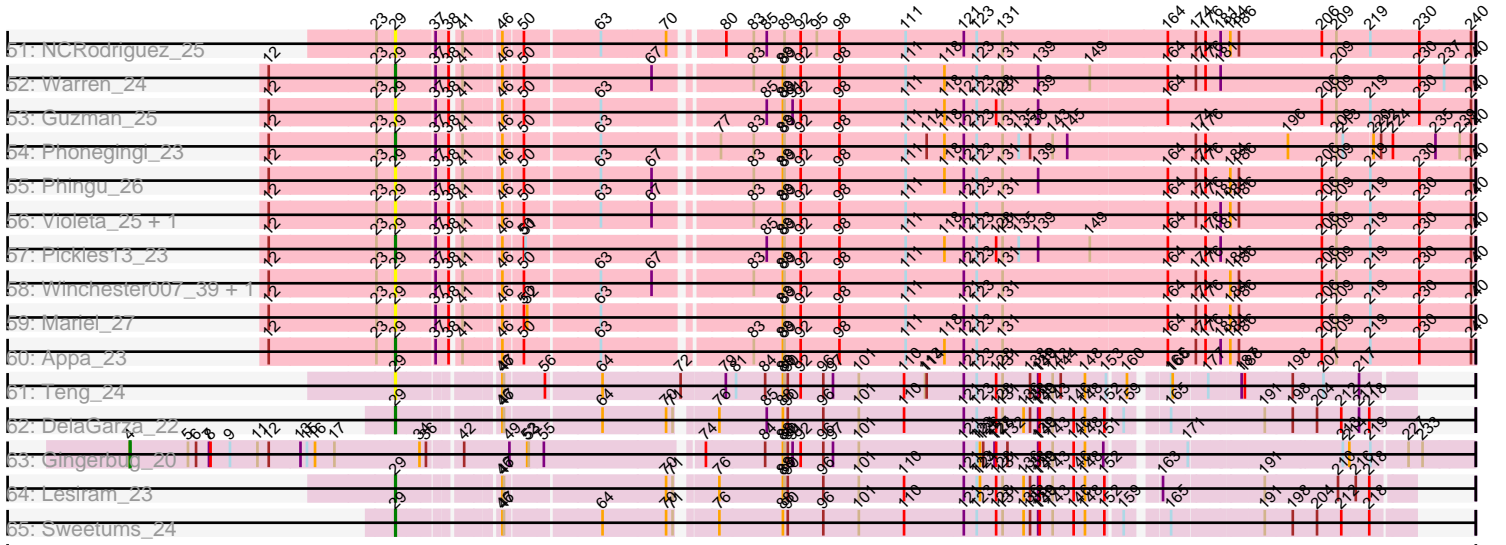




Pham 304920



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 304920 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304920 has 88 members, 17 are drafts.

Phages represented in each track:

- Track 1 : Armstrong\_17
- Track 2 : Clayda5\_17
- Track 3 : Rollins\_17, Bernstein\_17
- Track 4 : Coltrane\_17, Brahms\_17
- Track 5 : Vitas\_17
- Track 6 : Skylord\_17
- Track 7 : Haunter\_31
- Track 8 : Tongui\_30
- Track 9 : Erudite\_30, Dauntless\_30
- Track 10 : Pharpay\_31, Artiphact\_31
- Track 11 : JingleBells\_30
- Track 12 : DannyDe\_30
- Track 13 : FountainFog\_30
- Track 14 : Snakehole\_31, Hiddenleaf\_30, FreddieHg\_30, Chivey\_30
- Track 15 : Kate\_31, OhDear\_31, OverHedge\_31
- Track 16 : CoolCookie\_31, Krampus\_31, Potty\_31
- Track 17 : Rie18\_31
- Track 18 : Anakin\_31, NarutoRun\_31
- Track 19 : SilentWarrior\_30
- Track 20 : PhunaPhoke\_31, Cybele\_31, Neptune\_31
- Track 21 : Crestdrop\_30
- Track 22 : AnnaSerena\_31
- Track 23 : Hager\_32
- Track 24 : Rachella\_31
- Track 25 : Aesir\_30
- Track 26 : MortySmith\_29
- Track 27 : Tedro\_31
- Track 28 : Annapurna\_30
- Track 29 : Gilda\_31
- Track 30 : JDawG\_30
- Track 31 : Zeta1847\_16
- Track 32 : Zanella\_21, TurboVicky\_21
- Track 33 : Johann\_22, Goodman\_22
- Track 34 : Cicada\_23
- Track 35 : Jera\_22
- Track 36 : Alove\_21, Rootkit7\_21
- Track 37 : Rasovi\_21

- Track 38 : Linayshia\_21, Htur\_21
- Track 39 : Labella\_23
- Track 40 : Olympi\_23
- Track 41 : AyoTeo\_23
- Track 42 : Typher\_23
- Track 43 : SBlackberry\_21
- Track 44 : PermaG\_22
- Track 45 : Losacky\_25, Antuna\_24, MenE\_24
- Track 46 : ScoobySnack\_22
- Track 47 : Bush\_24
- Track 48 : CookieDog\_24
- Track 49 : Blett\_24, Dropshot\_23
- Track 50 : Carrillo\_25
- Track 51 : NCRodriguez\_25
- Track 52 : Warren\_24
- Track 53 : Guzman\_25
- Track 54 : Phonegingi\_23
- Track 55 : Phingu\_26
- Track 56 : Violeta\_25, Jakelyne\_26
- Track 57 : Pickles13\_23
- Track 58 : Winchester007\_39, PhillyJawn\_24
- Track 59 : Mariel\_27
- Track 60 : Appa\_23
- Track 61 : Teng\_24
- Track 62 : DelaGarza\_22
- Track 63 : Gingerbug\_20
- Track 64 : Lesiram\_23
- Track 65 : Sweetums\_24

***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 36 of the 71 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• Alove\_21, Antuna\_24, Appa\_23, Armstrong\_17, AyoTeo\_23, Bernstein\_17, Blett\_24, Brahms\_17, Bush\_24, Carrillo\_25, Cicada\_23, Clayda5\_17, Coltrane\_17, CookieDog\_24, DelaGarza\_22, Dropshot\_23, Goodman\_22, Guzman\_25, Htur\_21, Jakelyne\_26, Jera\_22, Johann\_22, Labella\_23, Lesiram\_23, Linayshia\_21, Losacky\_25, Mariel\_27, MenE\_24, NCRodriguez\_25, Olympi\_23, PermaG\_22, PhillyJawn\_24, Phingu\_26, Phonegingi\_23, Pickles13\_23, Rasovi\_21, Rollins\_17, Rootkit7\_21, SBlackberry\_21, ScoobySnack\_22, Skylord\_17, Sweetums\_24, Teng\_24, TurboVicky\_21, Typher\_23, Violeta\_25, Vitas\_17, Warren\_24, Winchester007\_39, Zanella\_21,

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

- 

Genes that do not have the "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, FountainFog\_30, FreddieHg\_30, Gilda\_31, Gingerbug\_20, 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, Tongui\_30, Zeta1847\_16,

### Summary by start number:

#### Start 1:

- Found in 1 of 88 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Zeta1847\_16 (EH),

#### Start 4:

- Found in 1 of 88 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Gingerbug\_20 (GF),

#### Start 29:

- Found in 50 of 88 ( 56.8% ) of genes in pham
- Manual Annotations of this start: 36 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alove\_21 (EJ), Antuna\_24 (GA), Appa\_23 (GA), Armstrong\_17 (EB), AyoTeo\_23 (EJ), Bernstein\_17 (EB), Blett\_24 (GA), Brahms\_17 (EB), Bush\_24 (GA), Carrillo\_25 (GA), Cicada\_23 (EJ), Clayda5\_17 (EB), Coltrane\_17 (EB), CookieDog\_24 (GA), DelaGarza\_22 (GF), Dropshot\_23 (GA), Goodman\_22 (EJ), Guzman\_25 (GA), Htur\_21 (EJ), Jakelyne\_26 (GA), Jera\_22 (EJ), Johann\_22 (EJ), Labela\_23 (EJ), Lesiram\_23 (GF), Linayshia\_21 (EJ), Losacky\_25 (GA), Mariel\_27 (GA), MenE\_24 (GA), NCRodriguez\_25 (GA), Olympi\_23 (EJ), PermaG\_22 (EJ), PhillyJawn\_24 (GA), Phingu\_26 (GA), Phonegingi\_23 (GA), Pickles13\_23 (GA), Rasovi\_21 (EJ), Rollins\_17 (EB), Rootkit7\_21 (EJ), SBlackberry\_21 (EJ), ScoobySnack\_22 (GA), Skylord\_17 (EB), Sweetums\_24 (GF), Teng\_24 (GF), TurboVicky\_21 (EJ), Typher\_23 (EJ), Violeta\_25 (GA), Vitas\_17 (EB), Warren\_24 (GA), Winchester007\_39 (GA), Zanella\_21 (EJ),

#### Start 30:

- Found in 37 of 88 ( 42.0% ) of genes in pham
- Manual Annotations of this start: 33 of 71
- Called 97.3% 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), FountainFog\_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), Tongui\_30 (EF),

## Summary by clusters:

There are 6 clusters represented in this pham: EH, EJ, EF, EB, GF, GA,

Info for manual annotations of cluster EB:

- Start number 29 was manually annotated 8 times for cluster EB.

Info for manual annotations of cluster EF:

- Start number 30 was manually annotated 33 times for cluster EF.

Info for manual annotations of cluster EH:

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

Info for manual annotations of cluster EJ:

- Start number 29 was manually annotated 14 times for cluster EJ.

Info for manual annotations of cluster GA:

- Start number 29 was manually annotated 11 times for cluster GA.

Info for manual annotations of cluster GF:

- Start number 4 was manually annotated 1 time for cluster GF.
- Start number 29 was manually annotated 3 times for cluster GF.

## Gene Information:

Gene: Aesir\_30 Start: 18424, Stop: 20193, Start Num: 30

Candidate Starts for Aesir\_30:

(18, 18337), (19, 18355), (Start: 30 @18424 has 33 MA's), (39, 18526), (47, 18589), (59, 18712), (60, 18715), (61, 18721), (69, 18850), (70, 18862), (92, 19075), (100, 19177), (104, 19219), (106, 19225), (113, 19306), (120, 19372), (123, 19402), (125, 19411), (128, 19438), (130, 19447), (142, 19528), (146, 19582), (150, 19633), (155, 19648), (161, 19684), (188, 19867), (207, 19996), (225, 20122), (231, 20161), (234, 20173),

Gene: Alove\_21 Start: 16231, Stop: 18123, Start Num: 29

Candidate Starts for Alove\_21:

(Start: 29 @16231 has 36 MA's), (43, 16360), (46, 16399), (56, 16471), (62, 16552), (63, 16564), (70, 16681), (74, 16723), (86, 16840), (88, 16861), (89, 16864), (93, 16897), (101, 17002), (105, 17041), (106, 17044), (109, 17074), (122, 17212), (123, 17218), (134, 17290), (137, 17305), (139, 17329), (143, 17356), (147, 17404), (164, 17569), (171, 17605), (175, 17629), (176, 17638), (178, 17644), (186, 17698), (203, 17833), (211, 17878), (214, 17896), (217, 17914), (230, 18022), (238, 18088),

Gene: Anakin\_31 Start: 18678, Stop: 20456, Start Num: 30

Candidate Starts for Anakin\_31:

(14, 18513), (20, 18636), (21, 18639), (Start: 30 @18678 has 33 MA's), (39, 18780), (43, 18801), (47, 18843), (52, 18879), (59, 18966), (69, 19104), (79, 19194), (88, 19296), (100, 19431), (106, 19479), (113, 19560), (120, 19626), (123, 19656), (125, 19665), (128, 19692), (130, 19701), (146, 19836), (150, 19887), (155, 19902), (161, 19938), (165, 19986), (188, 20121), (234, 20436),

Gene: AnnaSerena\_31 Start: 18687, Stop: 20465, Start Num: 30

Candidate Starts for AnnaSerena\_31:

(14, 18522), (21, 18648), (Start: 30 @18687 has 33 MA's), (39, 18789), (43, 18810), (44, 18831), (47, 18852), (52, 18888), (59, 18975), (69, 19113), (79, 19203), (88, 19305), (100, 19440), (106, 19488), (113, 19569), (120, 19635), (123, 19665), (125, 19674), (128, 19701), (130, 19710), (146, 19845), (150, 19896), (155, 19911), (161, 19947), (165, 19995), (188, 20130), (214, 20316), (234, 20445),

Gene: Annapurna\_30 Start: 17886, Stop: 19655, Start Num: 30

Candidate Starts for Annapurna\_30:

(Start: 30 @17886 has 33 MA's), (39, 17988), (47, 18051), (59, 18174), (60, 18177), (61, 18183), (69, 18312), (70, 18324), (92, 18537), (100, 18639), (106, 18687), (113, 18768), (120, 18834), (123, 18864), (125, 18873), (128, 18900), (130, 18909), (142, 18990), (146, 19044), (150, 19095), (155, 19110), (161, 19146), (165, 19194), (188, 19329), (207, 19458), (231, 19623), (234, 19635),

Gene: Antuna\_24 Start: 14563, Stop: 16431, Start Num: 29

Candidate Starts for Antuna\_24:

(12, 14338), (23, 14533), (Start: 29 @14563 has 36 MA's), (37, 14623), (38, 14644), (41, 14656), (46, 14710), (50, 14743), (52, 14749), (67, 14965), (83, 15121), (88, 15175), (89, 15178), (92, 15208), (98, 15280), (111, 15403), (118, 15475), (121, 15508), (123, 15532), (131, 15580), (139, 15643), (164, 15877), (174, 15928), (176, 15946), (181, 15973), (184, 15991), (186, 16006), (206, 16153), (209, 16180), (219, 16243), (230, 16330), (240, 16423),

Gene: Appa\_23 Start: 14425, Stop: 16293, Start Num: 29

Candidate Starts for Appa\_23:

(12, 14200), (23, 14395), (Start: 29 @14425 has 36 MA's), (37, 14485), (38, 14506), (41, 14518), (46, 14572), (50, 14605), (63, 14734), (83, 14983), (88, 15037), (89, 15040), (92, 15070), (98, 15142), (111, 15265), (118, 15337), (121, 15370), (123, 15394), (131, 15442), (164, 15739), (174, 15790), (176, 15808), (181, 15835), (184, 15853), (186, 15868), (206, 16015), (209, 16042), (219, 16105), (230, 16192), (240, 16285),

Gene: Armstrong\_17 Start: 12466, Stop: 14193, Start Num: 29

Candidate Starts for Armstrong\_17:

(Start: 29 @12466 has 36 MA's), (35, 12514), (40, 12559), (48, 12625), (54, 12682), (57, 12712), (69, 12886), (70, 12898), (101, 13204), (102, 13207), (115, 13333), (119, 13384), (123, 13423), (126, 13435), (129, 13465), (131, 13471), (136, 13507), (198, 13963), (205, 14011), (228, 14167), (229, 14170),

Gene: Artiphact\_31 Start: 18679, Stop: 20457, Start Num: 30

Candidate Starts for Artiphact\_31:

(14, 18514), (21, 18640), (Start: 30 @18679 has 33 MA's), (39, 18781), (43, 18802), (47, 18844), (52, 18880), (59, 18967), (69, 19105), (79, 19195), (100, 19432), (106, 19480), (113, 19561), (120, 19627), (123, 19657), (125, 19666), (130, 19702), (146, 19837), (150, 19888), (155, 19903), (161, 19939), (165, 19987), (182, 20083), (188, 20122), (234, 20437),

Gene: AyoTeo\_23 Start: 16358, Stop: 18250, Start Num: 29

Candidate Starts for AyoTeo\_23:

(Start: 29 @16358 has 36 MA's), (43, 16487), (46, 16526), (47, 16529), (56, 16598), (62, 16679), (63, 16691), (70, 16808), (86, 16967), (88, 16988), (89, 16991), (93, 17024), (101, 17129), (105, 17168), (106, 17171), (108, 17189), (109, 17201), (122, 17339), (123, 17345), (134, 17417), (137, 17432), (139, 17456), (141, 17462), (143, 17483), (147, 17531), (164, 17696), (165, 17702), (171, 17732), (176, 17765), (178, 17771), (186, 17825), (190, 17864), (211, 18005), (230, 18149), (237, 18194), (238, 18215),

Gene: Bernstein\_17 Start: 12526, Stop: 14229, Start Num: 29

Candidate Starts for Bernstein\_17:

(Start: 29 @12526 has 36 MA's), (35, 12574), (40, 12619), (54, 12742), (57, 12772), (69, 12946), (70, 12958), (101, 13264), (102, 13267), (115, 13393), (119, 13444), (123, 13483), (126, 13495), (129, 13525), (131, 13531), (136, 13567), (187, 13933), (198, 14023), (228, 14203), (229, 14206),

Gene: Blett\_24 Start: 14578, Stop: 16446, Start Num: 29

Candidate Starts for Blett\_24:

(12, 14353), (23, 14548), (Start: 29 @14578 has 36 MA's), (37, 14638), (38, 14659), (41, 14671), (46, 14725), (50, 14758), (63, 14887), (67, 14980), (88, 15190), (89, 15193), (92, 15223), (98, 15295), (111, 15418), (121, 15523), (123, 15547), (131, 15595), (164, 15892), (174, 15943), (176, 15961), (181, 15988), (184, 16006), (186, 16021), (206, 16168), (209, 16195), (219, 16258), (230, 16345), (240, 16438),

Gene: Brahms\_17 Start: 12466, Stop: 14169, Start Num: 29

Candidate Starts for Brahms\_17:

(Start: 29 @12466 has 36 MA's), (40, 12559), (54, 12682), (57, 12712), (69, 12886), (101, 13204), (102, 13207), (115, 13333), (119, 13384), (123, 13423), (126, 13435), (129, 13465), (131, 13471), (133, 13489), (136, 13507), (152, 13654), (156, 13669), (158, 13678), (162, 13717), (187, 13873), (198, 13963), (228, 14143), (229, 14146),

Gene: Bush\_24 Start: 14559, Stop: 16421, Start Num: 29

Candidate Starts for Bush\_24:

(12, 14334), (23, 14529), (Start: 29 @14559 has 36 MA's), (37, 14619), (38, 14640), (41, 14652), (46, 14706), (50, 14739), (63, 14868), (83, 15117), (85, 15141), (88, 15171), (89, 15174), (92, 15204), (98, 15276), (111, 15399), (121, 15504), (123, 15528), (131, 15576), (139, 15639), (164, 15867), (186, 15996), (192, 16041), (209, 16170), (230, 16320), (238, 16386), (240, 16413),

Gene: Carrillo\_25 Start: 14532, Stop: 16400, Start Num: 29

Candidate Starts for Carrillo\_25:

(12, 14307), (23, 14502), (Start: 29 @14532 has 36 MA's), (37, 14592), (38, 14613), (41, 14625), (46, 14679), (50, 14712), (67, 14934), (83, 15090), (88, 15144), (89, 15147), (92, 15177), (98, 15249), (111, 15372), (118, 15444), (121, 15477), (123, 15501), (131, 15549), (139, 15612), (164, 15846), (174, 15897), (176, 15915), (181, 15942), (184, 15960), (186, 15975), (206, 16122), (209, 16149), (219, 16212), (230, 16299), (240, 16392),

Gene: Chivey\_30 Start: 17840, Stop: 19609, Start Num: 30

Candidate Starts for Chivey\_30:

(Start: 30 @17840 has 33 MA's), (39, 17942), (47, 18005), (59, 18128), (60, 18131), (61, 18137), (69, 18266), (70, 18278), (79, 18356), (87, 18446), (92, 18491), (100, 18593), (106, 18641), (120, 18788), (123, 18818), (125, 18827), (128, 18854), (130, 18863), (142, 18944), (146, 18998), (150, 19049), (155, 19064), (161, 19100), (180, 19238), (201, 19394), (207, 19412), (234, 19589),

Gene: Cicada\_23 Start: 16468, Stop: 18345, Start Num: 29

Candidate Starts for Cicada\_23:

(12, 16243), (Start: 29 @16468 has 36 MA's), (43, 16597), (46, 16636), (47, 16639), (56, 16708), (58, 16753), (62, 16789), (70, 16918), (88, 17098), (89, 17101), (93, 17134), (101, 17239), (103, 17260), (105, 17278), (106, 17281), (123, 17455), (134, 17527), (137, 17542), (139, 17566), (141, 17572), (143, 17593), (147, 17641), (167, 17809), (168, 17812), (170, 17833), (173, 17845), (185, 17920), (213, 18115), (215, 18136), (217, 18145), (221, 18178), (230, 18244), (235, 18274), (239, 18316),

Gene: Clayda5\_17 Start: 12466, Stop: 14199, Start Num: 29

Candidate Starts for Clayda5\_17:

(Start: 29 @12466 has 36 MA's), (35, 12514), (40, 12559), (48, 12625), (54, 12682), (57, 12712), (69, 12886), (70, 12898), (101, 13204), (102, 13207), (115, 13333), (119, 13384), (123, 13423), (126,

13435), (129, 13465), (131, 13471), (136, 13507), (187, 13873), (228, 14173), (229, 14176),

Gene: Coltrane\_17 Start: 12466, Stop: 14169, Start Num: 29

Candidate Starts for Coltrane\_17:

(Start: 29 @12466 has 36 MA's), (40, 12559), (54, 12682), (57, 12712), (69, 12886), (101, 13204), (102, 13207), (115, 13333), (119, 13384), (123, 13423), (126, 13435), (129, 13465), (131, 13471), (133, 13489), (136, 13507), (152, 13654), (156, 13669), (158, 13678), (162, 13717), (187, 13873), (198, 13963), (228, 14143), (229, 14146),

Gene: CookieDog\_24 Start: 14559, Stop: 16421, Start Num: 29

Candidate Starts for CookieDog\_24:

(12, 14334), (23, 14529), (Start: 29 @14559 has 36 MA's), (37, 14619), (38, 14640), (41, 14652), (46, 14706), (50, 14739), (68, 14973), (83, 15117), (88, 15171), (89, 15174), (92, 15204), (98, 15276), (111, 15399), (118, 15471), (121, 15504), (123, 15528), (131, 15576), (164, 15867), (206, 16143), (209, 16170), (219, 16233), (230, 16320), (240, 16413),

Gene: CoolCookie\_31 Start: 18685, Stop: 20463, Start Num: 30

Candidate Starts for CoolCookie\_31:

(14, 18520), (21, 18646), (Start: 30 @18685 has 33 MA's), (39, 18787), (43, 18808), (47, 18850), (52, 18886), (59, 18973), (69, 19111), (79, 19201), (88, 19303), (100, 19438), (106, 19486), (113, 19567), (120, 19633), (123, 19663), (125, 19672), (130, 19708), (146, 19843), (150, 19894), (155, 19909), (161, 19945), (165, 19993), (188, 20128), (234, 20443),

Gene: Crestdrop\_30 Start: 17749, Stop: 19518, Start Num: 30

Candidate Starts for Crestdrop\_30:

(19, 17680), (Start: 30 @17749 has 33 MA's), (39, 17851), (47, 17914), (59, 18037), (60, 18040), (61, 18046), (69, 18175), (70, 18187), (92, 18400), (100, 18502), (106, 18550), (113, 18631), (120, 18697), (123, 18727), (125, 18736), (128, 18763), (130, 18772), (142, 18853), (146, 18907), (150, 18958), (155, 18973), (161, 19009), (165, 19057), (207, 19321), (231, 19486), (234, 19498),

Gene: Cybele\_31 Start: 18655, Stop: 20433, Start Num: 30

Candidate Starts for Cybele\_31:

(14, 18490), (21, 18616), (Start: 30 @18655 has 33 MA's), (39, 18757), (43, 18778), (47, 18820), (52, 18856), (59, 18943), (69, 19081), (79, 19171), (88, 19273), (99, 19399), (100, 19408), (106, 19456), (113, 19537), (120, 19603), (123, 19633), (125, 19642), (128, 19669), (130, 19678), (146, 19813), (150, 19864), (155, 19879), (161, 19915), (165, 19963), (182, 20059), (188, 20098), (234, 20413),

Gene: DannyDe\_30 Start: 17832, Stop: 19601, Start Num: 30

Candidate Starts for DannyDe\_30:

(19, 17763), (Start: 30 @17832 has 33 MA's), (39, 17934), (47, 17997), (59, 18120), (60, 18123), (61, 18129), (69, 18258), (70, 18270), (92, 18483), (100, 18585), (106, 18633), (113, 18714), (118, 18750), (120, 18780), (123, 18810), (125, 18819), (128, 18846), (130, 18855), (142, 18936), (146, 18990), (150, 19041), (155, 19056), (161, 19092), (165, 19140), (188, 19275), (207, 19404), (231, 19569), (234, 19581),

Gene: Dauntless\_30 Start: 18392, Stop: 20161, Start Num: 30

Candidate Starts for Dauntless\_30:

(Start: 30 @18392 has 33 MA's), (39, 18494), (47, 18557), (59, 18680), (60, 18683), (61, 18689), (69, 18818), (70, 18830), (92, 19043), (100, 19145), (106, 19193), (113, 19274), (120, 19340), (123, 19370), (125, 19379), (128, 19406), (130, 19415), (142, 19496), (146, 19550), (150, 19601), (155, 19616), (161, 19652), (207, 19964), (225, 20090), (231, 20129), (234, 20141),

Gene: DelaGarza\_22 Start: 15128, Stop: 16816, Start Num: 29

Candidate Starts for DelaGarza\_22:

(Start: 29 @15128 has 36 MA's), (46, 15275), (47, 15278), (64, 15440), (70, 15557), (71, 15569), (76, 15623), (85, 15710), (88, 15740), (90, 15749), (96, 15815), (101, 15881), (110, 15965), (121, 16073), (123, 16097), (128, 16133), (131, 16145), (136, 16181), (138, 16193), (139, 16208), (140, 16211), (143, 16235), (146, 16274), (148, 16295), (152, 16331), (159, 16352), (165, 16409), (191, 16556), (198, 16607), (204, 16652), (212, 16697), (217, 16721), (218, 16739),

Gene: Dropshot\_23 Start: 14425, Stop: 16293, Start Num: 29

Candidate Starts for Dropshot\_23:

(12, 14200), (23, 14395), (Start: 29 @14425 has 36 MA's), (37, 14485), (38, 14506), (41, 14518), (46, 14572), (50, 14605), (63, 14734), (67, 14827), (88, 15037), (89, 15040), (92, 15070), (98, 15142), (111, 15265), (121, 15370), (123, 15394), (131, 15442), (164, 15739), (174, 15790), (176, 15808), (181, 15835), (184, 15853), (186, 15868), (206, 16015), (209, 16042), (219, 16105), (230, 16192), (240, 16285),

Gene: Erudite\_30 Start: 18392, Stop: 20161, Start Num: 30

Candidate Starts for Erudite\_30:

(Start: 30 @18392 has 33 MA's), (39, 18494), (47, 18557), (59, 18680), (60, 18683), (61, 18689), (69, 18818), (70, 18830), (92, 19043), (100, 19145), (106, 19193), (113, 19274), (120, 19340), (123, 19370), (125, 19379), (128, 19406), (130, 19415), (142, 19496), (146, 19550), (150, 19601), (155, 19616), (161, 19652), (207, 19964), (225, 20090), (231, 20129), (234, 20141),

Gene: FountainFog\_30 Start: 17995, Stop: 19764, Start Num: 30

Candidate Starts for FountainFog\_30:

(23, 17965), (24, 17968), (26, 17980), (28, 17992), (Start: 30 @17995 has 33 MA's), (39, 18097), (47, 18160), (59, 18283), (61, 18292), (66, 18394), (69, 18421), (70, 18433), (82, 18532), (100, 18748), (106, 18796), (114, 18880), (120, 18943), (123, 18973), (125, 18982), (130, 19018), (150, 19204), (155, 19219), (161, 19255), (179, 19384), (207, 19567), (234, 19744),

Gene: FreddieHg\_30 Start: 17856, Stop: 19625, Start Num: 30

Candidate Starts for FreddieHg\_30:

(Start: 30 @17856 has 33 MA's), (39, 17958), (47, 18021), (59, 18144), (60, 18147), (61, 18153), (69, 18282), (70, 18294), (79, 18372), (87, 18462), (92, 18507), (100, 18609), (106, 18657), (120, 18804), (123, 18834), (125, 18843), (128, 18870), (130, 18879), (142, 18960), (146, 19014), (150, 19065), (155, 19080), (161, 19116), (180, 19254), (201, 19410), (207, 19428), (234, 19605),

Gene: Gilda\_31 Start: 18679, Stop: 20457, Start Num: 30

Candidate Starts for Gilda\_31:

(14, 18514), (21, 18640), (Start: 30 @18679 has 33 MA's), (39, 18781), (43, 18802), (47, 18844), (52, 18880), (59, 18967), (69, 19105), (79, 19195), (88, 19297), (100, 19432), (106, 19480), (113, 19561), (120, 19627), (123, 19657), (125, 19666), (128, 19693), (130, 19702), (146, 19837), (150, 19888), (155, 19903), (161, 19939), (165, 19987), (182, 20083), (188, 20122), (234, 20437),

Gene: Gingerbug\_20 Start: 14337, Stop: 16679, Start Num: 4

Candidate Starts for Gingerbug\_20:

(Start: 4 @14337 has 1 MA's), (5, 14445), (6, 14460), (7, 14484), (8, 14487), (9, 14523), (11, 14574), (12, 14595), (13, 14652), (15, 14664), (16, 14679), (17, 14715), (34, 14871), (36, 14883), (42, 14934), (49, 15018), (52, 15051), (53, 15054), (55, 15078), (74, 15345), (84, 15453), (88, 15486), (89, 15489), (90, 15495), (91, 15504), (92, 15519), (96, 15561), (97, 15579), (101, 15627), (121, 15819), (123, 15843), (124, 15849), (126, 15855), (127, 15876), (128, 15879), (132, 15900), (139, 15954), (140, 15957), (143, 15981), (146, 16020), (148, 16041), (151, 16074), (171, 16188), (213, 16452), (214, 16464), (219, 16503), (227, 16563), (233, 16587),

Gene: Goodman\_22 Start: 16381, Stop: 18258, Start Num: 29

Candidate Starts for Goodman\_22:

(Start: 29 @16381 has 36 MA's), (43, 16510), (46, 16549), (47, 16552), (56, 16621), (58, 16666), (62, 16702), (70, 16831), (88, 17011), (89, 17014), (93, 17047), (101, 17152), (103, 17173), (105, 17191), (106, 17194), (123, 17368), (130, 17413), (134, 17440), (137, 17455), (139, 17479), (141, 17485), (143, 17506), (147, 17554), (167, 17722), (168, 17725), (170, 17746), (173, 17758), (185, 17833), (213, 18028), (215, 18049), (217, 18058), (221, 18091), (230, 18157), (235, 18187), (239, 18229),

Gene: Guzman\_25 Start: 14840, Stop: 16702, Start Num: 29

Candidate Starts for Guzman\_25:

(12, 14615), (23, 14810), (Start: 29 @14840 has 36 MA's), (37, 14900), (38, 14921), (41, 14933), (46, 14987), (50, 15020), (63, 15149), (85, 15422), (88, 15452), (89, 15455), (91, 15470), (92, 15485), (98, 15557), (111, 15680), (118, 15752), (121, 15785), (123, 15809), (128, 15845), (131, 15857), (139, 15920), (164, 16148), (206, 16424), (209, 16451), (219, 16514), (230, 16601), (240, 16694),

Gene: Hager\_32 Start: 18239, Stop: 20017, Start Num: 30

Candidate Starts for Hager\_32:

(23, 18209), (24, 18212), (26, 18224), (28, 18236), (Start: 30 @18239 has 33 MA's), (39, 18341), (47, 18404), (59, 18527), (68, 18662), (69, 18665), (70, 18677), (79, 18755), (88, 18857), (100, 18992), (106, 19040), (107, 19049), (120, 19187), (123, 19217), (125, 19226), (128, 19253), (130, 19262), (146, 19397), (150, 19448), (155, 19463), (165, 19547), (188, 19682), (234, 19997),

Gene: Haunter\_31 Start: 18092, Stop: 19870, Start Num: 30

Candidate Starts for Haunter\_31:

(21, 18053), (Start: 30 @18092 has 33 MA's), (39, 18194), (43, 18215), (47, 18257), (52, 18293), (59, 18380), (69, 18518), (79, 18608), (88, 18710), (100, 18845), (106, 18893), (113, 18974), (120, 19040), (123, 19070), (125, 19079), (128, 19106), (130, 19115), (146, 19250), (150, 19301), (155, 19316), (161, 19352), (182, 19496), (188, 19535), (212, 19706), (234, 19850),

Gene: Hiddenleaf\_30 Start: 17840, Stop: 19609, Start Num: 30

Candidate Starts for Hiddenleaf\_30:

(Start: 30 @17840 has 33 MA's), (39, 17942), (47, 18005), (59, 18128), (60, 18131), (61, 18137), (69, 18266), (70, 18278), (79, 18356), (87, 18446), (92, 18491), (100, 18593), (106, 18641), (120, 18788), (123, 18818), (125, 18827), (128, 18854), (130, 18863), (142, 18944), (146, 18998), (150, 19049), (155, 19064), (161, 19100), (180, 19238), (201, 19394), (207, 19412), (234, 19589),

Gene: Htur\_21 Start: 16411, Stop: 18312, Start Num: 29

Candidate Starts for Htur\_21:

(Start: 29 @16411 has 36 MA's), (31, 16432), (32, 16438), (43, 16540), (46, 16579), (47, 16582), (56, 16651), (62, 16732), (65, 16762), (70, 16861), (73, 16903), (86, 17044), (88, 17065), (89, 17068), (93, 17101), (101, 17206), (105, 17245), (106, 17248), (112, 17308), (122, 17416), (123, 17422), (134, 17494), (137, 17509), (139, 17533), (141, 17539), (143, 17560), (147, 17608), (153, 17659), (158, 17680), (167, 17776), (170, 17800), (173, 17812), (183, 17875), (189, 17932), (197, 17986), (206, 18043), (209, 18070), (211, 18076), (213, 18082), (214, 18094), (221, 18145), (239, 18283),

Gene: JDawG\_30 Start: 18422, Stop: 20188, Start Num: 30

Candidate Starts for JDawG\_30:

(Start: 30 @18422 has 33 MA's), (39, 18524), (47, 18587), (56, 18647), (59, 18710), (60, 18713), (61, 18719), (69, 18848), (70, 18860), (100, 19172), (106, 19220), (123, 19397), (125, 19406), (130, 19442), (142, 19523), (146, 19577), (150, 19628), (155, 19643), (161, 19679), (165, 19727), (188, 19862), (207, 19991), (225, 20117), (231, 20156), (234, 20168),

Gene: Jakelyne\_26 Start: 14641, Stop: 16509, Start Num: 29

Candidate Starts for Jakelyne\_26:

(12, 14416), (23, 14611), (Start: 29 @14641 has 36 MA's), (37, 14701), (38, 14722), (41, 14734), (46, 14788), (50, 14821), (63, 14950), (67, 15043), (83, 15199), (88, 15253), (89, 15256), (92, 15286), (98, 15358), (111, 15481), (121, 15586), (123, 15610), (131, 15658), (164, 15955), (174, 16006), (176, 16024), (181, 16051), (184, 16069), (186, 16084), (206, 16231), (209, 16258), (219, 16321), (230, 16408), (240, 16501),

Gene: Jera\_22 Start: 15478, Stop: 17370, Start Num: 29

Candidate Starts for Jera\_22:

(Start: 29 @15478 has 36 MA's), (43, 15607), (46, 15646), (56, 15718), (62, 15799), (63, 15811), (70, 15928), (76, 15994), (86, 16087), (88, 16108), (89, 16111), (93, 16144), (101, 16249), (106, 16291), (108, 16309), (122, 16459), (123, 16465), (134, 16537), (137, 16552), (139, 16576), (141, 16582), (143, 16603), (147, 16651), (164, 16816), (165, 16822), (171, 16852), (175, 16876), (176, 16885), (178, 16891), (181, 16912), (186, 16945), (203, 17080), (208, 17110), (209, 17119), (211, 17125), (237, 17314), (238, 17335),

Gene: JingleBells\_30 Start: 17956, Stop: 19725, Start Num: 30

Candidate Starts for JingleBells\_30:

(19, 17887), (Start: 30 @17956 has 33 MA's), (39, 18058), (47, 18121), (59, 18244), (60, 18247), (61, 18253), (69, 18382), (70, 18394), (92, 18607), (100, 18709), (106, 18757), (113, 18838), (120, 18904), (123, 18934), (125, 18943), (128, 18970), (130, 18979), (142, 19060), (146, 19114), (150, 19165), (155, 19180), (161, 19216), (207, 19528), (225, 19654), (231, 19693), (234, 19705),

Gene: Johann\_22 Start: 16381, Stop: 18258, Start Num: 29

Candidate Starts for Johann\_22:

(Start: 29 @16381 has 36 MA's), (43, 16510), (46, 16549), (47, 16552), (56, 16621), (58, 16666), (62, 16702), (70, 16831), (88, 17011), (89, 17014), (93, 17047), (101, 17152), (103, 17173), (105, 17191), (106, 17194), (123, 17368), (130, 17413), (134, 17440), (137, 17455), (139, 17479), (141, 17485), (143, 17506), (147, 17554), (167, 17722), (168, 17725), (170, 17746), (173, 17758), (185, 17833), (213, 18028), (215, 18049), (217, 18058), (221, 18091), (230, 18157), (235, 18187), (239, 18229),

Gene: Kate\_31 Start: 18687, Stop: 20465, Start Num: 30

Candidate Starts for Kate\_31:

(14, 18522), (21, 18648), (Start: 30 @18687 has 33 MA's), (39, 18789), (43, 18810), (47, 18852), (52, 18888), (59, 18975), (69, 19113), (79, 19203), (88, 19305), (99, 19431), (100, 19440), (106, 19488), (113, 19569), (120, 19635), (123, 19665), (125, 19674), (128, 19701), (130, 19710), (146, 19845), (150, 19896), (155, 19911), (161, 19947), (165, 19995), (188, 20130), (234, 20445),

Gene: Krampus\_31 Start: 18685, Stop: 20463, Start Num: 30

Candidate Starts for Krampus\_31:

(14, 18520), (21, 18646), (Start: 30 @18685 has 33 MA's), (39, 18787), (43, 18808), (47, 18850), (52, 18886), (59, 18973), (69, 19111), (79, 19201), (88, 19303), (100, 19438), (106, 19486), (113, 19567), (120, 19633), (123, 19663), (125, 19672), (130, 19708), (146, 19843), (150, 19894), (155, 19909), (161, 19945), (165, 19993), (188, 20128), (234, 20443),

Gene: Labella\_23 Start: 16361, Stop: 18253, Start Num: 29

Candidate Starts for Labella\_23:

(Start: 29 @16361 has 36 MA's), (43, 16490), (46, 16529), (47, 16532), (56, 16601), (60, 16667), (62, 16682), (63, 16694), (70, 16811), (86, 16970), (88, 16991), (89, 16994), (93, 17027), (101, 17132), (105, 17171), (106, 17174), (108, 17192), (109, 17204), (122, 17342), (123, 17348), (134, 17420), (137, 17435), (139, 17459), (141, 17465), (143, 17486), (147, 17534), (164, 17699), (165, 17705), (171, 17735), (176, 17768), (178, 17774), (186, 17828), (203, 17963), (209, 18002), (214, 18026), (237, 18197), (238, 18218),

Gene: Lesiram\_23 Start: 15098, Stop: 16786, Start Num: 29

Candidate Starts for Lesiram\_23:

(Start: 29 @15098 has 36 MA's), (46, 15245), (47, 15248), (70, 15527), (71, 15539), (76, 15593), (88, 15710), (89, 15713), (90, 15719), (96, 15785), (101, 15851), (110, 15935), (121, 16043), (123, 16067), (124, 16073), (128, 16103), (131, 16115), (136, 16151), (138, 16163), (139, 16178), (140, 16181), (143, 16205), (146, 16244), (148, 16265), (152, 16301), (163, 16364), (191, 16526), (210, 16661), (216, 16688), (218, 16712),

Gene: Linayshia\_21 Start: 16403, Stop: 18304, Start Num: 29

Candidate Starts for Linayshia\_21:

(Start: 29 @16403 has 36 MA's), (31, 16424), (32, 16430), (43, 16532), (46, 16571), (47, 16574), (56, 16643), (62, 16724), (65, 16754), (70, 16853), (73, 16895), (86, 17036), (88, 17057), (89, 17060), (93, 17093), (101, 17198), (105, 17237), (106, 17240), (112, 17300), (122, 17408), (123, 17414), (134, 17486), (137, 17501), (139, 17525), (141, 17531), (143, 17552), (147, 17600), (153, 17651), (158, 17672), (167, 17768), (170, 17792), (173, 17804), (183, 17867), (189, 17924), (197, 17978), (206, 18035), (209, 18062), (211, 18068), (213, 18074), (214, 18086), (221, 18137), (239, 18275),

Gene: Losacky\_25 Start: 14705, Stop: 16573, Start Num: 29

Candidate Starts for Losacky\_25:

(12, 14480), (23, 14675), (Start: 29 @14705 has 36 MA's), (37, 14765), (38, 14786), (41, 14798), (46, 14852), (50, 14885), (52, 14891), (67, 15107), (83, 15263), (88, 15317), (89, 15320), (92, 15350), (98, 15422), (111, 15545), (118, 15617), (121, 15650), (123, 15674), (131, 15722), (139, 15785), (164, 16019), (174, 16070), (176, 16088), (181, 16115), (184, 16133), (186, 16148), (206, 16295), (209, 16322), (219, 16385), (230, 16472), (240, 16565),

Gene: Mariel\_27 Start: 14997, Stop: 16865, Start Num: 29

Candidate Starts for Mariel\_27:

(12, 14772), (23, 14967), (Start: 29 @14997 has 36 MA's), (37, 15057), (38, 15078), (41, 15090), (46, 15144), (50, 15177), (52, 15183), (63, 15306), (88, 15609), (89, 15612), (92, 15642), (98, 15714), (111, 15837), (121, 15942), (123, 15966), (131, 16014), (164, 16311), (174, 16362), (176, 16380), (184, 16425), (186, 16440), (206, 16587), (209, 16614), (219, 16677), (230, 16764), (240, 16857),

Gene: MenE\_24 Start: 14693, Stop: 16561, Start Num: 29

Candidate Starts for MenE\_24:

(12, 14468), (23, 14663), (Start: 29 @14693 has 36 MA's), (37, 14753), (38, 14774), (41, 14786), (46, 14840), (50, 14873), (52, 14879), (67, 15095), (83, 15251), (88, 15305), (89, 15308), (92, 15338), (98, 15410), (111, 15533), (118, 15605), (121, 15638), (123, 15662), (131, 15710), (139, 15773), (164, 16007), (174, 16058), (176, 16076), (181, 16103), (184, 16121), (186, 16136), (206, 16283), (209, 16310), (219, 16373), (230, 16460), (240, 16553),

Gene: MortySmith\_29 Start: 17815, Stop: 19581, Start Num: 30

Candidate Starts for MortySmith\_29:

(Start: 30 @17815 has 33 MA's), (39, 17917), (47, 17980), (59, 18103), (60, 18106), (61, 18112), (69, 18241), (70, 18253), (100, 18565), (106, 18613), (123, 18790), (125, 18799), (130, 18835), (142, 18916), (150, 19021), (155, 19036), (161, 19072), (188, 19255), (207, 19384), (234, 19561),

Gene: NCRodriguez\_25 Start: 14754, Stop: 16613, Start Num: 29

Candidate Starts for NCRodriguez\_25:

(23, 14724), (Start: 29 @14754 has 36 MA's), (37, 14814), (38, 14835), (41, 14847), (46, 14901), (50, 14934), (63, 15063), (70, 15177), (80, 15252), (83, 15303), (85, 15327), (89, 15360), (92, 15390), (95, 15420), (98, 15462), (111, 15585), (121, 15690), (123, 15714), (131, 15762), (164, 16059), (174, 16110), (176, 16128), (181, 16155), (184, 16173), (186, 16188), (206, 16335), (209, 16362), (219,

16425), (230, 16512), (240, 16605),

Gene: NarutoRun\_31 Start: 18678, Stop: 20456, Start Num: 30

Candidate Starts for NarutoRun\_31:

(14, 18513), (20, 18636), (21, 18639), (Start: 30 @18678 has 33 MA's), (39, 18780), (43, 18801), (47, 18843), (52, 18879), (59, 18966), (69, 19104), (79, 19194), (88, 19296), (100, 19431), (106, 19479), (113, 19560), (120, 19626), (123, 19656), (125, 19665), (128, 19692), (130, 19701), (146, 19836), (150, 19887), (155, 19902), (161, 19938), (165, 19986), (188, 20121), (234, 20436),

Gene: Neptune\_31 Start: 18655, Stop: 20433, Start Num: 30

Candidate Starts for Neptune\_31:

(14, 18490), (21, 18616), (Start: 30 @18655 has 33 MA's), (39, 18757), (43, 18778), (47, 18820), (52, 18856), (59, 18943), (69, 19081), (79, 19171), (88, 19273), (99, 19399), (100, 19408), (106, 19456), (113, 19537), (120, 19603), (123, 19633), (125, 19642), (128, 19669), (130, 19678), (146, 19813), (150, 19864), (155, 19879), (161, 19915), (165, 19963), (182, 20059), (188, 20098), (234, 20413),

Gene: OhDear\_31 Start: 18684, Stop: 20462, Start Num: 30

Candidate Starts for OhDear\_31:

(14, 18519), (21, 18645), (Start: 30 @18684 has 33 MA's), (39, 18786), (43, 18807), (47, 18849), (52, 18885), (59, 18972), (69, 19110), (79, 19200), (88, 19302), (99, 19428), (100, 19437), (106, 19485), (113, 19566), (120, 19632), (123, 19662), (125, 19671), (128, 19698), (130, 19707), (146, 19842), (150, 19893), (155, 19908), (161, 19944), (165, 19992), (188, 20127), (234, 20442),

Gene: Olympi\_23 Start: 16368, Stop: 18245, Start Num: 29

Candidate Starts for Olympi\_23:

(Start: 29 @16368 has 36 MA's), (43, 16497), (46, 16536), (47, 16539), (56, 16608), (58, 16653), (62, 16689), (70, 16818), (88, 16998), (89, 17001), (93, 17034), (94, 17058), (101, 17139), (105, 17178), (106, 17181), (116, 17271), (123, 17355), (134, 17427), (137, 17442), (139, 17466), (141, 17472), (143, 17493), (147, 17541), (167, 17709), (168, 17712), (170, 17733), (173, 17745), (185, 17820), (213, 18015), (215, 18036), (217, 18045), (221, 18078), (230, 18144), (235, 18174), (239, 18216),

Gene: OverHedge\_31 Start: 18645, Stop: 20423, Start Num: 30

Candidate Starts for OverHedge\_31:

(14, 18480), (21, 18606), (Start: 30 @18645 has 33 MA's), (39, 18747), (43, 18768), (47, 18810), (52, 18846), (59, 18933), (69, 19071), (79, 19161), (88, 19263), (99, 19389), (100, 19398), (106, 19446), (113, 19527), (120, 19593), (123, 19623), (125, 19632), (128, 19659), (130, 19668), (146, 19803), (150, 19854), (155, 19869), (161, 19905), (165, 19953), (188, 20088), (234, 20403),

Gene: PermaG\_22 Start: 16442, Stop: 18325, Start Num: 29

Candidate Starts for PermaG\_22:

(23, 16412), (Start: 29 @16442 has 36 MA's), (43, 16571), (46, 16610), (47, 16613), (56, 16682), (62, 16763), (70, 16892), (79, 16970), (88, 17072), (89, 17075), (101, 17213), (105, 17252), (106, 17255), (120, 17399), (123, 17429), (137, 17516), (139, 17540), (141, 17546), (143, 17567), (147, 17615), (167, 17783), (168, 17786), (170, 17807), (173, 17819), (193, 17975), (206, 18050), (208, 18068), (219, 18137), (230, 18224), (232, 18227), (236, 18260),

Gene: Pharpay\_31 Start: 18700, Stop: 20478, Start Num: 30

Candidate Starts for Pharpay\_31:

(14, 18535), (21, 18661), (Start: 30 @18700 has 33 MA's), (39, 18802), (43, 18823), (47, 18865), (52, 18901), (59, 18988), (69, 19126), (79, 19216), (100, 19453), (106, 19501), (113, 19582), (120, 19648), (123, 19678), (125, 19687), (130, 19723), (146, 19858), (150, 19909), (155, 19924), (161, 19960), (165, 20008), (182, 20104), (188, 20143), (234, 20458),

Gene: PhillyJawn\_24 Start: 14425, Stop: 16293, Start Num: 29

Candidate Starts for PhillyJawn\_24:

(12, 14200), (23, 14395), (Start: 29 @14425 has 36 MA's), (37, 14485), (38, 14506), (41, 14518), (46, 14572), (50, 14605), (63, 14734), (67, 14827), (83, 14983), (88, 15037), (89, 15040), (92, 15070), (98, 15142), (111, 15265), (121, 15370), (123, 15394), (131, 15442), (164, 15739), (174, 15790), (176, 15808), (184, 15853), (186, 15868), (206, 16015), (209, 16042), (219, 16105), (230, 16192), (240, 16285),

Gene: Phingu\_26 Start: 14644, Stop: 16512, Start Num: 29

Candidate Starts for Phingu\_26:

(12, 14419), (23, 14614), (Start: 29 @14644 has 36 MA's), (37, 14704), (38, 14725), (41, 14737), (46, 14791), (50, 14824), (63, 14953), (67, 15046), (83, 15202), (88, 15256), (89, 15259), (92, 15289), (98, 15361), (111, 15484), (118, 15556), (121, 15589), (123, 15613), (131, 15661), (139, 15724), (164, 15958), (174, 16009), (176, 16027), (184, 16072), (186, 16087), (206, 16234), (209, 16261), (219, 16324), (230, 16411), (240, 16504),

Gene: Phonegingi\_23 Start: 14486, Stop: 16339, Start Num: 29

Candidate Starts for Phonegingi\_23:

(12, 14261), (23, 14456), (Start: 29 @14486 has 36 MA's), (37, 14546), (38, 14567), (41, 14579), (46, 14633), (50, 14666), (63, 14795), (77, 14984), (83, 15044), (88, 15098), (89, 15101), (92, 15131), (98, 15203), (111, 15326), (114, 15365), (118, 15398), (121, 15431), (123, 15455), (131, 15503), (135, 15530), (138, 15551), (143, 15593), (145, 15620), (174, 15851), (176, 15869), (196, 16016), (209, 16103), (213, 16115), (220, 16160), (222, 16172), (224, 16193), (235, 16268), (239, 16310), (240, 16331),

Gene: PhunaPhoke\_31 Start: 18673, Stop: 20451, Start Num: 30

Candidate Starts for PhunaPhoke\_31:

(14, 18508), (21, 18634), (Start: 30 @18673 has 33 MA's), (39, 18775), (43, 18796), (47, 18838), (52, 18874), (59, 18961), (69, 19099), (79, 19189), (88, 19291), (99, 19417), (100, 19426), (106, 19474), (113, 19555), (120, 19621), (123, 19651), (125, 19660), (128, 19687), (130, 19696), (146, 19831), (150, 19882), (155, 19897), (161, 19933), (165, 19981), (182, 20077), (188, 20116), (234, 20431),

Gene: Pickles13\_23 Start: 14850, Stop: 16718, Start Num: 29

Candidate Starts for Pickles13\_23:

(12, 14625), (23, 14820), (Start: 29 @14850 has 36 MA's), (37, 14910), (38, 14931), (41, 14943), (46, 14997), (50, 15030), (51, 15033), (85, 15432), (88, 15462), (89, 15465), (92, 15495), (98, 15567), (111, 15690), (118, 15762), (121, 15795), (123, 15819), (128, 15855), (131, 15867), (135, 15894), (139, 15930), (149, 16026), (164, 16164), (176, 16233), (181, 16260), (206, 16440), (209, 16467), (219, 16530), (230, 16617), (240, 16710),

Gene: Potty\_31 Start: 18678, Stop: 20456, Start Num: 30

Candidate Starts for Potty\_31:

(14, 18513), (21, 18639), (Start: 30 @18678 has 33 MA's), (39, 18780), (43, 18801), (47, 18843), (52, 18879), (59, 18966), (69, 19104), (79, 19194), (88, 19296), (100, 19431), (106, 19479), (113, 19560), (120, 19626), (123, 19656), (125, 19665), (130, 19701), (146, 19836), (150, 19887), (155, 19902), (161, 19938), (165, 19986), (188, 20121), (234, 20436),

Gene: Rachella\_31 Start: 18681, Stop: 20459, Start Num: 30

Candidate Starts for Rachella\_31:

(14, 18516), (21, 18642), (Start: 30 @18681 has 33 MA's), (39, 18783), (43, 18804), (47, 18846), (52, 18882), (59, 18969), (69, 19107), (79, 19197), (88, 19299), (100, 19434), (106, 19482), (113, 19563), (120, 19629), (123, 19659), (125, 19668), (128, 19695), (130, 19704), (146, 19839), (150, 19890), (155, 19905), (161, 19941), (165, 19989), (182, 20085), (188, 20124), (212, 20295), (234, 20439),

Gene: Rasovi\_21 Start: 16411, Stop: 18312, Start Num: 29

Candidate Starts for Rasovi\_21:

(Start: 29 @16411 has 36 MA's), (31, 16432), (32, 16438), (43, 16540), (47, 16582), (56, 16651), (62, 16732), (65, 16762), (70, 16861), (73, 16903), (86, 17044), (88, 17065), (89, 17068), (93, 17101), (101, 17206), (105, 17245), (106, 17248), (112, 17308), (122, 17416), (123, 17422), (134, 17494), (137, 17509), (139, 17533), (141, 17539), (143, 17560), (147, 17608), (153, 17659), (158, 17680), (167, 17776), (170, 17800), (173, 17812), (183, 17875), (189, 17932), (197, 17986), (206, 18043), (209, 18070), (211, 18076), (213, 18082), (214, 18094), (221, 18145), (239, 18283),

Gene: Rie18\_31 Start: 18192, Stop: 19970, Start Num: 30

Candidate Starts for Rie18\_31:

(23, 18162), (24, 18165), (26, 18177), (28, 18189), (Start: 30 @18192 has 33 MA's), (39, 18294), (47, 18357), (59, 18480), (69, 18618), (70, 18630), (79, 18708), (88, 18810), (100, 18945), (106, 18993), (114, 19077), (120, 19140), (123, 19170), (125, 19179), (128, 19206), (130, 19215), (142, 19296), (146, 19350), (150, 19401), (155, 19416), (165, 19500), (188, 19635), (199, 19725), (234, 19950),

Gene: Rollins\_17 Start: 12526, Stop: 14229, Start Num: 29

Candidate Starts for Rollins\_17:

(Start: 29 @12526 has 36 MA's), (35, 12574), (40, 12619), (54, 12742), (57, 12772), (69, 12946), (70, 12958), (101, 13264), (102, 13267), (115, 13393), (119, 13444), (123, 13483), (126, 13495), (129, 13525), (131, 13531), (136, 13567), (187, 13933), (198, 14023), (228, 14203), (229, 14206),

Gene: Rootkit7\_21 Start: 16231, Stop: 18123, Start Num: 29

Candidate Starts for Rootkit7\_21:

(Start: 29 @16231 has 36 MA's), (43, 16360), (46, 16399), (56, 16471), (62, 16552), (63, 16564), (70, 16681), (74, 16723), (86, 16840), (88, 16861), (89, 16864), (93, 16897), (101, 17002), (105, 17041), (106, 17044), (109, 17074), (122, 17212), (123, 17218), (134, 17290), (137, 17305), (139, 17329), (143, 17356), (147, 17404), (164, 17569), (171, 17605), (175, 17629), (176, 17638), (178, 17644), (186, 17698), (203, 17833), (211, 17878), (214, 17896), (217, 17914), (230, 18022), (238, 18088),

Gene: SBlackberry\_21 Start: 16237, Stop: 18123, Start Num: 29

Candidate Starts for SBlackberry\_21:

(Start: 29 @16237 has 36 MA's), (43, 16366), (46, 16405), (56, 16477), (62, 16558), (63, 16570), (70, 16687), (74, 16729), (86, 16846), (88, 16867), (89, 16870), (93, 16903), (101, 17008), (105, 17047), (106, 17050), (109, 17080), (122, 17218), (123, 17224), (134, 17296), (137, 17311), (139, 17335), (141, 17341), (143, 17362), (147, 17410), (154, 17467), (163, 17566), (164, 17575), (165, 17581), (175, 17635), (181, 17671), (213, 17893), (215, 17914), (217, 17923), (221, 17956), (230, 18022), (235, 18052), (239, 18094),

Gene: ScoobySnack\_22 Start: 14554, Stop: 16422, Start Num: 29

Candidate Starts for ScoobySnack\_22:

(12, 14329), (23, 14524), (Start: 29 @14554 has 36 MA's), (37, 14614), (38, 14635), (41, 14647), (46, 14701), (56, 14770), (63, 14863), (75, 15034), (88, 15166), (89, 15169), (92, 15199), (96, 15241), (98, 15271), (111, 15394), (118, 15466), (121, 15499), (123, 15523), (128, 15559), (131, 15571), (138, 15619), (139, 15634), (164, 15868), (181, 15964), (184, 15982), (190, 16036), (202, 16126), (209, 16171), (223, 16267), (240, 16414),

Gene: SilentWarrior\_30 Start: 17848, Stop: 19617, Start Num: 30

Candidate Starts for SilentWarrior\_30:

(Start: 30 @17848 has 33 MA's), (39, 17950), (47, 18013), (59, 18136), (60, 18139), (61, 18145), (69, 18274), (70, 18286), (92, 18499), (100, 18601), (106, 18649), (113, 18730), (120, 18796), (123, 18826), (125, 18835), (128, 18862), (130, 18871), (142, 18952), (146, 19006), (150, 19057), (155,

19072), (161, 19108), (165, 19156), (188, 19291), (207, 19420), (231, 19585), (234, 19597),

Gene: Skylord\_17 Start: 12466, Stop: 14169, Start Num: 29

Candidate Starts for Skylord\_17:

(Start: 29 @12466 has 36 MA's), (35, 12514), (40, 12559), (54, 12682), (57, 12712), (69, 12886), (101, 13204), (102, 13207), (115, 13333), (119, 13384), (123, 13423), (126, 13435), (129, 13465), (131, 13471), (133, 13489), (136, 13507), (152, 13654), (156, 13669), (158, 13678), (162, 13717), (187, 13873), (198, 13963), (228, 14143), (229, 14146),

Gene: Snakehole\_31 Start: 17937, Stop: 19706, Start Num: 30

Candidate Starts for Snakehole\_31:

(Start: 30 @17937 has 33 MA's), (39, 18039), (47, 18102), (59, 18225), (60, 18228), (61, 18234), (69, 18363), (70, 18375), (79, 18453), (87, 18543), (92, 18588), (100, 18690), (106, 18738), (120, 18885), (123, 18915), (125, 18924), (128, 18951), (130, 18960), (142, 19041), (146, 19095), (150, 19146), (155, 19161), (161, 19197), (180, 19335), (201, 19491), (207, 19509), (234, 19686),

Gene: Sweetums\_24 Start: 15209, Stop: 16897, Start Num: 29

Candidate Starts for Sweetums\_24:

(Start: 29 @15209 has 36 MA's), (46, 15356), (47, 15359), (64, 15521), (70, 15638), (71, 15650), (76, 15704), (88, 15821), (90, 15830), (96, 15896), (101, 15962), (110, 16046), (121, 16154), (123, 16178), (128, 16214), (131, 16226), (136, 16262), (138, 16274), (139, 16289), (140, 16292), (143, 16316), (146, 16355), (148, 16376), (152, 16412), (159, 16433), (165, 16490), (191, 16637), (198, 16688), (204, 16733), (212, 16778), (218, 16820),

Gene: Tedro\_31 Start: 18151, Stop: 19929, Start Num: 30

Candidate Starts for Tedro\_31:

(14, 17986), (21, 18112), (Start: 30 @18151 has 33 MA's), (39, 18253), (43, 18274), (47, 18316), (52, 18352), (59, 18439), (69, 18577), (79, 18667), (88, 18769), (99, 18895), (100, 18904), (106, 18952), (113, 19033), (120, 19099), (123, 19129), (125, 19138), (128, 19165), (130, 19174), (146, 19309), (150, 19360), (155, 19375), (161, 19411), (165, 19459), (182, 19555), (188, 19594), (212, 19765), (234, 19909),

Gene: Teng\_24 Start: 15125, Stop: 16837, Start Num: 29

Candidate Starts for Teng\_24:

(Start: 29 @15125 has 36 MA's), (46, 15272), (47, 15275), (56, 15341), (64, 15437), (72, 15581), (79, 15659), (81, 15677), (84, 15731), (88, 15764), (89, 15767), (90, 15773), (92, 15797), (96, 15839), (97, 15857), (101, 15905), (110, 15989), (113, 16028), (114, 16031), (121, 16097), (123, 16121), (128, 16157), (131, 16169), (138, 16217), (139, 16232), (140, 16235), (143, 16259), (144, 16274), (148, 16319), (153, 16358), (160, 16382), (165, 16433), (166, 16436), (177, 16490), (187, 16541), (188, 16547), (198, 16631), (207, 16688), (217, 16745),

Gene: Tongui\_30 Start: 18184, Stop: 19953, Start Num: 30

Candidate Starts for Tongui\_30:

(23, 18154), (24, 18157), (26, 18169), (28, 18181), (Start: 30 @18184 has 33 MA's), (33, 18217), (39, 18286), (47, 18349), (59, 18472), (61, 18481), (66, 18583), (69, 18610), (70, 18622), (100, 18937), (106, 18985), (120, 19132), (123, 19162), (125, 19171), (128, 19198), (130, 19207), (150, 19393), (157, 19420), (161, 19444), (169, 19513), (172, 19525), (179, 19573), (180, 19582), (188, 19627), (194, 19693), (234, 19933),

Gene: TurboVicky\_21 Start: 16231, Stop: 18123, Start Num: 29

Candidate Starts for TurboVicky\_21:

(Start: 29 @16231 has 36 MA's), (43, 16360), (46, 16399), (47, 16402), (56, 16471), (62, 16552), (63, 16564), (70, 16681), (86, 16840), (88, 16861), (89, 16864), (93, 16897), (101, 17002), (105, 17041),

(106, 17044), (108, 17062), (109, 17074), (122, 17212), (123, 17218), (134, 17290), (137, 17305), (139, 17329), (141, 17335), (143, 17356), (147, 17404), (164, 17569), (165, 17575), (171, 17605), (176, 17638), (178, 17644), (186, 17698), (190, 17737), (203, 17833), (211, 17878), (214, 17896), (230, 18022), (237, 18067), (238, 18088),

Gene: Typher\_23 Start: 16361, Stop: 18253, Start Num: 29

Candidate Starts for Typher\_23:

(Start: 29 @16361 has 36 MA's), (43, 16490), (46, 16529), (47, 16532), (56, 16601), (62, 16682), (63, 16694), (70, 16811), (86, 16970), (88, 16991), (89, 16994), (93, 17027), (101, 17132), (105, 17171), (106, 17174), (108, 17192), (109, 17204), (122, 17342), (123, 17348), (134, 17420), (137, 17435), (139, 17459), (141, 17465), (143, 17486), (147, 17534), (164, 17699), (165, 17705), (171, 17735), (176, 17768), (178, 17774), (186, 17828), (203, 17963), (209, 18002), (214, 18026), (237, 18197), (238, 18218),

Gene: Violeta\_25 Start: 14523, Stop: 16391, Start Num: 29

Candidate Starts for Violeta\_25:

(12, 14298), (23, 14493), (Start: 29 @14523 has 36 MA's), (37, 14583), (38, 14604), (41, 14616), (46, 14670), (50, 14703), (63, 14832), (67, 14925), (83, 15081), (88, 15135), (89, 15138), (92, 15168), (98, 15240), (111, 15363), (121, 15468), (123, 15492), (131, 15540), (164, 15837), (174, 15888), (176, 15906), (181, 15933), (184, 15951), (186, 15966), (206, 16113), (209, 16140), (219, 16203), (230, 16290), (240, 16383),

Gene: Vitas\_17 Start: 12466, Stop: 14169, Start Num: 29

Candidate Starts for Vitas\_17:

(Start: 29 @12466 has 36 MA's), (35, 12514), (40, 12559), (54, 12682), (57, 12712), (69, 12886), (70, 12898), (101, 13204), (102, 13207), (115, 13333), (119, 13384), (123, 13423), (126, 13435), (129, 13465), (131, 13471), (136, 13507), (188, 13879), (198, 13963), (228, 14143), (229, 14146),

Gene: Warren\_24 Start: 14623, Stop: 16491, Start Num: 29

Candidate Starts for Warren\_24:

(12, 14398), (23, 14593), (Start: 29 @14623 has 36 MA's), (37, 14683), (38, 14704), (41, 14716), (46, 14770), (50, 14803), (67, 15025), (83, 15181), (88, 15235), (89, 15238), (92, 15268), (98, 15340), (111, 15463), (118, 15535), (123, 15592), (131, 15640), (139, 15703), (149, 15799), (164, 15937), (174, 15988), (176, 16006), (181, 16033), (209, 16240), (230, 16390), (237, 16435), (240, 16483),

Gene: Winchester007\_39 Start: 20543, Stop: 22411, Start Num: 29

Candidate Starts for Winchester007\_39:

(12, 20318), (23, 20513), (Start: 29 @20543 has 36 MA's), (37, 20603), (38, 20624), (41, 20636), (46, 20690), (50, 20723), (63, 20852), (67, 20945), (83, 21101), (88, 21155), (89, 21158), (92, 21188), (98, 21260), (111, 21383), (121, 21488), (123, 21512), (131, 21560), (164, 21857), (174, 21908), (176, 21926), (184, 21971), (186, 21986), (206, 22133), (209, 22160), (219, 22223), (230, 22310), (240, 22403),

Gene: Zanella\_21 Start: 16234, Stop: 18126, Start Num: 29

Candidate Starts for Zanella\_21:

(Start: 29 @16234 has 36 MA's), (43, 16363), (46, 16402), (47, 16405), (56, 16474), (62, 16555), (63, 16567), (70, 16684), (86, 16843), (88, 16864), (89, 16867), (93, 16900), (101, 17005), (105, 17044), (106, 17047), (108, 17065), (109, 17077), (122, 17215), (123, 17221), (134, 17293), (137, 17308), (139, 17332), (141, 17338), (143, 17359), (147, 17407), (164, 17572), (165, 17578), (171, 17608), (176, 17641), (178, 17647), (186, 17701), (190, 17740), (203, 17836), (211, 17881), (214, 17899), (230, 18025), (237, 18070), (238, 18091),

Gene: Zeta1847\_16 Start: 13524, Stop: 16088, Start Num: 1

Candidate Starts for Zeta1847\_16:

(Start: 1 @13524 has 1 MA's), (2, 13632), (3, 13683), (10, 13923), (22, 14172), (25, 14187), (27, 14199), (Start: 30 @14217 has 33 MA's), (45, 14394), (69, 14664), (78, 14733), (89, 14844), (96, 14916), (101, 14982), (117, 15132), (165, 15552), (195, 15765), (200, 15792), (226, 15969),