (110, 19633), (120, 19702), (127, 19804), (133, 19852), (141, 19936), (147, 19999), (151, 20029), (154, 20038), (156, 20065), (158, 20074), (165, 20128), (168, 20155), (178, 20260), (180, 20272), (182, 20275), (191, 20311), (196, 20359), (219, 20494), (241, 20623), (264, 20728), (271, 20788), (274, 20800),

Gene: Rachella\_31 Start: 18681, Stop: 20459, Start Num: 49

Candidate Starts for Rachella\_31:

(24, 18516), (41, 18642), (Start: 49 @18681 has 31 MA's), (61, 18783), (64, 18804), (70, 18846), (76, 18882), (86, 18969), (97, 19107), (107, 19197), (115, 19299), (127, 19434), (133, 19482), (140, 19563), (147, 19629), (151, 19659), (154, 19668), (156, 19695), (158, 19704), (174, 19839), (178, 19890), (182, 19905), (191, 19941), (196, 19989), (211, 20085), (219, 20124), (250, 20295), (274, 20439),

Gene: Rie18\_31 Start: 18192, Stop: 19970, Start Num: 49

Candidate Starts for Rie18\_31:

(43, 18162), (45, 18165), (Start: 46 @18177 has 2 MA's), (47, 18189), (Start: 49 @18192 has 31 MA's), (61, 18294), (70, 18357), (86, 18480), (97, 18618), (98, 18630), (107, 18708), (115, 18810), (127, 18945), (133, 18993), (141, 19077), (147, 19140), (151, 19170), (154, 19179), (156, 19206), (158, 19215), (168, 19296), (174, 19350), (178, 19401), (182, 19416), (196, 19500), (219, 19635), (230, 19725), (274, 19950),

Gene: RikSengupta\_32 Start: 18570, Stop: 20519, Start Num: 46

Candidate Starts for RikSengupta\_32:

(43, 18555), (45, 18558), (Start: 46 @18570 has 2 MA's), (47, 18582), (Start: 48 @18585 has 6 MA's), (55, 18645), (63, 18696), (76, 18786), (83, 18816), (86, 18873), (87, 18876), (92, 18906), (94, 18966), (102, 19053), (109, 19134), (115, 19218), (123, 19293), (127, 19353), (135, 19434), (141, 19485), (151, 19578), (152, 19581), (154, 19587), (163, 19665), (168, 19701), (170, 19719), (191, 19875), (202, 19959), (203, 19983), (238, 20199), (251, 20241), (268, 20358), (273, 20379),

Gene: Rollins\_17 Start: 12526, Stop: 14229, Start Num: 50

Candidate Starts for Rollins\_17:

(Start: 50 @12526 has 16 MA's), (55, 12574), (62, 12619), (79, 12742), (84, 12772), (97, 12946), (98, 12958), (129, 13264), (130, 13267), (142, 13393), (146, 13444), (151, 13483), (155, 13495), (157, 13525), (159, 13531), (162, 13567), (213, 13933), (228, 14023), (270, 14203), (271, 14206),

Gene: SilentWarrior\_30 Start: 17848, Stop: 19617, Start Num: 49

Candidate Starts for SilentWarrior\_30:

(Start: 49 @17848 has 31 MA's), (61, 17950), (70, 18013), (86, 18136), (87, 18139), (89, 18145), (97, 18274), (98, 18286), (120, 18499), (127, 18601), (133, 18649), (140, 18730), (147, 18796), (151, 18826), (154, 18835), (156, 18862), (158, 18871), (168, 18952), (174, 19006), (178, 19057), (182, 19072), (191, 19108), (196, 19156), (219, 19291), (241, 19420), (271, 19585), (274, 19597),

Gene: Skylord\_17 Start: 12466, Stop: 14169, Start Num: 50

Candidate Starts for Skylord\_17:

(Start: 50 @12466 has 16 MA's), (55, 12514), (62, 12559), (79, 12682), (84, 12712), (97, 12886), (129, 13204), (130, 13207), (142, 13333), (146, 13384), (151, 13423), (155, 13435), (157, 13465), (159, 13471), (160, 13489), (162, 13507), (179, 13654), (183, 13669), (185, 13678), (192, 13717), (213, 13873), (228, 13963), (270, 14143), (271, 14146),

Gene: Snakehole\_31 Start: 17937, Stop: 19706, Start Num: 49

Candidate Starts for Snakehole\_31:

(Start: 49 @17937 has 31 MA's), (61, 18039), (70, 18102), (86, 18225), (87, 18228), (89, 18234), (97, 18363), (98, 18375), (107, 18453), (114, 18543), (120, 18588), (127, 18690), (133, 18738), (147, 18885), (151, 18915), (154, 18924), (156, 18951), (158, 18960), (168, 19041), (174, 19095), (178, 19146), (182, 19161), (191, 19197), (209, 19335), (234, 19491), (241, 19509), (274, 19686),

Gene: Solea\_20 Start: 14384, Stop: 16222, Start Num: 50

Candidate Starts for Solea\_20:

(Start: 50 @14384 has 16 MA's), (76, 14573), (82, 14615), (84, 14630), (91, 14705), (95, 14777), (97, 14804), (98, 14816), (131, 15155), (157, 15383), (161, 15416), (177, 15548), (191, 15614), (193, 15653), (198, 15668), (206, 15737), (232, 15905), (240, 15932), (248, 15962), (260, 16022), (261, 16025), (269, 16088), (272, 16097),

Gene: Sparcetus\_32 Start: 18449, Stop: 20398, Start Num: 46

Candidate Starts for Sparcetus\_32:

(43, 18434), (45, 18437), (Start: 46 @18449 has 2 MA's), (47, 18461), (Start: 48 @18464 has 6 MA's), (55, 18524), (63, 18575), (76, 18665), (83, 18695), (86, 18752), (87, 18755), (94, 18845), (102, 18932), (109, 19013), (115, 19097), (123, 19172), (127, 19232), (135, 19313), (141, 19364), (151, 19457), (152, 19460), (154, 19466), (163, 19544), (168, 19580), (170, 19598), (191, 19754), (202, 19838), (203, 19862), (238, 20078), (251, 20120), (268, 20237), (273, 20258),

Gene: Sucha\_18 Start: 13667, Stop: 15568, Start Num: 51

Candidate Starts for Sucha\_18:

(Start: 51 @13667 has 6 MA's), (56, 13718), (69, 13814), (70, 13817), (74, 13847), (77, 13856), (90, 13964), (91, 13976), (93, 13994), (98, 14096), (99, 14108), (102, 14135), (106, 14186), (112, 14270),

(115, 14300), (116, 14303), (120, 14333), (141, 14567), (148, 14633), (151, 14657), (158, 14702), (159, 14705), (162, 14741), (163, 14744), (169, 14795), (176, 14855), (184, 14903), (226, 15182), (228, 15191), (233, 15239), (242, 15272), (247, 15293), (255, 15326), (275, 15449),

Gene: Sweetums\_22 Start: 15209, Stop: 16897, Start Num: 51

Candidate Starts for Sweetums\_22:

(Start: 51 @15209 has 6 MA's), (69, 15356), (70, 15359), (92, 15521), (98, 15638), (99, 15650), (105, 15704), (115, 15821), (117, 15830), (123, 15896), (129, 15962), (136, 16046), (148, 16154), (151, 16178), (156, 16214), (159, 16226), (162, 16262), (165, 16274), (166, 16289), (167, 16292), (169, 16316), (174, 16355), (176, 16376), (181, 16412), (190, 16433), (197, 16490), (222, 16637), (228, 16688), (232, 16733), (244, 16778), (256, 16820),

Gene: Tedro\_31 Start: 18151, Stop: 19929, Start Num: 49

Candidate Starts for Tedro\_31:

(24, 17986), (41, 18112), (Start: 49 @18151 has 31 MA's), (61, 18253), (64, 18274), (70, 18316), (76, 18352), (86, 18439), (97, 18577), (107, 18667), (115, 18769), (126, 18895), (127, 18904), (133, 18952), (140, 19033), (147, 19099), (151, 19129), (154, 19138), (156, 19165), (158, 19174), (174, 19309), (178, 19360), (182, 19375), (191, 19411), (196, 19459), (211, 19555), (219, 19594), (250, 19765), (274, 19909),

Gene: Teng\_24 Start: 15125, Stop: 16837, Start Num: 51

Candidate Starts for Teng\_24:

(Start: 51 @15125 has 6 MA's), (69, 15272), (70, 15275), (81, 15341), (92, 15437), (100, 15581), (107, 15659), (108, 15677), (111, 15731), (115, 15764), (116, 15767), (117, 15773), (120, 15797), (123, 15839), (124, 15857), (129, 15905), (136, 15989), (140, 16028), (141, 16031), (148, 16097), (151, 16121), (156, 16157), (159, 16169), (165, 16217), (166, 16232), (167, 16235), (169, 16259), (171, 16274), (176, 16319), (184, 16358), (192, 16382), (197, 16433), (199, 16436), (205, 16490), (215, 16541), (216, 16547), (228, 16631), (236, 16688), (253, 16745),

Gene: TinyMiny\_32 Start: 18483, Stop: 20417, Start Num: 48

Candidate Starts for TinyMiny\_32:

(43, 18453), (45, 18456), (Start: 46 @18468 has 2 MA's), (47, 18480), (Start: 48 @18483 has 6 MA's), (55, 18543), (63, 18594), (76, 18684), (83, 18714), (86, 18771), (87, 18774), (94, 18864), (102, 18951), (109, 19032), (115, 19116), (123, 19191), (127, 19251), (135, 19332), (141, 19383), (151, 19476), (152, 19479), (154, 19485), (163, 19563), (168, 19599), (170, 19617), (191, 19773), (202, 19857), (203, 19881), (238, 20097), (251, 20139), (268, 20256), (273, 20277),

Gene: Tongui\_30 Start: 18184, Stop: 19953, Start Num: 48

Candidate Starts for Tongui\_30:

(43, 18154), (45, 18157), (Start: 46 @18169 has 2 MA's), (47, 18181), (Start: 48 @18184 has 6 MA's), (53, 18217), (61, 18286), (70, 18349), (86, 18472), (89, 18481), (95, 18583), (97, 18610), (98, 18622), (127, 18937), (133, 18985), (147, 19132), (151, 19162), (154, 19171), (156, 19198), (158, 19207), (178, 19393), (186, 19420), (191, 19444), (201, 19513), (202, 19525), (208, 19573), (209, 19582), (219, 19627), (228, 19693), (274, 19933),

Gene: Vitas\_17 Start: 12466, Stop: 14169, Start Num: 50

Candidate Starts for Vitas\_17:

(Start: 50 @12466 has 16 MA's), (55, 12514), (62, 12559), (79, 12682), (84, 12712), (97, 12886), (98, 12898), (129, 13204), (130, 13207), (142, 13333), (146, 13384), (151, 13423), (155, 13435), (157, 13465), (159, 13471), (162, 13507), (214, 13879), (228, 13963), (270, 14143), (271, 14146),