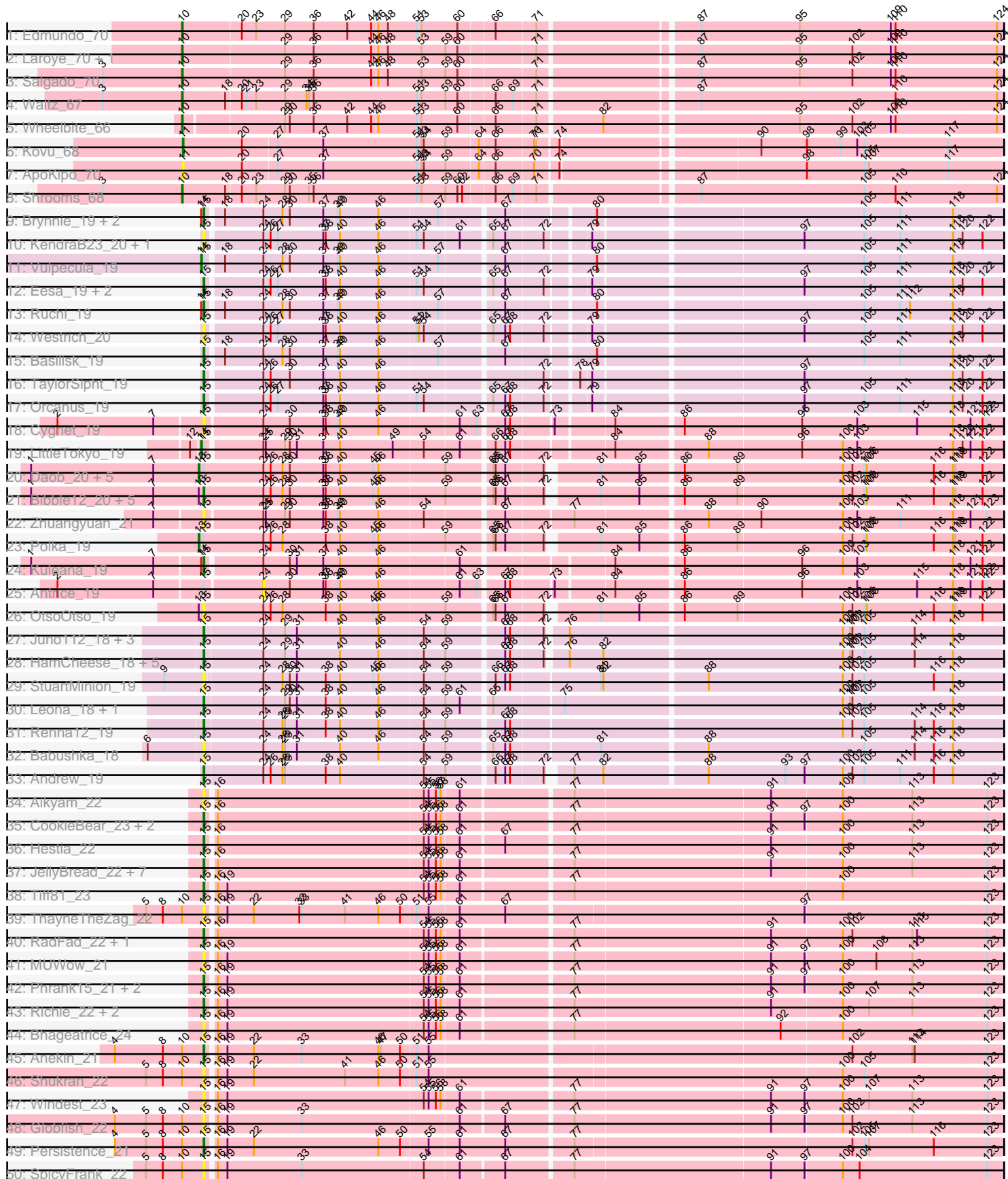
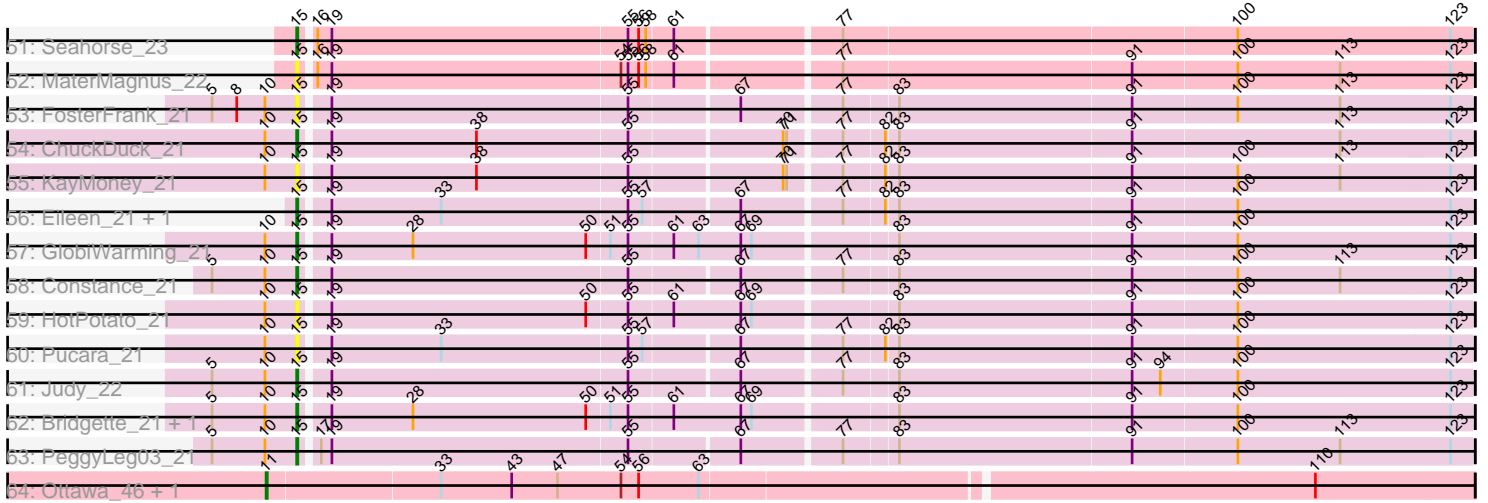


Pham 214143



Pham 214143



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 214143 Report

This analysis was run 02/22/25 on database version 588.

Pham number 214143 has 106 members, 44 are drafts.

Phages represented in each track:

- Track 1 : Edmundo\_70
- Track 2 : Laroye\_70, LiSara\_67
- Track 3 : Salgado\_70
- Track 4 : Waltz\_67
- Track 5 : Wheelbite\_66
- Track 6 : Kovu\_68
- Track 7 : ApoKipo\_70
- Track 8 : Shrooms\_68
- Track 9 : Brynnie\_19, Jamun\_19, Chickaboom\_18
- Track 10 : KendraB23\_20, Toad24\_20
- Track 11 : Vulpecula\_19
- Track 12 : Eesa\_19, Pelletreau\_20, Gravel\_20
- Track 13 : Ruchi\_19
- Track 14 : Westrich\_20
- Track 15 : Basilisk\_19
- Track 16 : TaylorSipht\_19
- Track 17 : Orcanus\_19
- Track 18 : Cygnet\_19
- Track 19 : LittleTokyo\_19
- Track 20 : Daob\_20, HannahPhantana\_20, Melons\_20, Cote\_20, Coral\_19, Kepler\_19
- Track 21 : Bibble12\_20, Jerole\_20, Amelia\_20, Bedetta\_20, Lunar\_20, Colusalem\_19
- Track 22 : Zhuangyuan\_21
- Track 23 : Polka\_19
- Track 24 : Kuleana\_19
- Track 25 : Antrice\_19
- Track 26 : OtsoOtso\_19
- Track 27 : Juno112\_18, KHumphrey\_18, Atlantica\_18, Camara\_18
- Track 28 : HamCheese\_18, Glotell\_19, PhluffyCoco\_18, DanHam62\_18, AmiCi24\_18, RedFox\_18
- Track 29 : StuartMinion\_19
- Track 30 : Leona\_18, Rattail\_18
- Track 31 : Renna12\_19
- Track 32 : Babushka\_18
- Track 33 : Andrew\_19
- Track 34 : Aikyam\_22

- Track 35 : CookieBear\_23, YoungHarleezy\_22, MidnightRain\_22
- Track 36 : Hestia\_22
- Track 37 : JellyBread\_22, Vopal\_23, Auxilium\_22, Raphaella\_22, Sakai\_22, BillyTP\_22, Lawnathon\_22, Gorpy\_22
- Track 38 : Tiff81\_23
- Track 39 : ThayneTheZag\_22
- Track 40 : RadFad\_22, Hillester\_22
- Track 41 : MUWow\_21
- Track 42 : Phrank15\_21, AdaS\_22, Isolde\_22
- Track 43 : Richie\_22, BlueShadow\_23, BenchScraper\_22
- Track 44 : Bhageatrice\_24
- Track 45 : Anekin\_21
- Track 46 : Shukran\_22
- Track 47 : Windest\_23
- Track 48 : Globfish\_22
- Track 49 : Persistence\_21
- Track 50 : SpicyFrank\_22
- Track 51 : Seahorse\_23
- Track 52 : MaterMagnus\_22
- Track 53 : FosterFrank\_21
- Track 54 : ChuckDuck\_21
- Track 55 : KayMoney\_21
- Track 56 : Eileen\_21, Peas\_21
- Track 57 : GlobiWarming\_21
- Track 58 : Constance\_21
- Track 59 : HotPotato\_21
- Track 60 : Pucara\_21
- Track 61 : Judy\_22
- Track 62 : Bridgette\_21, Karkharias\_21
- Track 63 : PeggyLeg03\_21
- Track 64 : Ottawa\_46, Kharcho\_46

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

The start number called the most often in the published annotations is 15, it was called in 43 of the 62 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AdaS\_22, Aikyam\_22, Amelia\_20, AmiCi24\_18, Andrew\_19, Anekin\_21, Atlantica\_18, Auxilium\_22, Babushka\_18, Basilisk\_19, Bedetta\_20, BenchScraper\_22, Bhageatrice\_24, Bibble12\_20, BillyTP\_22, BlueShadow\_23, Bridgette\_21, Brynnie\_19, Camara\_18, Chickaboom\_18, ChuckDuck\_21, Colusalem\_19, Constance\_21, CookieBear\_23, Cygnet\_19, DanHam62\_18, Eesa\_19, Eileen\_21, FosterFrank\_21, Globfish\_22, GlobiWarming\_21, Glotell\_19, Gorpy\_22, Gravel\_20, HamCheese\_18, Hestia\_22, Hillester\_22, HotPotato\_21, Isolde\_22, Jamun\_19, JellyBread\_22, Jerole\_20, Judy\_22, Juno112\_18, KHumphrey\_18, Karkharias\_21, KayMoney\_21, KendraB23\_20, Kuleana\_19, Lawnathon\_22, Leona\_18, Lunar\_20, MUWow\_21, MaterMagnus\_22, MidnightRain\_22, Orcanus\_19, OtsoOtso\_19, Peas\_21, PeggyLeg03\_21, Pelletreau\_20, Persistence\_21, PhluffyCoco\_18, Phrank15\_21, Pucara\_21,

RadFad\_22, Raphaella\_22, Rattail\_18, RedFox\_18, Renna12\_19, Richie\_22, Ruchi\_19, Sakai\_22, Seahorse\_23, Shukran\_22, SpicyFrank\_22, StuartMinion\_19, TaylorSipt\_19, ThayneTheZag\_22, Tiff81\_23, Toad24\_20, Vopal\_23, Westrich\_20, Windest\_23, YoungHarleezy\_22, Zhuangyuan\_21,

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

- Antrice\_19, Coral\_19, Cote\_20, Daob\_20, HannahPhantana\_20, Kepler\_19, LittleTokyo\_19, Melons\_20, Polka\_19, Vulpecula\_19,

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

- ApoKipo\_70, Edmundo\_70, Kharcho\_46, Kovu\_68, Laroye\_70, LiSara\_67, Ottawa\_46, Salgado\_70, Shrooms\_68, Waltz\_67, Wheelbite\_66,

### Summary by start number:

Start 10:

- Found in 24 of 106 ( 22.6% ) of genes in pham
- Manual Annotations of this start: 7 of 62
- Called 29.2% of time when present
- Phage (with cluster) where this start called: Edmundo\_70 (AL), Laroye\_70 (AL), LiSara\_67 (AL), Salgado\_70 (AL), Shrooms\_68 (AL), Waltz\_67 (AL), Wheelbite\_66 (AL),

Start 11:

- Found in 4 of 106 ( 3.8% ) of genes in pham
- Manual Annotations of this start: 3 of 62
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ApoKipo\_70 (AL), Kharcho\_46 (FM), Kovu\_68 (AL), Ottawa\_46 (FM),

Start 13:

- Found in 14 of 106 ( 13.2% ) of genes in pham
- Manual Annotations of this start: 7 of 62
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Coral\_19 (AS2), Cote\_20 (AS2), Daob\_20 (AS2), HannahPhantana\_20 (AS2), Kepler\_19 (AS2), Melons\_20 (AS2), Polka\_19 (AS2),

Start 14:

- Found in 7 of 106 ( 6.6% ) of genes in pham
- Manual Annotations of this start: 2 of 62
- Called 28.6% of time when present
- Phage (with cluster) where this start called: LittleTokyo\_19 (AS2), Vulpecula\_19 (AS1),

Start 15:

- Found in 95 of 106 ( 89.6% ) of genes in pham
- Manual Annotations of this start: 43 of 62
- Called 89.5% of time when present
- Phage (with cluster) where this start called: AdaS\_22 (AY), Aikyam\_22 (AY), Amelia\_20 (AS2), AmiCi24\_18 (AS3), Andrew\_19 (AS3), Anekin\_21 (AY), Atlantica\_18 (AS3), Auxilium\_22 (AY), Babushka\_18 (AS3), Basilisk\_19 (AS1), Bedetta\_20 (AS2), BenchScraper\_22 (AY), Bhageatrice\_24 (AY), Bibble12\_20 (AS2),

BillyTP\_22 (AY), BlueShadow\_23 (AY), Bridgette\_21 (FA), Brynnie\_19 (AS1), Camara\_18 (AS3), Chickaboom\_18 (AS1), ChuckDuck\_21 (FA), Colusalem\_19 (AS2), Constance\_21 (FA), CookieBear\_23 (AY), Cygnet\_19 (AS2), DanHam62\_18 (AS3), Eesa\_19 (AS1), Eileen\_21 (FA), FosterFrank\_21 (FA), Globfish\_22 (AY), GlobiWarming\_21 (FA), Glotell\_19 (AS3), Gorpy\_22 (AY), Gravel\_20 (AS1), HamCheese\_18 (AS3), Hestia\_22 (AY), Hillester\_22 (AY), HotPotato\_21 (FA), Isolde\_22 (AY), Jamun\_19 (AS1), JellyBread\_22 (AY), Jerole\_20 (AS2), Judy\_22 (FA), Juno112\_18 (AS3), KHumphrey\_18 (AS3), Karkharias\_21 (FA), KayMoney\_21 (FA), KendraB23\_20 (AS1), Kuleana\_19 (AS2), Lawnathon\_22 (AY), Leona\_18 (AS3), Lunar\_20 (AS2), MUWow\_21 (AY), MaterMagnus\_22 (AY), MidnightRain\_22 (AY), Orcanus\_19 (AS1), OtsoOtso\_19 (AS2), Peas\_21 (FA), PeggyLeg03\_21 (FA), Pelletreau\_20 (AS1), Persistence\_21 (AY), PhluffyCoco\_18 (AS3), Phrank15\_21 (AY), Pucara\_21 (FA), RadFad\_22 (AY), Raphaella\_22 (AY), Rattail\_18 (AS3), RedFox\_18 (AS3), Renna12\_19 (AS3), Richie\_22 (AY), Ruchi\_19 (AS1), Sakai\_22 (AY), Seahorse\_23 (AY), Shukran\_22 (AY), SpicyFrank\_22 (AY), StuartMinion\_19 (AS3), TaylorSipht\_19 (AS1), ThayneTheZag\_22 (AY), Tiff81\_23 (AY), Toad24\_20 (AS1), Vopal\_23 (AY), Westrich\_20 (AS1), Windest\_23 (AY), YoungHarleezy\_22 (AY), Zhuangyuan\_21 (AS2),

Start 24:

- Found in 49 of 106 ( 46.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.0% of time when present
- Phage (with cluster) where this start called: Antrice\_19 (AS2),

### Summary by clusters:

There are 7 clusters represented in this pham: AS3, AS2, AS1, AL, FA, AY, FM,

Info for manual annotations of cluster AL:

- Start number 10 was manually annotated 7 times for cluster AL.
- Start number 11 was manually annotated 1 time for cluster AL.

Info for manual annotations of cluster AS1:

- Start number 14 was manually annotated 1 time for cluster AS1.
- Start number 15 was manually annotated 8 times for cluster AS1.

Info for manual annotations of cluster AS2:

- Start number 13 was manually annotated 7 times for cluster AS2.
- Start number 14 was manually annotated 1 time for cluster AS2.
- Start number 15 was manually annotated 3 times for cluster AS2.

Info for manual annotations of cluster AS3:

- Start number 15 was manually annotated 7 times for cluster AS3.

Info for manual annotations of cluster AY:

- Start number 15 was manually annotated 16 times for cluster AY.

Info for manual annotations of cluster FA:

- Start number 15 was manually annotated 9 times for cluster FA.

Info for manual annotations of cluster FM:

- Start number 11 was manually annotated 2 times for cluster FM.

**Gene Information:**

Gene: AdaS\_22 Start: 16933, Stop: 17892, Start Num: 15

Candidate Starts for AdaS\_22:

(Start: 15 @16933 has 43 MA's), (16, 16942), (19, 16954), (54, 17197), (55, 17203), (56, 17212), (58, 17218), (61, 17239), (77, 17368), (91, 17608), (97, 17650), (100, 17695), (113, 17782), (123, 17875),

Gene: Aikyam\_22 Start: 16934, Stop: 17893, Start Num: 15

Candidate Starts for Aikyam\_22:

(Start: 15 @16934 has 43 MA's), (16, 16943), (54, 17198), (55, 17204), (56, 17213), (57, 17216), (58, 17219), (61, 17240), (77, 17369), (91, 17609), (100, 17696), (113, 17783), (123, 17876),

Gene: Amelia\_20 Start: 14633, Stop: 15586, Start Num: 15

Candidate Starts for Amelia\_20:

(1, 14417), (7, 14570), (Start: 13 @14627 has 7 MA's), (Start: 15 @14633 has 43 MA's), (24, 14708), (26, 14717), (28, 14732), (30, 14741), (37, 14783), (38, 14786), (40, 14804), (45, 14846), (46, 14852), (59, 14933), (65, 14984), (66, 14987), (67, 14999), (72, 15044), (81, 15098), (85, 15146), (86, 15194), (89, 15260), (100, 15389), (102, 15401), (105, 15416), (106, 15419), (116, 15503), (118, 15527), (119, 15530), (122, 15563),

Gene: AmiCi24\_18 Start: 14178, Stop: 15137, Start Num: 15

Candidate Starts for AmiCi24\_18:

(Start: 15 @14178 has 43 MA's), (24, 14250), (29, 14277), (31, 14292), (40, 14346), (46, 14394), (54, 14448), (59, 14475), (67, 14541), (68, 14547), (72, 14586), (76, 14607), (82, 14649), (100, 14940), (101, 14949), (102, 14952), (105, 14967), (114, 15030), (118, 15078),

Gene: Andrew\_19 Start: 14644, Stop: 15597, Start Num: 15

Candidate Starts for Andrew\_19:

(Start: 15 @14644 has 43 MA's), (24, 14716), (26, 14725), (28, 14740), (29, 14743), (38, 14794), (40, 14812), (54, 14914), (59, 14941), (66, 14995), (67, 15007), (68, 15013), (72, 15052), (77, 15073), (82, 15109), (88, 15232), (93, 15328), (97, 15352), (100, 15400), (102, 15412), (105, 15427), (111, 15472), (116, 15514), (118, 15538),

Gene: Anekin\_21 Start: 16896, Stop: 17858, Start Num: 15

Candidate Starts for Anekin\_21:

(4, 16785), (8, 16845), (Start: 10 @16869 has 7 MA's), (Start: 15 @16896 has 43 MA's), (16, 16905), (19, 16917), (22, 16950), (33, 17010), (46, 17106), (47, 17109), (50, 17133), (51, 17151), (55, 17166), (102, 17673), (113, 17748), (114, 17751), (123, 17841),

Gene: Antrice\_19 Start: 15250, Stop: 16131, Start Num: 24

Candidate Starts for Antrice\_19:

(2, 15004), (7, 15124), (Start: 15 @15181 has 43 MA's), (24, 15250), (30, 15283), (37, 15325), (38, 15328), (39, 15343), (40, 15346), (46, 15394), (61, 15490), (63, 15511), (67, 15538), (68, 15544), (73, 15592), (84, 15658), (86, 15736), (96, 15880), (103, 15949), (115, 16024), (118, 16069), (121, 16090), (122, 16105), (123, 16111),

Gene: ApoKipo\_70 Start: 43581, Stop: 44564, Start Num: 11

Candidate Starts for ApoKipo\_70:

(Start: 11 @43581 has 3 MA's), (20, 43653), (27, 43695), (37, 43752), (51, 43869), (53, 43875), (54, 43878), (59, 43905), (64, 43944), (66, 43962), (70, 44007), (74, 44034), (98, 44322), (105, 44394),

(107, 44400), (117, 44499),

Gene: Atlantica\_18 Start: 14180, Stop: 15139, Start Num: 15

Candidate Starts for Atlantica\_18:

(Start: 15 @14180 has 43 MA's), (24, 14252), (29, 14279), (31, 14294), (40, 14348), (46, 14396), (54, 14450), (59, 14477), (67, 14543), (68, 14549), (72, 14588), (76, 14609), (100, 14942), (101, 14951), (102, 14954), (105, 14969), (114, 15032), (118, 15080),

Gene: Auxilium\_22 Start: 16933, Stop: 17892, Start Num: 15

Candidate Starts for Auxilium\_22:

(Start: 15 @16933 has 43 MA's), (16, 16942), (54, 17197), (55, 17203), (56, 17212), (58, 17218), (61, 17239), (77, 17368), (91, 17608), (100, 17695), (113, 17782), (123, 17875),

Gene: Babushka\_18 Start: 14233, Stop: 15198, Start Num: 15

Candidate Starts for Babushka\_18:

(6, 14167), (Start: 15 @14233 has 43 MA's), (24, 14305), (28, 14329), (29, 14332), (31, 14347), (40, 14401), (46, 14449), (54, 14503), (59, 14530), (65, 14581), (67, 14596), (68, 14602), (81, 14707), (88, 14833), (105, 15028), (114, 15091), (116, 15115), (118, 15139),

Gene: Basilisk\_19 Start: 15922, Stop: 16863, Start Num: 15

Candidate Starts for Basilisk\_19:

(Start: 15 @15922 has 43 MA's), (18, 15940), (24, 15988), (28, 16012), (30, 16021), (37, 16063), (39, 16081), (40, 16084), (46, 16132), (57, 16204), (67, 16276), (80, 16375), (105, 16693), (111, 16738), (118, 16804),

Gene: Bedetta\_20 Start: 14633, Stop: 15586, Start Num: 15

Candidate Starts for Bedetta\_20:

(1, 14417), (7, 14570), (Start: 13 @14627 has 7 MA's), (Start: 15 @14633 has 43 MA's), (24, 14708), (26, 14717), (28, 14732), (30, 14741), (37, 14783), (38, 14786), (40, 14804), (45, 14846), (46, 14852), (59, 14933), (65, 14984), (66, 14987), (67, 14999), (72, 15044), (81, 15098), (85, 15146), (86, 15194), (89, 15260), (100, 15389), (102, 15401), (105, 15416), (106, 15419), (116, 15503), (118, 15527), (119, 15530), (122, 15563),

Gene: BenchScraper\_22 Start: 16948, Stop: 17907, Start Num: 15

Candidate Starts for BenchScraper\_22:

(Start: 15 @16948 has 43 MA's), (16, 16957), (19, 16969), (54, 17212), (55, 17218), (56, 17227), (58, 17233), (61, 17254), (77, 17383), (91, 17623), (100, 17710), (107, 17743), (113, 17797), (123, 17890),

Gene: Bhageatrice\_24 Start: 18223, Stop: 19182, Start Num: 15

Candidate Starts for Bhageatrice\_24:

(Start: 15 @18223 has 43 MA's), (16, 18232), (19, 18244), (54, 18487), (55, 18493), (56, 18502), (58, 18508), (61, 18529), (77, 18658), (92, 18910), (100, 18985), (123, 19165),

Gene: Bible12\_20 Start: 14636, Stop: 15589, Start Num: 15

Candidate Starts for Bible12\_20:

(1, 14420), (7, 14573), (Start: 13 @14630 has 7 MA's), (Start: 15 @14636 has 43 MA's), (24, 14711), (26, 14720), (28, 14735), (30, 14744), (37, 14786), (38, 14789), (40, 14807), (45, 14849), (46, 14855), (59, 14936), (65, 14987), (66, 14990), (67, 15002), (72, 15047), (81, 15101), (85, 15149), (86, 15197), (89, 15263), (100, 15392), (102, 15404), (105, 15419), (106, 15422), (116, 15506), (118, 15530), (119, 15533), (122, 15566),

Gene: BillyTP\_22 Start: 16717, Stop: 17676, Start Num: 15

Candidate Starts for BillyTP\_22:



(Start: 15 @16717 has 43 MA's), (16, 16726), (54, 16981), (55, 16987), (56, 16996), (58, 17002), (61, 17023), (77, 17152), (91, 17392), (100, 17479), (113, 17566), (123, 17659),

Gene: BlueShadow\_23 Start: 16933, Stop: 17892, Start Num: 15

Candidate Starts for BlueShadow\_23:

(Start: 15 @16933 has 43 MA's), (16, 16942), (19, 16954), (54, 17197), (55, 17203), (56, 17212), (58, 17218), (61, 17239), (77, 17368), (91, 17608), (100, 17695), (107, 17728), (113, 17782), (123, 17875),

Gene: Bridgette\_21 Start: 16995, Stop: 17957, Start Num: 15

Candidate Starts for Bridgette\_21:

(5, 16923), (Start: 10 @16968 has 7 MA's), (Start: 15 @16995 has 43 MA's), (19, 17016), (28, 17085), (50, 17232), (51, 17250), (55, 17265), (61, 17301), (67, 17358), (69, 17367), (83, 17478), (91, 17673), (100, 17760), (123, 17940),

Gene: Brynnie\_19 Start: 15734, Stop: 16675, Start Num: 15

Candidate Starts for Brynnie\_19:

(Start: 14 @15731 has 2 MA's), (Start: 15 @15734 has 43 MA's), (18, 15752), (24, 15800), (28, 15824), (30, 15833), (37, 15875), (39, 15893), (40, 15896), (46, 15944), (57, 16016), (67, 16088), (80, 16187), (105, 16505), (111, 16550), (118, 16616),

Gene: Camara\_18 Start: 14181, Stop: 15140, Start Num: 15

Candidate Starts for Camara\_18:

(Start: 15 @14181 has 43 MA's), (24, 14253), (29, 14280), (31, 14295), (40, 14349), (46, 14397), (54, 14451), (59, 14478), (67, 14544), (68, 14550), (72, 14589), (76, 14610), (100, 14943), (101, 14952), (102, 14955), (105, 14970), (114, 15033), (118, 15081),

Gene: Chickaboom\_18 Start: 14660, Stop: 15601, Start Num: 15

Candidate Starts for Chickaboom\_18:

(Start: 14 @14657 has 2 MA's), (Start: 15 @14660 has 43 MA's), (18, 14678), (24, 14726), (28, 14750), (30, 14759), (37, 14801), (39, 14819), (40, 14822), (46, 14870), (57, 14942), (67, 15014), (80, 15113), (105, 15431), (111, 15476), (118, 15542),

Gene: ChuckDuck\_21 Start: 16837, Stop: 17793, Start Num: 15

Candidate Starts for ChuckDuck\_21:

(Start: 10 @16810 has 7 MA's), (Start: 15 @16837 has 43 MA's), (19, 16858), (38, 16981), (55, 17107), (70, 17230), (71, 17233), (77, 17272), (82, 17305), (83, 17314), (91, 17509), (113, 17683), (123, 17776),

Gene: Colusalem\_19 Start: 14472, Stop: 15425, Start Num: 15

Candidate Starts for Colusalem\_19:

(1, 14256), (7, 14409), (Start: 13 @14466 has 7 MA's), (Start: 15 @14472 has 43 MA's), (24, 14547), (26, 14556), (28, 14571), (30, 14580), (37, 14622), (38, 14625), (40, 14643), (45, 14685), (46, 14691), (59, 14772), (65, 14823), (66, 14826), (67, 14838), (72, 14883), (81, 14937), (85, 14985), (86, 15033), (89, 15099), (100, 15228), (102, 15240), (105, 15255), (106, 15258), (116, 15342), (118, 15366), (119, 15369), (122, 15402),

Gene: Constance\_21 Start: 16977, Stop: 17933, Start Num: 15

Candidate Starts for Constance\_21:

(5, 16905), (Start: 10 @16950 has 7 MA's), (Start: 15 @16977 has 43 MA's), (19, 16998), (55, 17247), (67, 17334), (77, 17412), (83, 17454), (91, 17649), (100, 17736), (113, 17823), (123, 17916),

Gene: CookieBear\_23 Start: 16933, Stop: 17892, Start Num: 15

Candidate Starts for CookieBear\_23:

(Start: 15 @16933 has 43 MA's), (16, 16942), (54, 17197), (55, 17203), (56, 17212), (58, 17218), (61, 17239), (77, 17368), (91, 17608), (97, 17650), (100, 17695), (113, 17782), (123, 17875),

Gene: Coral\_19 Start: 14466, Stop: 15425, Start Num: 13

Candidate Starts for Coral\_19:

(1, 14256), (7, 14409), (Start: 13 @14466 has 7 MA's), (Start: 15 @14472 has 43 MA's), (24, 14547), (26, 14556), (28, 14571), (30, 14580), (37, 14622), (38, 14625), (40, 14643), (45, 14685), (46, 14691), (59, 14772), (65, 14823), (66, 14826), (67, 14838), (72, 14883), (81, 14937), (85, 14985), (86, 15033), (89, 15099), (100, 15228), (102, 15240), (105, 15255), (106, 15258), (116, 15342), (118, 15366), (119, 15369), (122, 15402),

Gene: Cote\_20 Start: 14627, Stop: 15586, Start Num: 13

Candidate Starts for Cote\_20:

(1, 14417), (7, 14570), (Start: 13 @14627 has 7 MA's), (Start: 15 @14633 has 43 MA's), (24, 14708), (26, 14717), (28, 14732), (30, 14741), (37, 14783), (38, 14786), (40, 14804), (45, 14846), (46, 14852), (59, 14933), (65, 14984), (66, 14987), (67, 14999), (72, 15044), (81, 15098), (85, 15146), (86, 15194), (89, 15260), (100, 15389), (102, 15401), (105, 15416), (106, 15419), (116, 15503), (118, 15527), (119, 15530), (122, 15563),

Gene: Cygnet\_19 Start: 15291, Stop: 16241, Start Num: 15

Candidate Starts for Cygnet\_19:

(2, 15114), (7, 15234), (Start: 15 @15291 has 43 MA's), (24, 15360), (30, 15393), (37, 15435), (38, 15438), (39, 15453), (40, 15456), (46, 15504), (61, 15600), (63, 15621), (67, 15648), (68, 15654), (73, 15702), (84, 15768), (86, 15846), (96, 15990), (103, 16059), (115, 16134), (118, 16179), (121, 16200), (122, 16215), (123, 16221),

Gene: DanHam62\_18 Start: 14180, Stop: 15139, Start Num: 15

Candidate Starts for DanHam62\_18:

(Start: 15 @14180 has 43 MA's), (24, 14252), (29, 14279), (31, 14294), (40, 14348), (46, 14396), (54, 14450), (59, 14477), (67, 14543), (68, 14549), (72, 14588), (76, 14609), (82, 14651), (100, 14942), (101, 14951), (102, 14954), (105, 14969), (114, 15032), (118, 15080),

Gene: Daob\_20 Start: 14630, Stop: 15589, Start Num: 13

Candidate Starts for Daob\_20:

(1, 14420), (7, 14573), (Start: 13 @14630 has 7 MA's), (Start: 15 @14636 has 43 MA's), (24, 14711), (26, 14720), (28, 14735), (30, 14744), (37, 14786), (38, 14789), (40, 14807), (45, 14849), (46, 14855), (59, 14936), (65, 14987), (66, 14990), (67, 15002), (72, 15047), (81, 15101), (85, 15149), (86, 15197), (89, 15263), (100, 15392), (102, 15404), (105, 15419), (106, 15422), (116, 15506), (118, 15530), (119, 15533), (122, 15566),

Gene: Edmundo\_70 Start: 43370, Stop: 44359, Start Num: 10

Candidate Starts for Edmundo\_70:

(Start: 10 @43370 has 7 MA's), (20, 43442), (23, 43460), (29, 43496), (36, 43532), (42, 43574), (44, 43604), (46, 43613), (48, 43625), (51, 43661), (53, 43667), (60, 43712), (66, 43754), (71, 43802), (87, 43985), (95, 44108), (109, 44222), (110, 44228), (124, 44354),

Gene: Eesa\_19 Start: 15885, Stop: 16823, Start Num: 15

Candidate Starts for Eesa\_19:

(Start: 15 @15885 has 43 MA's), (24, 15951), (26, 15960), (27, 15969), (37, 16026), (38, 16029), (40, 16047), (46, 16095), (51, 16140), (54, 16149), (65, 16224), (67, 16239), (72, 16284), (79, 16329), (97, 16578), (105, 16653), (111, 16698), (118, 16764), (120, 16776), (122, 16800),

Gene: Eileen\_21 Start: 16939, Stop: 17895, Start Num: 15

Candidate Starts for Eileen\_21:

(Start: 15 @16939 has 43 MA's), (19, 16960), (33, 17053), (55, 17209), (57, 17221), (67, 17296), (77, 17374), (82, 17407), (83, 17416), (91, 17611), (100, 17698), (123, 17878),

Gene: FosterFrank\_21 Start: 16935, Stop: 17891, Start Num: 15

Candidate Starts for FosterFrank\_21:

(5, 16863), (8, 16884), (Start: 10 @16908 has 7 MA's), (Start: 15 @16935 has 43 MA's), (19, 16956), (55, 17205), (67, 17292), (77, 17370), (83, 17412), (91, 17607), (100, 17694), (113, 17781), (123, 17874),

Gene: Globfish\_22 Start: 17006, Stop: 17965, Start Num: 15

Candidate Starts for Globfish\_22:

(4, 16895), (5, 16934), (8, 16955), (Start: 10 @16979 has 7 MA's), (Start: 15 @17006 has 43 MA's), (16, 17015), (19, 17027), (33, 17120), (61, 17312), (67, 17363), (77, 17441), (91, 17681), (97, 17723), (100, 17768), (102, 17780), (113, 17855), (123, 17948),

Gene: GlobiWarming\_21 Start: 16931, Stop: 17893, Start Num: 15

Candidate Starts for GlobiWarming\_21:

(Start: 10 @16904 has 7 MA's), (Start: 15 @16931 has 43 MA's), (19, 16952), (28, 17021), (50, 17168), (51, 17186), (55, 17201), (61, 17237), (63, 17258), (67, 17294), (69, 17303), (83, 17414), (91, 17609), (100, 17696), (123, 17876),

Gene: Glotell\_19 Start: 14178, Stop: 15137, Start Num: 15

Candidate Starts for Glotell\_19:

(Start: 15 @14178 has 43 MA's), (24, 14250), (29, 14277), (31, 14292), (40, 14346), (46, 14394), (54, 14448), (59, 14475), (67, 14541), (68, 14547), (72, 14586), (76, 14607), (82, 14649), (100, 14940), (101, 14949), (102, 14952), (105, 14967), (114, 15030), (118, 15078),

Gene: Gorpy\_22 Start: 16942, Stop: 17901, Start Num: 15

Candidate Starts for Gorpy\_22:

(Start: 15 @16942 has 43 MA's), (16, 16951), (54, 17206), (55, 17212), (56, 17221), (58, 17227), (61, 17248), (77, 17377), (91, 17617), (100, 17704), (113, 17791), (123, 17884),

Gene: Gravel\_20 Start: 15791, Stop: 16729, Start Num: 15

Candidate Starts for Gravel\_20:

(Start: 15 @15791 has 43 MA's), (24, 15857), (26, 15866), (27, 15875), (37, 15932), (38, 15935), (40, 15953), (46, 16001), (51, 16046), (54, 16055), (65, 16130), (67, 16145), (72, 16190), (79, 16235), (97, 16484), (105, 16559), (111, 16604), (118, 16670), (120, 16682), (122, 16706),

Gene: HamCheese\_18 Start: 14180, Stop: 15139, Start Num: 15

Candidate Starts for HamCheese\_18:

(Start: 15 @14180 has 43 MA's), (24, 14252), (29, 14279), (31, 14294), (40, 14348), (46, 14396), (54, 14450), (59, 14477), (67, 14543), (68, 14549), (72, 14588), (76, 14609), (82, 14651), (100, 14942), (101, 14951), (102, 14954), (105, 14969), (114, 15032), (118, 15080),

Gene: HannahPhantana\_20 Start: 14630, Stop: 15589, Start Num: 13

Candidate Starts for HannahPhantana\_20:

(1, 14420), (7, 14573), (Start: 13 @14630 has 7 MA's), (Start: 15 @14636 has 43 MA's), (24, 14711), (26, 14720), (28, 14735), (30, 14744), (37, 14786), (38, 14789), (40, 14807), (45, 14849), (46, 14855), (59, 14936), (65, 14987), (66, 14990), (67, 15002), (72, 15047), (81, 15101), (85, 15149), (86, 15197), (89, 15263), (100, 15392), (102, 15404), (105, 15419), (106, 15422), (116, 15506), (118, 15530), (119, 15533), (122, 15566),

Gene: Hestia\_22 Start: 17111, Stop: 18070, Start Num: 15

Candidate Starts for Hestia\_22:

(Start: 15 @17111 has 43 MA's), (16, 17120), (54, 17375), (55, 17381), (56, 17390), (58, 17396), (61, 17417), (67, 17468), (77, 17546), (91, 17786), (100, 17873), (113, 17960), (123, 18053),

Gene: Hillester\_22 Start: 16933, Stop: 17892, Start Num: 15

Candidate Starts for Hillester\_22:

(Start: 15 @16933 has 43 MA's), (16, 16942), (54, 17197), (55, 17203), (56, 17212), (58, 17218), (61, 17239), (77, 17368), (91, 17608), (100, 17695), (102, 17707), (113, 17782), (115, 17788), (123, 17875),

Gene: HotPotato\_21 Start: 16939, Stop: 17901, Start Num: 15

Candidate Starts for HotPotato\_21:

(Start: 10 @16912 has 7 MA's), (Start: 15 @16939 has 43 MA's), (19, 16960), (50, 17176), (55, 17209), (61, 17245), (67, 17302), (69, 17311), (83, 17422), (91, 17617), (100, 17704), (123, 17884),

Gene: Isolde\_22 Start: 16768, Stop: 17727, Start Num: 15

Candidate Starts for Isolde\_22:

(Start: 15 @16768 has 43 MA's), (16, 16777), (19, 16789), (54, 17032), (55, 17038), (56, 17047), (58, 17053), (61, 17074), (77, 17203), (91, 17443), (97, 17485), (100, 17530), (113, 17617), (123, 17710),

Gene: Jamun\_19 Start: 15328, Stop: 16269, Start Num: 15

Candidate Starts for Jamun\_19:

(Start: 14 @15325 has 2 MA's), (Start: 15 @15328 has 43 MA's), (18, 15346), (24, 15394), (28, 15418), (30, 15427), (37, 15469), (39, 15487), (40, 15490), (46, 15538), (57, 15610), (67, 15682), (80, 15781), (105, 16099), (111, 16144), (118, 16210),

Gene: JellyBread\_22 Start: 16926, Stop: 17885, Start Num: 15

Candidate Starts for JellyBread\_22:

(Start: 15 @16926 has 43 MA's), (16, 16935), (54, 17190), (55, 17196), (56, 17205), (58, 17211), (61, 17232), (77, 17361), (91, 17601), (100, 17688), (113, 17775), (123, 17868),

Gene: Jerole\_20 Start: 14633, Stop: 15586, Start Num: 15

Candidate Starts for Jerole\_20:

(1, 14417), (7, 14570), (Start: 13 @14627 has 7 MA's), (Start: 15 @14633 has 43 MA's), (24, 14708), (26, 14717), (28, 14732), (30, 14741), (37, 14783), (38, 14786), (40, 14804), (45, 14846), (46, 14852), (59, 14933), (65, 14984), (66, 14987), (67, 14999), (72, 15044), (81, 15098), (85, 15146), (86, 15194), (89, 15260), (100, 15389), (102, 15401), (105, 15416), (106, 15419), (116, 15503), (118, 15527), (119, 15530), (122, 15563),

Gene: Judy\_22 Start: 17248, Stop: 18204, Start Num: 15

Candidate Starts for Judy\_22:

(5, 17176), (Start: 10 @17221 has 7 MA's), (Start: 15 @17248 has 43 MA's), (19, 17269), (55, 17518), (67, 17605), (77, 17683), (83, 17725), (91, 17920), (94, 17944), (100, 18007), (123, 18187),

Gene: Juno112\_18 Start: 14181, Stop: 15140, Start Num: 15

Candidate Starts for Juno112\_18:

(Start: 15 @14181 has 43 MA's), (24, 14253), (29, 14280), (31, 14295), (40, 14349), (46, 14397), (54, 14451), (59, 14478), (67, 14544), (68, 14550), (72, 14589), (76, 14610), (100, 14943), (101, 14952), (102, 14955), (105, 14970), (114, 15033), (118, 15081),

Gene: KHumphrey\_18 Start: 14178, Stop: 15137, Start Num: 15

Candidate Starts for KHumphrey\_18:

(Start: 15 @14178 has 43 MA's), (24, 14250), (29, 14277), (31, 14292), (40, 14346), (46, 14394), (54, 14448), (59, 14475), (67, 14541), (68, 14547), (72, 14586), (76, 14607), (100, 14940), (101, 14949), (102, 14952), (105, 14967), (114, 15030), (118, 15078),

Gene: Karkharias\_21 Start: 16935, Stop: 17897, Start Num: 15

Candidate Starts for Karkharias\_21:

(5, 16863), (Start: 10 @16908 has 7 MA's), (Start: 15 @16935 has 43 MA's), (19, 16956), (28, 17025), (50, 17172), (51, 17190), (55, 17205), (61, 17241), (67, 17298), (69, 17307), (83, 17418), (91, 17613), (100, 17700), (123, 17880),

Gene: KayMoney\_21 Start: 16839, Stop: 17795, Start Num: 15

Candidate Starts for KayMoney\_21:

(Start: 10 @16812 has 7 MA's), (Start: 15 @16839 has 43 MA's), (19, 16860), (38, 16983), (55, 17109), (70, 17232), (71, 17235), (77, 17274), (82, 17307), (83, 17316), (91, 17511), (100, 17598), (113, 17685), (123, 17778),

Gene: KendraB23\_20 Start: 15792, Stop: 16730, Start Num: 15

Candidate Starts for KendraB23\_20:

(Start: 15 @15792 has 43 MA's), (24, 15858), (26, 15867), (27, 15876), (37, 15933), (38, 15936), (40, 15954), (46, 16002), (51, 16047), (54, 16056), (61, 16098), (65, 16131), (67, 16146), (72, 16191), (79, 16236), (97, 16485), (105, 16560), (111, 16605), (118, 16671), (120, 16683), (122, 16707),

Gene: Kepler\_19 Start: 14465, Stop: 15424, Start Num: 13

Candidate Starts for Kepler\_19:

(1, 14255), (7, 14408), (Start: 13 @14465 has 7 MA's), (Start: 15 @14471 has 43 MA's), (24, 14546), (26, 14555), (28, 14570), (30, 14579), (37, 14621), (38, 14624), (40, 14642), (45, 14684), (46, 14690), (59, 14771), (65, 14822), (66, 14825), (67, 14837), (72, 14882), (81, 14936), (85, 14984), (86, 15032), (89, 15098), (100, 15227), (102, 15239), (105, 15254), (106, 15257), (116, 15341), (118, 15365), (119, 15368), (122, 15401),

Gene: Kharcho\_46 Start: 25166, Stop: 26164, Start Num: 11

Candidate Starts for Kharcho\_46:

(Start: 11 @25166 has 3 MA's), (33, 25307), (43, 25367), (47, 25406), (54, 25460), (56, 25475), (63, 25526), (110, 26030),

Gene: Kovu\_68 Start: 43241, Stop: 44224, Start Num: 11

Candidate Starts for Kovu\_68:

(Start: 11 @43241 has 3 MA's), (20, 43313), (27, 43355), (37, 43412), (51, 43529), (53, 43535), (54, 43538), (59, 43565), (64, 43604), (66, 43622), (70, 43667), (71, 43670), (74, 43694), (90, 43925), (98, 43982), (99, 44024), (103, 44045), (105, 44054), (117, 44159),

Gene: Kuleana\_19 Start: 14642, Stop: 15589, Start Num: 15

Candidate Starts for Kuleana\_19:

(1, 14432), (7, 14585), (Start: 14 @14639 has 2 MA's), (Start: 15 @14642 has 43 MA's), (24, 14708), (30, 14741), (31, 14750), (37, 14783), (40, 14804), (46, 14852), (61, 14948), (84, 15116), (86, 15194), (96, 15338), (100, 15389), (103, 15407), (118, 15527), (121, 15548), (122, 15563),

Gene: Laroye\_70 Start: 42761, Stop: 43750, Start Num: 10

Candidate Starts for Laroye\_70:

(Start: 10 @42761 has 7 MA's), (29, 42887), (36, 42923), (44, 42995), (46, 43004), (48, 43016), (53, 43058), (59, 43088), (60, 43103), (71, 43193), (87, 43376), (95, 43499), (102, 43565), (109, 43613), (110, 43619), (124, 43745),

Gene: Lawnathon\_22 Start: 16862, Stop: 17821, Start Num: 15

Candidate Starts for Lawnathon\_22:

(Start: 15 @16862 has 43 MA's), (16, 16871), (54, 17126), (55, 17132), (56, 17141), (58, 17147), (61, 17168), (77, 17297), (91, 17537), (100, 17624), (113, 17711), (123, 17804),

Gene: Leona\_18 Start: 14234, Stop: 15199, Start Num: 15

Candidate Starts for Leona\_18:

(Start: 15 @14234 has 43 MA's), (24, 14306), (29, 14333), (30, 14339), (31, 14348), (38, 14384), (40, 14402), (46, 14450), (54, 14504), (59, 14531), (61, 14549), (65, 14582), (75, 14663), (100, 15002), (101, 15011), (102, 15014), (105, 15029), (118, 15140),

Gene: LiSara\_67 Start: 42923, Stop: 43912, Start Num: 10

Candidate Starts for LiSara\_67:

(Start: 10 @42923 has 7 MA's), (29, 43049), (36, 43085), (44, 43157), (46, 43166), (48, 43178), (53, 43220), (59, 43250), (60, 43265), (71, 43355), (87, 43538), (95, 43661), (102, 43727), (109, 43775), (110, 43781), (124, 43907),

Gene: LittleTokyo\_19 Start: 14585, Stop: 15535, Start Num: 14

Candidate Starts for LittleTokyo\_19:

(12, 14576), (Start: 14 @14585 has 2 MA's), (Start: 15 @14588 has 43 MA's), (24, 14654), (25, 14657), (29, 14681), (30, 14687), (31, 14696), (37, 14729), (40, 14750), (49, 14816), (54, 14852), (61, 14894), (66, 14930), (67, 14942), (68, 14948), (84, 15062), (88, 15170), (96, 15284), (100, 15335), (103, 15353), (118, 15473), (120, 15485), (121, 15494), (122, 15509),

Gene: Lunar\_20 Start: 14633, Stop: 15586, Start Num: 15

Candidate Starts for Lunar\_20:

(1, 14417), (7, 14570), (Start: 13 @14627 has 7 MA's), (Start: 15 @14633 has 43 MA's), (24, 14708), (26, 14717), (28, 14732), (30, 14741), (37, 14783), (38, 14786), (40, 14804), (45, 14846), (46, 14852), (59, 14933), (65, 14984), (66, 14987), (67, 14999), (72, 15044), (81, 15098), (85, 15146), (86, 15194), (89, 15260), (100, 15389), (102, 15401), (105, 15416), (106, 15419), (116, 15503), (118, 15527), (119, 15530), (122, 15563),

Gene: MUWow\_21 Start: 17026, Stop: 17985, Start Num: 15

Candidate Starts for MUWow\_21:

(Start: 15 @17026 has 43 MA's), (16, 17035), (19, 17047), (54, 17290), (55, 17296), (56, 17305), (58, 17311), (61, 17332), (77, 17461), (91, 17701), (97, 17743), (100, 17788), (108, 17830), (113, 17875), (123, 17968),

Gene: MaterMagnus\_22 Start: 16934, Stop: 17893, Start Num: 15

Candidate Starts for MaterMagnus\_22:

(Start: 15 @16934 has 43 MA's), (16, 16943), (19, 16955), (54, 17198), (55, 17204), (56, 17213), (58, 17219), (61, 17240), (77, 17369), (91, 17609), (100, 17696), (113, 17783), (123, 17876),

Gene: Melons\_20 Start: 14627, Stop: 15586, Start Num: 13

Candidate Starts for Melons\_20:

(1, 14417), (7, 14570), (Start: 13 @14627 has 7 MA's), (Start: 15 @14633 has 43 MA's), (24, 14708), (26, 14717), (28, 14732), (30, 14741), (37, 14783), (38, 14786), (40, 14804), (45, 14846), (46, 14852), (59, 14933), (65, 14984), (66, 14987), (67, 14999), (72, 15044), (81, 15098), (85, 15146), (86, 15194), (89, 15260), (100, 15389), (102, 15401), (105, 15416), (106, 15419), (116, 15503), (118, 15527), (119, 15530), (122, 15563),

Gene: MidnightRain\_22 Start: 16932, Stop: 17891, Start Num: 15

Candidate Starts for MidnightRain\_22:

(Start: 15 @16932 has 43 MA's), (16, 16941), (54, 17196), (55, 17202), (56, 17211), (58, 17217), (61, 17238), (77, 17367), (91, 17607), (97, 17649), (100, 17694), (113, 17781), (123, 17874),

Gene: Orcanus\_19 Start: 15585, Stop: 16523, Start Num: 15

Candidate Starts for Orcanus\_19:

(Start: 15 @15585 has 43 MA's), (24, 15651), (26, 15660), (27, 15669), (37, 15726), (38, 15729), (40, 15747), (46, 15795), (51, 15840), (54, 15849), (65, 15924), (67, 15939), (68, 15945), (72, 15984), (79, 16029), (97, 16278), (105, 16353), (111, 16398), (118, 16464), (120, 16476), (122, 16500),

Gene: OtsoOtso\_19 Start: 14475, Stop: 15428, Start Num: 15

Candidate Starts for OtsoOtso\_19:

(Start: 13 @14469 has 7 MA's), (Start: 15 @14475 has 43 MA's), (24, 14550), (26, 14559), (28, 14574), (38, 14628), (40, 14646), (45, 14688), (46, 14694), (59, 14775), (65, 14826), (66, 14829), (67, 14841), (72, 14886), (81, 14940), (85, 14988), (86, 15036), (89, 15102), (100, 15231), (102, 15243), (105, 15258), (106, 15261), (116, 15345), (118, 15369), (119, 15372), (122, 15405),

Gene: Ottawa\_46 Start: 25164, Stop: 26162, Start Num: 11

Candidate Starts for Ottawa\_46:

(Start: 11 @25164 has 3 MA's), (33, 25305), (43, 25365), (47, 25404), (54, 25458), (56, 25473), (63, 25524), (110, 26028),

Gene: Peas\_21 Start: 16939, Stop: 17895, Start Num: 15

Candidate Starts for Peas\_21:

(Start: 15 @16939 has 43 MA's), (19, 16960), (33, 17053), (55, 17209), (57, 17221), (67, 17296), (77, 17374), (82, 17407), (83, 17416), (91, 17611), (100, 17698), (123, 17878),

Gene: PeggyLeg03\_21 Start: 16977, Stop: 17933, Start Num: 15

Candidate Starts for PeggyLeg03\_21:

(5, 16905), (Start: 10 @16950 has 7 MA's), (Start: 15 @16977 has 43 MA's), (17, 16989), (19, 16998), (55, 17247), (67, 17334), (77, 17412), (83, 17454), (91, 17649), (100, 17736), (113, 17823), (123, 17916),

Gene: Pelletreau\_20 Start: 15791, Stop: 16729, Start Num: 15

Candidate Starts for Pelletreau\_20:

(Start: 15 @15791 has 43 MA's), (24, 15857), (26, 15866), (27, 15875), (37, 15932), (38, 15935), (40, 15953), (46, 16001), (51, 16046), (54, 16055), (65, 16130), (67, 16145), (72, 16190), (79, 16235), (97, 16484), (105, 16559), (111, 16604), (118, 16670), (120, 16682), (122, 16706),

Gene: Persistence\_21 Start: 16854, Stop: 17816, Start Num: 15

Candidate Starts for Persistence\_21:

(4, 16743), (5, 16782), (8, 16803), (Start: 10 @16827 has 7 MA's), (Start: 15 @16854 has 43 MA's), (16, 16863), (19, 16875), (22, 16908), (46, 17064), (50, 17091), (55, 17124), (61, 17160), (67, 17217), (77, 17295), (102, 17631), (105, 17646), (107, 17652), (116, 17733), (123, 17799),

Gene: PhluffyCoco\_18 Start: 14180, Stop: 15139, Start Num: 15

Candidate Starts for PhluffyCoco\_18:

(Start: 15 @14180 has 43 MA's), (24, 14252), (29, 14279), (31, 14294), (40, 14348), (46, 14396), (54, 14450), (59, 14477), (67, 14543), (68, 14549), (72, 14588), (76, 14609), (82, 14651), (100, 14942), (101, 14951), (102, 14954), (105, 14969), (114, 15032), (118, 15080),

Gene: Phrank15\_21 Start: 16867, Stop: 17826, Start Num: 15

Candidate Starts for Phrank15\_21:

(Start: 15 @16867 has 43 MA's), (16, 16876), (19, 16888), (54, 17131), (55, 17137), (56, 17146), (58, 17152), (61, 17173), (77, 17302), (91, 17542), (97, 17584), (100, 17629), (113, 17716), (123, 17809),

Gene: Polka\_19 Start: 14469, Stop: 15428, Start Num: 13

Candidate Starts for Polka\_19:

(Start: 13 @14469 has 7 MA's), (Start: 15 @14475 has 43 MA's), (24, 14550), (26, 14559), (28, 14574), (38, 14628), (40, 14646), (45, 14688), (46, 14694), (59, 14775), (65, 14826), (66, 14829), (67, 14841), (72, 14886), (81, 14940), (85, 14988), (86, 15036), (89, 15102), (100, 15231), (102, 15243), (105, 15258), (106, 15261), (116, 15345), (118, 15369), (119, 15372), (122, 15405),

Gene: Pucara\_21 Start: 16938, Stop: 17894, Start Num: 15

Candidate Starts for Pucara\_21:

(Start: 10 @16911 has 7 MA's), (Start: 15 @16938 has 43 MA's), (19, 16959), (33, 17052), (55, 17208), (57, 17220), (67, 17295), (77, 17373), (82, 17406), (83, 17415), (91, 17610), (100, 17697), (123, 17877),

Gene: RadFad\_22 Start: 16933, Stop: 17892, Start Num: 15

Candidate Starts for RadFad\_22:

(Start: 15 @16933 has 43 MA's), (16, 16942), (54, 17197), (55, 17203), (56, 17212), (58, 17218), (61, 17239), (77, 17368), (91, 17608), (100, 17695), (102, 17707), (113, 17782), (115, 17788), (123, 17875),

Gene: Raphaella\_22 Start: 16933, Stop: 17892, Start Num: 15

Candidate Starts for Raphaella\_22:

(Start: 15 @16933 has 43 MA's), (16, 16942), (54, 17197), (55, 17203), (56, 17212), (58, 17218), (61, 17239), (77, 17368), (91, 17608), (100, 17695), (113, 17782), (123, 17875),

Gene: Rattail\_18 Start: 14234, Stop: 15199, Start Num: 15

Candidate Starts for Rattail\_18:

(Start: 15 @14234 has 43 MA's), (24, 14306), (29, 14333), (30, 14339), (31, 14348), (38, 14384), (40, 14402), (46, 14450), (54, 14504), (59, 14531), (61, 14549), (65, 14582), (75, 14663), (100, 15002), (101, 15011), (102, 15014), (105, 15029), (118, 15140),

Gene: RedFox\_18 Start: 14180, Stop: 15139, Start Num: 15

Candidate Starts for RedFox\_18:

(Start: 15 @14180 has 43 MA's), (24, 14252), (29, 14279), (31, 14294), (40, 14348), (46, 14396), (54, 14450), (59, 14477), (67, 14543), (68, 14549), (72, 14588), (76, 14609), (82, 14651), (100, 14942), (101, 14951), (102, 14954), (105, 14969), (114, 15032), (118, 15080),

Gene: Renna12\_19 Start: 14524, Stop: 15489, Start Num: 15

Candidate Starts for Renna12\_19:

(Start: 15 @14524 has 43 MA's), (24, 14596), (28, 14620), (29, 14623), (31, 14638), (38, 14674), (40, 14692), (46, 14740), (54, 14794), (59, 14821), (67, 14887), (68, 14893), (100, 15292), (102, 15304), (105, 15319), (114, 15382), (116, 15406), (118, 15430),

Gene: Richie\_22 Start: 16948, Stop: 17907, Start Num: 15

Candidate Starts for Richie\_22:

(Start: 15 @16948 has 43 MA's), (16, 16957), (19, 16969), (54, 17212), (55, 17218), (56, 17227), (58, 17233), (61, 17254), (77, 17383), (91, 17623), (100, 17710), (107, 17743), (113, 17797), (123, 17890),

Gene: Ruchi\_19 Start: 15868, Stop: 16809, Start Num: 15

Candidate Starts for Ruchi\_19:



(Start: 14 @15865 has 2 MA's), (Start: 15 @15868 has 43 MA's), (18, 15886), (24, 15934), (28, 15958), (30, 15967), (37, 16009), (39, 16027), (40, 16030), (46, 16078), (57, 16150), (67, 16222), (80, 16321), (105, 16639), (111, 16684), (112, 16696), (118, 16750),

Gene: Sakai\_22 Start: 16942, Stop: 17901, Start Num: 15

Candidate Starts for Sakai\_22:

(Start: 15 @16942 has 43 MA's), (16, 16951), (54, 17206), (55, 17212), (56, 17221), (58, 17227), (61, 17248), (77, 17377), (91, 17617), (100, 17704), (113, 17791), (123, 17884),

Gene: Salgado\_70 Start: 42577, Stop: 43566, Start Num: 10

Candidate Starts for Salgado\_70:

(3, 42478), (Start: 10 @42577 has 7 MA's), (29, 42703), (36, 42739), (44, 42811), (46, 42820), (48, 42832), (53, 42874), (59, 42904), (60, 42919), (71, 43009), (87, 43192), (95, 43315), (102, 43381), (109, 43429), (110, 43435), (124, 43561),

Gene: Seahorse\_23 Start: 17300, Stop: 18259, Start Num: 15

Candidate Starts for Seahorse\_23:

(Start: 15 @17300 has 43 MA's), (16, 17309), (19, 17321), (55, 17570), (56, 17579), (58, 17585), (61, 17606), (77, 17735), (100, 18062), (123, 18242),

Gene: Shrooms\_68 Start: 41098, Stop: 42087, Start Num: 10

Candidate Starts for Shrooms\_68:

(3, 40999), (Start: 10 @41098 has 7 MA's), (18, 41152), (20, 41170), (23, 41188), (29, 41224), (30, 41230), (35, 41254), (36, 41260), (51, 41389), (53, 41395), (59, 41425), (60, 41440), (62, 41446), (66, 41482), (69, 41503), (71, 41530), (87, 41713), (105, 41917), (110, 41956), (124, 42082),

Gene: Shukran\_22 Start: 16854, Stop: 17816, Start Num: 15

Candidate Starts for Shukran\_22:

(5, 16782), (8, 16803), (Start: 10 @16827 has 7 MA's), (Start: 15 @16854 has 43 MA's), (16, 16863), (19, 16875), (22, 16908), (41, 17022), (46, 17064), (50, 17091), (51, 17109), (55, 17124), (100, 17619), (105, 17646), (123, 17799),

Gene: SpicyFrank\_22 Start: 17010, Stop: 17969, Start Num: 15

Candidate Starts for SpicyFrank\_22:

(5, 16938), (8, 16959), (Start: 10 @16983 has 7 MA's), (Start: 15 @17010 has 43 MA's), (16, 17019), (19, 17031), (33, 17124), (54, 17274), (61, 17316), (67, 17367), (77, 17445), (91, 17685), (97, 17727), (100, 17772), (104, 17793), (123, 17952),

Gene: StuartMinion\_19 Start: 14221, Stop: 15183, Start Num: 15

Candidate Starts for StuartMinion\_19:

(9, 14173), (Start: 15 @14221 has 43 MA's), (24, 14290), (28, 14314), (30, 14323), (31, 14332), (38, 14368), (40, 14386), (45, 14428), (46, 14434), (54, 14488), (59, 14515), (66, 14569), (67, 14581), (68, 14587), (81, 14692), (82, 14695), (88, 14818), (100, 14986), (102, 14998), (105, 15013), (116, 15100), (118, 15124),

Gene: TaylorSipt\_19 Start: 14602, Stop: 15540, Start Num: 15

Candidate Starts for TaylorSipt\_19:

(Start: 15 @14602 has 43 MA's), (24, 14668), (26, 14677), (30, 14701), (37, 14743), (40, 14764), (46, 14812), (72, 15001), (78, 15034), (79, 15046), (97, 15295), (118, 15481), (120, 15493), (122, 15517),

Gene: ThayneTheZag\_22 Start: 17101, Stop: 18063, Start Num: 15

Candidate Starts for ThayneTheZag\_22:

(5, 17029), (8, 17050), (Start: 10 @17074 has 7 MA's), (Start: 15 @17101 has 43 MA's), (16, 17110), (19, 17122), (22, 17155), (32, 17212), (33, 17215), (41, 17269), (46, 17311), (50, 17338), (51, 17356), (55, 17371), (61, 17407), (67, 17464), (97, 17821), (123, 18046),

Gene: Tiff81\_23 Start: 17028, Stop: 17987, Start Num: 15

Candidate Starts for Tiff81\_23:

(Start: 15 @17028 has 43 MA's), (16, 17037), (19, 17049), (54, 17292), (55, 17298), (56, 17307), (58, 17313), (61, 17334), (77, 17463), (100, 17790), (123, 17970),

Gene: Toad24\_20 Start: 15792, Stop: 16730, Start Num: 15

Candidate Starts for Toad24\_20:

(Start: 15 @15792 has 43 MA's), (24, 15858), (26, 15867), (27, 15876), (37, 15933), (38, 15936), (40, 15954), (46, 16002), (51, 16047), (54, 16056), (61, 16098), (65, 16131), (67, 16146), (72, 16191), (79, 16236), (97, 16485), (105, 16560), (111, 16605), (118, 16671), (120, 16683), (122, 16707),

Gene: Vopal\_23 Start: 17005, Stop: 17964, Start Num: 15

Candidate Starts for Vopal\_23:

(Start: 15 @17005 has 43 MA's), (16, 17014), (54, 17269), (55, 17275), (56, 17284), (58, 17290), (61, 17311), (77, 17440), (91, 17680), (100, 17767), (113, 17854), (123, 17947),

Gene: Vulpecula\_19 Start: 15323, Stop: 16267, Start Num: 14

Candidate Starts for Vulpecula\_19:

(Start: 14 @15323 has 2 MA's), (Start: 15 @15326 has 43 MA's), (18, 15344), (24, 15392), (28, 15416), (30, 15425), (37, 15467), (39, 15485), (40, 15488), (46, 15536), (57, 15608), (67, 15680), (80, 15779), (105, 16097), (111, 16142), (118, 16208),

Gene: Waltz\_67 Start: 41111, Stop: 42100, Start Num: 10

Candidate Starts for Waltz\_67:

(3, 41012), (Start: 10 @41111 has 7 MA's), (18, 41165), (20, 41183), (21, 41189), (23, 41201), (29, 41237), (34, 41264), (35, 41267), (36, 41273), (51, 41402), (53, 41408), (59, 41438), (60, 41453), (66, 41495), (69, 41516), (71, 41543), (87, 41726), (110, 41969), (124, 42095),

Gene: Westrich\_20 Start: 15781, Stop: 16719, Start Num: 15

Candidate Starts for Westrich\_20:

(Start: 15 @15781 has 43 MA's), (24, 15847), (26, 15856), (27, 15865), (37, 15922), (38, 15925), (40, 15943), (46, 15991), (51, 16036), (52, 16039), (54, 16045), (65, 16120), (67, 16135), (68, 16141), (72, 16180), (79, 16225), (97, 16474), (105, 16549), (111, 16594), (118, 16660), (120, 16672), (122, 16696),

Gene: Wheelbite\_66 Start: 42734, Stop: 43717, Start Num: 10

Candidate Starts for Wheelbite\_66:

(Start: 10 @42734 has 7 MA's), (29, 42854), (30, 42860), (36, 42890), (42, 42932), (44, 42962), (46, 42971), (51, 43019), (53, 43025), (60, 43070), (66, 43112), (71, 43160), (82, 43235), (95, 43466), (102, 43532), (109, 43580), (110, 43586), (124, 43712),

Gene: Windest\_23 Start: 16989, Stop: 17948, Start Num: 15

Candidate Starts for Windest\_23:

(Start: 15 @16989 has 43 MA's), (16, 16998), (19, 17010), (54, 17253), (55, 17259), (56, 17268), (58, 17274), (61, 17295), (77, 17424), (91, 17664), (97, 17706), (100, 17751), (107, 17784), (113, 17838), (123, 17931),

Gene: YoungHarleezy\_22 Start: 16946, Stop: 17905, Start Num: 15

Candidate Starts for YoungHarleezy\_22:

(Start: 15 @16946 has 43 MA's), (16, 16955), (54, 17210), (55, 17216), (56, 17225), (58, 17231), (61, 17252), (77, 17381), (91, 17621), (97, 17663), (100, 17708), (113, 17795), (123, 17888),

Gene: Zhuangyuan\_21 Start: 15026, Stop: 15979, Start Num: 15

Candidate Starts for Zhuangyuan\_21:

(7, 14969), (Start: 15 @15026 has 43 MA's), (24, 15095), (25, 15098), (29, 15122), (30, 15128), (37, 15170), (38, 15173), (39, 15188), (40, 15191), (46, 15239), (54, 15293), (67, 15383), (77, 15461), (88, 15617), (90, 15680), (100, 15782), (103, 15800), (111, 15854), (118, 15920), (121, 15941), (123, 15962),