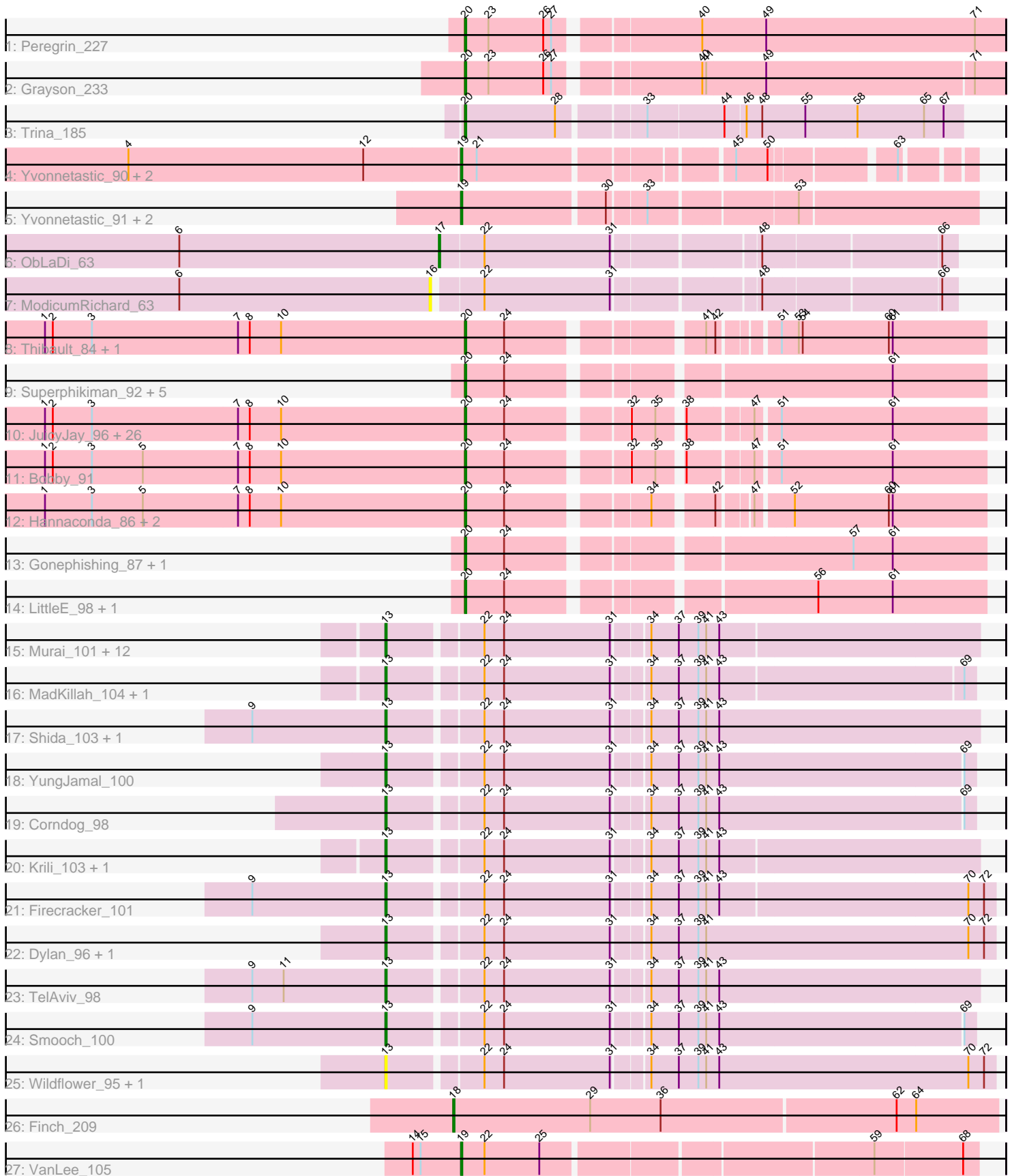


# Pham 1305



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 1305 Report

This analysis was run 04/28/24 on database version 559.

Pham number 1305 has 84 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Peregrin\_227
- Track 2 : Grayson\_233
- Track 3 : Trina\_185
- Track 4 : Yvonnestic\_90, JonJames\_92, Cardigan\_94
- Track 5 : Yvonnestic\_91, JonJames\_93, Cardigan\_95
- Track 6 : ObLaDi\_63
- Track 7 : ModicumRichard\_63
- Track 8 : Thibault\_84, Constella\_85
- Track 9 : Superphikiman\_92, Courthouse\_90, Ariel\_94, Squint\_93, MiaZeal\_95, Porcelain\_93
- Track 10 : JuicyJay\_96, Yeet\_92, Ejimix\_93, Kalah2\_93, HokkenD\_88, Bagrid\_99, ThreeRngTarjay\_96, Schatzie\_94, Beem\_100, BAKA\_101, Pound\_91, Optimus\_93, Klein\_100, Duke13\_96, Halley\_101, EricMillard\_93, Bombitas\_88, Redno2\_91, Dove\_88, Wanda\_103, Phoebus\_101, Odette\_99, Dallas\_101, Zelink\_96, NihilNomen\_101, Hughesyang\_99, Minerva\_99
- Track 11 : Bobby\_91
- Track 12 : Hannaconda\_86, DmpstrDiver\_101, KashFlow\_90
- Track 13 : Gonephishing\_87, Lucky2013\_92
- Track 14 : LittleE\_98, Omega\_104
- Track 15 : Murai\_101, Bora\_100, Familton\_102, Schuy\_98, Vorrrps\_101, Winget\_101, Mori\_101, Blessica\_99, Alkhayr\_97, FoulBall\_97, NiebruSaylor\_101, Catdawg\_102, SchoolBus\_100
- Track 16 : MadKillah\_104, Ryadel\_105
- Track 17 : Shida\_103, JangDynasty\_97
- Track 18 : YungJamal\_100
- Track 19 : Corndog\_98
- Track 20 : Krili\_103, Idergollasper\_103
- Track 21 : Firecracker\_101
- Track 22 : Dylan\_96, Zakhe101\_96
- Track 23 : TelAviv\_98
- Track 24 : Smooch\_100
- Track 25 : Wildflower\_95, Ashwin\_97
- Track 26 : Finch\_209
- Track 27 : VanLee\_105

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

The start number called the most often in the published annotations is 20, it was called in 42 of the 71 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Ariel\_94, BAKA\_101, Bagrid\_99, Beem\_100, Bobby\_91, Bombitas\_88, Constella\_85, Courthouse\_90, Dallas\_101, DmpstrDiver\_101, Dove\_88, Duke13\_96, Ejimix\_93, EricMillard\_93, Gonephishing\_87, Grayson\_233, Halley\_101, Hannaconda\_86, HokkenD\_88, Hughesyang\_99, JuicyJay\_96, Kalah2\_93, KashFlow\_90, Klein\_100, LittleE\_98, Lucky2013\_92, MiaZeal\_95, Minerva\_99, NihilNomen\_101, Odette\_99, Omega\_104, Optimus\_93, Peregrin\_227, Phoebus\_101, Porcelain\_93, Pound\_91, Redno2\_91, Schatzie\_94, Squint\_93, Superphikiman\_92, Thibault\_84, ThreeRngTarjay\_96, Trina\_185, Wanda\_103, Yeet\_92, Zelink\_96,

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

- 

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

- Alkhayr\_97, Ashwin\_97, Blessica\_99, Bora\_100, Cardigan\_94, Cardigan\_95, Catdawg\_102, Corndog\_98, Dylan\_96, Familton\_102, Finch\_209, Firecracker\_101, FoulBall\_97, Idergollasper\_103, JangDynasty\_97, JonJames\_92, JonJames\_93, Krili\_103, MadKillah\_104, ModicumRichard\_63, Mori\_101, Murai\_101, NiebruSaylor\_101, ObLaDi\_63, Ryadel\_105, SchoolBus\_100, Schuy\_98, Shida\_103, Smooch\_100, TelAviv\_98, VanLee\_105, Vorrrps\_101, Wildflower\_95, Winget\_101, YungJamal\_100, Yvonnetastic\_90, Yvonnetastic\_91, Zakhe101\_96,

### **Summary by start number:**

Start 13:

- Found in 28 of 84 ( 33.3% ) of genes in pham
- Manual Annotations of this start: 22 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alkhayr\_97 (O), Ashwin\_97 (O), Blessica\_99 (O), Bora\_100 (O), Catdawg\_102 (O), Corndog\_98 (O), Dylan\_96 (O), Familton\_102 (O), Firecracker\_101 (O), FoulBall\_97 (O), Idergollasper\_103 (O), JangDynasty\_97 (O), Krili\_103 (O), MadKillah\_104 (O), Mori\_101 (O), Murai\_101 (O), NiebruSaylor\_101 (O), Ryadel\_105 (O), SchoolBus\_100 (O), Schuy\_98 (O), Shida\_103 (O), Smooch\_100 (O), TelAviv\_98 (O), Vorrrps\_101 (O), Wildflower\_95 (O), Winget\_101 (O), YungJamal\_100 (O), Zakhe101\_96 (O),

Start 16:

- Found in 1 of 84 ( 1.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ModicumRichard\_63 (DZ),

Start 17:

- Found in 1 of 84 ( 1.2% ) 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: ObLaDi\_63 (DZ),

Start 18:

- Found in 1 of 84 ( 1.2% ) 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: Finch\_209 (singleton),

Start 19:

- Found in 7 of 84 ( 8.3% ) of genes in pham
- Manual Annotations of this start: 5 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cardigan\_94 (DD), Cardigan\_95 (DD), JonJames\_92 (DD), JonJames\_93 (DD), VanLee\_105 (singleton), Yvonnetastic\_90 (DD), Yvonnetastic\_91 (DD),

Start 20:

- Found in 46 of 84 ( 54.8% ) of genes in pham
- Manual Annotations of this start: 42 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ariel\_94 (J), BAKA\_101 (J), Bagrid\_99 (J), Beem\_100 (J), Bobby\_91 (J), Bombitas\_88 (J), Constella\_85 (J), Courthouse\_90 (J), Dallas\_101 (J), DmpstrDiver\_101 (J), Dove\_88 (J), Duke13\_96 (J), Ejimix\_93 (J), EricMillard\_93 (J), Gonephishing\_87 (J), Grayson\_233 (CB), Halley\_101 (J), Hannaconda\_86 (J), HokkenD\_88 (J), Hughesyang\_99 (J), JuicyJay\_96 (J), Kalah2\_93 (J), KashFlow\_90 (J), Klein\_100 (J), LittleE\_98 (J), Lucky2013\_92 (J), MiaZeal\_95 (J), Minerva\_99 (J), NihilNomen\_101 (J), Odette\_99 (J), Omega\_104 (J), Optimus\_93 (J), Peregrin\_227 (CB), Phoebus\_101 (J), Porcelain\_93 (J), Pound\_91 (J), Redno2\_91 (J), Schatzie\_94 (J), Squint\_93 (J), Superphikiman\_92 (J), Thibault\_84 (J), ThreeRngTarjay\_96 (J), Trina\_185 (CE), Wanda\_103 (J), Yeet\_92 (J), Zelink\_96 (J),

## Summary by clusters:

There are 7 clusters represented in this pham: singleton, CB, DD, J, CE, DZ, O,

Info for manual annotations of cluster CB:

- Start number 20 was manually annotated 2 times for cluster CB.

Info for manual annotations of cluster CE:

- Start number 20 was manually annotated 1 time for cluster CE.

Info for manual annotations of cluster DD:

- Start number 19 was manually annotated 4 times for cluster DD.

Info for manual annotations of cluster DZ:

- Start number 17 was manually annotated 1 time for cluster DZ.

Info for manual annotations of cluster J:

- Start number 20 was manually annotated 39 times for cluster J.

Info for manual annotations of cluster O:

- Start number 13 was manually annotated 22 times for cluster O.

**Gene Information:**

Gene: Alkhayr\_97 Start: 62112, Stop: 61681, Start Num: 13

Candidate Starts for Alkhayr\_97:

(Start: 13 @62112 has 22 MA's), (22, 62046), (24, 62031), (31, 61950), (34, 61926), (37, 61905), (39, 61890), (41, 61884), (43, 61875),

Gene: Ariel\_94 Start: 54759, Stop: 55124, Start Num: 20

Candidate Starts for Ariel\_94:

(Start: 20 @54759 has 42 MA's), (24, 54789), (61, 55053),

Gene: Ashwin\_97 Start: 61339, Stop: 60893, Start Num: 13

Candidate Starts for Ashwin\_97:

(Start: 13 @61339 has 22 MA's), (22, 61273), (24, 61258), (31, 61177), (34, 61153), (37, 61132), (39, 61117), (41, 61111), (43, 61102), (70, 60913), (72, 60901),

Gene: BAKA\_101 Start: 60653, Stop: 61012, Start Num: 20

Candidate Starts for BAKA\_101:

(1, 60332), (2, 60338), (3, 60368), (7, 60479), (8, 60488), (10, 60512), (Start: 20 @60653 has 42 MA's), (24, 60683), (32, 60764), (35, 60782), (38, 60797), (47, 60842), (51, 60857), (61, 60941),

Gene: Bagrid\_99 Start: 59520, Stop: 59879, Start Num: 20

Candidate Starts for Bagrid\_99:

(1, 59199), (2, 59205), (3, 59235), (7, 59346), (8, 59355), (10, 59379), (Start: 20 @59520 has 42 MA's), (24, 59550), (32, 59631), (35, 59649), (38, 59664), (47, 59709), (51, 59724), (61, 59808),

Gene: Beem\_100 Start: 60381, Stop: 60740, Start Num: 20

Candidate Starts for Beem\_100:

(1, 60060), (2, 60066), (3, 60096), (7, 60207), (8, 60216), (10, 60240), (Start: 20 @60381 has 42 MA's), (24, 60411), (32, 60492), (35, 60510), (38, 60525), (47, 60570), (51, 60585), (61, 60669),

Gene: Blessica\_99 Start: 62320, Stop: 61889, Start Num: 13

Candidate Starts for Blessica\_99:

(Start: 13 @62320 has 22 MA's), (22, 62254), (24, 62239), (31, 62158), (34, 62134), (37, 62113), (39, 62098), (41, 62092), (43, 62083),

Gene: Bobby\_91 Start: 58746, Stop: 59105, Start Num: 20

Candidate Starts for Bobby\_91:

(1, 58425), (2, 58431), (3, 58461), (5, 58500), (7, 58572), (8, 58581), (10, 58605), (Start: 20 @58746 has 42 MA's), (24, 58776), (32, 58857), (35, 58875), (38, 58890), (47, 58935), (51, 58950), (61, 59034),

Gene: Bombitas\_88 Start: 57544, Stop: 57903, Start Num: 20

Candidate Starts for Bombitas\_88:

(1, 57223), (2, 57229), (3, 57259), (7, 57370), (8, 57379), (10, 57403), (Start: 20 @57544 has 42 MA's), (24, 57574), (32, 57655), (35, 57673), (38, 57688), (47, 57733), (51, 57748), (61, 57832),

Gene: Bora\_100 Start: 63162, Stop: 62731, Start Num: 13

Candidate Starts for Bora\_100:

(Start: 13 @63162 has 22 MA's), (22, 63096), (24, 63081), (31, 63000), (34, 62976), (37, 62955), (39, 62940), (41, 62934), (43, 62925),

Gene: Cardigan\_94 Start: 56443, Stop: 56784, Start Num: 19

Candidate Starts for Cardigan\_94:

(4, 56191), (12, 56371), (Start: 19 @56443 has 5 MA's), (21, 56455), (45, 56629), (50, 56653), (63, 56737),

Gene: Cardigan\_95 Start: 56781, Stop: 57152, Start Num: 19

Candidate Starts for Cardigan\_95:

(Start: 19 @56781 has 5 MA's), (30, 56886), (33, 56913), (53, 57018),

Gene: Catdawg\_102 Start: 63432, Stop: 63001, Start Num: 13

Candidate Starts for Catdawg\_102:

(Start: 13 @63432 has 22 MA's), (22, 63366), (24, 63351), (31, 63270), (34, 63246), (37, 63225), (39, 63210), (41, 63204), (43, 63195),

Gene: Constella\_85 Start: 54550, Stop: 54906, Start Num: 20

Candidate Starts for Constella\_85:

(1, 54229), (2, 54235), (3, 54265), (7, 54376), (8, 54385), (10, 54409), (Start: 20 @54550 has 42 MA's), (24, 54580), (41, 54709), (42, 54715), (51, 54751), (53, 54763), (54, 54766), (60, 54832), (61, 54835),

Gene: Corndog\_98 Start: 61248, Stop: 60820, Start Num: 13

Candidate Starts for Corndog\_98:

(Start: 13 @61248 has 22 MA's), (22, 61182), (24, 61167), (31, 61086), (34, 61062), (37, 61041), (39, 61026), (41, 61020), (43, 61011), (69, 60828),

Gene: Courthouse\_90 Start: 54359, Stop: 54724, Start Num: 20

Candidate Starts for Courthouse\_90:

(Start: 20 @54359 has 42 MA's), (24, 54389), (61, 54653),

Gene: Dallas\_101 Start: 60389, Stop: 60748, Start Num: 20

Candidate Starts for Dallas\_101:

(1, 60068), (2, 60074), (3, 60104), (7, 60215), (8, 60224), (10, 60248), (Start: 20 @60389 has 42 MA's), (24, 60419), (32, 60500), (35, 60518), (38, 60533), (47, 60578), (51, 60593), (61, 60677),

Gene: DmpstrDiver\_101 Start: 59812, Stop: 60168, Start Num: 20

Candidate Starts for DmpstrDiver\_101:

(1, 59491), (3, 59527), (5, 59566), (7, 59638), (8, 59647), (10, 59671), (Start: 20 @59812 has 42 MA's), (24, 59842), (34, 59938), (42, 59977), (47, 59998), (52, 60022), (60, 60094), (61, 60097),

Gene: Dove\_88 Start: 55810, Stop: 56169, Start Num: 20

Candidate Starts for Dove\_88:

(1, 55489), (2, 55495), (3, 55525), (7, 55636), (8, 55645), (10, 55669), (Start: 20 @55810 has 42 MA's), (24, 55840), (32, 55921), (35, 55939), (38, 55954), (47, 55999), (51, 56014), (61, 56098),

Gene: Duke13\_96 Start: 58321, Stop: 58680, Start Num: 20

Candidate Starts for Duke13\_96:

(1, 58000), (2, 58006), (3, 58036), (7, 58147), (8, 58156), (10, 58180), (Start: 20 @58321 has 42 MA's), (24, 58351), (32, 58432), (35, 58450), (38, 58465), (47, 58510), (51, 58525), (61, 58609),

Gene: Dylan\_96 Start: 61072, Stop: 60626, Start Num: 13

Candidate Starts for Dylan\_96:

(Start: 13 @61072 has 22 MA's), (22, 61006), (24, 60991), (31, 60910), (34, 60886), (37, 60865), (39, 60850), (41, 60844), (70, 60646), (72, 60634),

Gene: Ejimix\_93 Start: 60108, Stop: 60467, Start Num: 20

Candidate Starts for Ejimix\_93:

(1, 59787), (2, 59793), (3, 59823), (7, 59934), (8, 59943), (10, 59967), (Start: 20 @60108 has 42 MA's), (24, 60138), (32, 60219), (35, 60237), (38, 60252), (47, 60297), (51, 60312), (61, 60396),

Gene: EricMillard\_93 Start: 59449, Stop: 59808, Start Num: 20

Candidate Starts for EricMillard\_93:

(1, 59128), (2, 59134), (3, 59164), (7, 59275), (8, 59284), (10, 59308), (Start: 20 @59449 has 42 MA's), (24, 59479), (32, 59560), (35, 59578), (38, 59593), (47, 59638), (51, 59653), (61, 59737),

Gene: Familton\_102 Start: 62844, Stop: 62413, Start Num: 13

Candidate Starts for Familton\_102:

(Start: 13 @62844 has 22 MA's), (22, 62778), (24, 62763), (31, 62682), (34, 62658), (37, 62637), (39, 62622), (41, 62616), (43, 62607),

Gene: Finch\_209 Start: 121773, Stop: 122186, Start Num: 18

Candidate Starts for Finch\_209:

(Start: 18 @121773 has 1 MA's), (29, 121878), (36, 121932), (62, 122109), (64, 122124),

Gene: Firecracker\_101 Start: 62707, Stop: 62264, Start Num: 13

Candidate Starts for Firecracker\_101:

(9, 62809), (Start: 13 @62707 has 22 MA's), (22, 62641), (24, 62626), (31, 62545), (34, 62521), (37, 62500), (39, 62485), (41, 62479), (43, 62470), (70, 62284), (72, 62272),

Gene: FoulBall\_97 Start: 62395, Stop: 61964, Start Num: 13

Candidate Starts for FoulBall\_97:

(Start: 13 @62395 has 22 MA's), (22, 62329), (24, 62314), (31, 62233), (34, 62209), (37, 62188), (39, 62173), (41, 62167), (43, 62158),

Gene: Gonephishing\_87 Start: 53920, Stop: 54285, Start Num: 20

Candidate Starts for Gonephishing\_87:

(Start: 20 @53920 has 42 MA's), (24, 53950), (57, 54184), (61, 54214),

Gene: Grayson\_233 Start: 113502, Stop: 113894, Start Num: 20

Candidate Starts for Grayson\_233:

(Start: 20 @113502 has 42 MA's), (23, 113520), (26, 113562), (27, 113568), (40, 113667), (41, 113670), (49, 113715), (71, 113871),

Gene: Halley\_101 Start: 60382, Stop: 60741, Start Num: 20

Candidate Starts for Halley\_101:

(1, 60061), (2, 60067), (3, 60097), (7, 60208), (8, 60217), (10, 60241), (Start: 20 @60382 has 42 MA's), (24, 60412), (32, 60493), (35, 60511), (38, 60526), (47, 60571), (51, 60586), (61, 60670),

Gene: Hannaconda\_86 Start: 53322, Stop: 53678, Start Num: 20

Candidate Starts for Hannaconda\_86:

(1, 53001), (3, 53037), (5, 53076), (7, 53148), (8, 53157), (10, 53181), (Start: 20 @53322 has 42 MA's), (24, 53352), (34, 53448), (42, 53487), (47, 53508), (52, 53532), (60, 53604), (61, 53607),

Gene: HokkenD\_88 Start: 58651, Stop: 59010, Start Num: 20

Candidate Starts for HokkenD\_88:

(1, 58330), (2, 58336), (3, 58366), (7, 58477), (8, 58486), (10, 58510), (Start: 20 @58651 has 42 MA's), (24, 58681), (32, 58762), (35, 58780), (38, 58795), (47, 58840), (51, 58855), (61, 58939),

Gene: Hughesyang\_99 Start: 60340, Stop: 60699, Start Num: 20

Candidate Starts for Hughesyang\_99:

(1, 60019), (2, 60025), (3, 60055), (7, 60166), (8, 60175), (10, 60199), (Start: 20 @60340 has 42 MA's), (24, 60370), (32, 60451), (35, 60469), (38, 60484), (47, 60529), (51, 60544), (61, 60628),

Gene: Idergollasper\_103 Start: 63392, Stop: 62961, Start Num: 13

Candidate Starts for Idergollasper\_103:

(Start: 13 @63392 has 22 MA's), (22, 63326), (24, 63311), (31, 63230), (34, 63206), (37, 63185), (39, 63170), (41, 63164), (43, 63155),

Gene: JangDynasty\_97 Start: 61738, Stop: 61307, Start Num: 13

Candidate Starts for JangDynasty\_97:

(9, 61840), (Start: 13 @61738 has 22 MA's), (22, 61672), (24, 61657), (31, 61576), (34, 61552), (37, 61531), (39, 61516), (41, 61510), (43, 61501),

Gene: JonJames\_92 Start: 56636, Stop: 56977, Start Num: 19

Candidate Starts for JonJames\_92:

(4, 56384), (12, 56564), (Start: 19 @56636 has 5 MA's), (21, 56648), (45, 56822), (50, 56846), (63, 56930),

Gene: JonJames\_93 Start: 56974, Stop: 57345, Start Num: 19

Candidate Starts for JonJames\_93:

(Start: 19 @56974 has 5 MA's), (30, 57079), (33, 57106), (53, 57211),

Gene: JuicyJay\_96 Start: 61516, Stop: 61875, Start Num: 20

Candidate Starts for JuicyJay\_96:

(1, 61195), (2, 61201), (3, 61231), (7, 61342), (8, 61351), (10, 61375), (Start: 20 @61516 has 42 MA's), (24, 61546), (32, 61627), (35, 61645), (38, 61660), (47, 61705), (51, 61720), (61, 61804),

Gene: Kalah2\_93 Start: 59675, Stop: 60034, Start Num: 20

Candidate Starts for Kalah2\_93:

(1, 59354), (2, 59360), (3, 59390), (7, 59501), (8, 59510), (10, 59534), (Start: 20 @59675 has 42 MA's), (24, 59705), (32, 59786), (35, 59804), (38, 59819), (47, 59864), (51, 59879), (61, 59963),

Gene: KashFlow\_90 Start: 54883, Stop: 55239, Start Num: 20

Candidate Starts for KashFlow\_90:

(1, 54562), (3, 54598), (5, 54637), (7, 54709), (8, 54718), (10, 54742), (Start: 20 @54883 has 42 MA's), (24, 54913), (34, 55009), (42, 55048), (47, 55069), (52, 55093), (60, 55165), (61, 55168),

Gene: Klein\_100 Start: 59382, Stop: 59741, Start Num: 20

Candidate Starts for Klein\_100:

(1, 59061), (2, 59067), (3, 59097), (7, 59208), (8, 59217), (10, 59241), (Start: 20 @59382 has 42 MA's), (24, 59412), (32, 59493), (35, 59511), (38, 59526), (47, 59571), (51, 59586), (61, 59670),

Gene: Krili\_103 Start: 62941, Stop: 62510, Start Num: 13

Candidate Starts for Krili\_103:

(Start: 13 @62941 has 22 MA's), (22, 62875), (24, 62860), (31, 62779), (34, 62755), (37, 62734), (39, 62719), (41, 62713), (43, 62704),



Gene: LittleE\_98 Start: 58455, Stop: 58820, Start Num: 20  
Candidate Starts for LittleE\_98:  
(Start: 20 @58455 has 42 MA's), (24, 58485), (56, 58692), (61, 58749),

Gene: Lucky2013\_92 Start: 54775, Stop: 55140, Start Num: 20  
Candidate Starts for Lucky2013\_92:  
(Start: 20 @54775 has 42 MA's), (24, 54805), (57, 55039), (61, 55069),

Gene: MadKillah\_104 Start: 62467, Stop: 62042, Start Num: 13  
Candidate Starts for MadKillah\_104:  
(Start: 13 @62467 has 22 MA's), (22, 62401), (24, 62386), (31, 62305), (34, 62281), (37, 62260), (39, 62245), (41, 62239), (43, 62230), (69, 62050),

Gene: MiaZeal\_95 Start: 55431, Stop: 55796, Start Num: 20  
Candidate Starts for MiaZeal\_95:  
(Start: 20 @55431 has 42 MA's), (24, 55461), (61, 55725),

Gene: Minerva\_99 Start: 60327, Stop: 60686, Start Num: 20  
Candidate Starts for Minerva\_99:  
(1, 60006), (2, 60012), (3, 60042), (7, 60153), (8, 60162), (10, 60186), (Start: 20 @60327 has 42 MA's), (24, 60357), (32, 60438), (35, 60456), (38, 60471), (47, 60516), (51, 60531), (61, 60615),

Gene: ModicumRichard\_63 Start: 43300, Stop: 43671, Start Num: 16  
Candidate Starts for ModicumRichard\_63:  
(6, 43108), (16, 43300), (22, 43333), (31, 43429), (48, 43531), (66, 43660),

Gene: Mori\_101 Start: 62970, Stop: 62539, Start Num: 13  
Candidate Starts for Mori\_101:  
(Start: 13 @62970 has 22 MA's), (22, 62904), (24, 62889), (31, 62808), (34, 62784), (37, 62763), (39, 62748), (41, 62742), (43, 62733),

Gene: Murai\_101 Start: 62818, Stop: 62387, Start Num: 13  
Candidate Starts for Murai\_101:  
(Start: 13 @62818 has 22 MA's), (22, 62752), (24, 62737), (31, 62656), (34, 62632), (37, 62611), (39, 62596), (41, 62590), (43, 62581),

Gene: NiebruSaylor\_101 Start: 62085, Stop: 61654, Start Num: 13  
Candidate Starts for NiebruSaylor\_101:  
(Start: 13 @62085 has 22 MA's), (22, 62019), (24, 62004), (31, 61923), (34, 61899), (37, 61878), (39, 61863), (41, 61857), (43, 61848),

Gene: NihilNomen\_101 Start: 60468, Stop: 60827, Start Num: 20  
Candidate Starts for NihilNomen\_101:  
(1, 60147), (2, 60153), (3, 60183), (7, 60294), (8, 60303), (10, 60327), (Start: 20 @60468 has 42 MA's), (24, 60498), (32, 60579), (35, 60597), (38, 60612), (47, 60657), (51, 60672), (61, 60756),

Gene: ObLaDi\_63 Start: 43248, Stop: 43619, Start Num: 17  
Candidate Starts for ObLaDi\_63:  
(6, 43053), (Start: 17 @43248 has 1 MA's), (22, 43281), (31, 43377), (48, 43479), (66, 43608),

Gene: Odette\_99 Start: 59511, Stop: 59870, Start Num: 20  
Candidate Starts for Odette\_99:

(1, 59190), (2, 59196), (3, 59226), (7, 59337), (8, 59346), (10, 59370), (Start: 20 @59511 has 42 MA's), (24, 59541), (32, 59622), (35, 59640), (38, 59655), (47, 59700), (51, 59715), (61, 59799),

Gene: Omega\_104 Start: 60228, Stop: 60593, Start Num: 20

Candidate Starts for Omega\_104:

(Start: 20 @60228 has 42 MA's), (24, 60258), (56, 60465), (61, 60522),

Gene: Optimus\_93 Start: 59002, Stop: 59361, Start Num: 20

Candidate Starts for Optimus\_93:

(1, 58681), (2, 58687), (3, 58717), (7, 58828), (8, 58837), (10, 58861), (Start: 20 @59002 has 42 MA's), (24, 59032), (32, 59113), (35, 59131), (38, 59146), (47, 59191), (51, 59206), (61, 59290),

Gene: Peregrin\_227 Start: 113498, Stop: 113893, Start Num: 20

Candidate Starts for Peregrin\_227:

(Start: 20 @113498 has 42 MA's), (23, 113516), (26, 113558), (27, 113564), (40, 113663), (49, 113711), (71, 113870),

Gene: Phoebus\_101 Start: 61651, Stop: 62010, Start Num: 20

Candidate Starts for Phoebus\_101:

(1, 61330), (2, 61336), (3, 61366), (7, 61477), (8, 61486), (10, 61510), (Start: 20 @61651 has 42 MA's), (24, 61681), (32, 61762), (35, 61780), (38, 61795), (47, 61840), (51, 61855), (61, 61939),

Gene: Porcelain\_93 Start: 55431, Stop: 55796, Start Num: 20

Candidate Starts for Porcelain\_93:

(Start: 20 @55431 has 42 MA's), (24, 55461), (61, 55725),

Gene: Pound\_91 Start: 59679, Stop: 60038, Start Num: 20

Candidate Starts for Pound\_91:

(1, 59358), (2, 59364), (3, 59394), (7, 59505), (8, 59514), (10, 59538), (Start: 20 @59679 has 42 MA's), (24, 59709), (32, 59790), (35, 59808), (38, 59823), (47, 59868), (51, 59883), (61, 59967),

Gene: Redno2\_91 Start: 56202, Stop: 56561, Start Num: 20

Candidate Starts for Redno2\_91:

(1, 55881), (2, 55887), (3, 55917), (7, 56028), (8, 56037), (10, 56061), (Start: 20 @56202 has 42 MA's), (24, 56232), (32, 56313), (35, 56331), (38, 56346), (47, 56391), (51, 56406), (61, 56490),

Gene: Ryadel\_105 Start: 63803, Stop: 63378, Start Num: 13

Candidate Starts for Ryadel\_105:

(Start: 13 @63803 has 22 MA's), (22, 63737), (24, 63722), (31, 63641), (34, 63617), (37, 63596), (39, 63581), (41, 63575), (43, 63566), (69, 63386),

Gene: Schatzie\_94 Start: 59258, Stop: 59617, Start Num: 20

Candidate Starts for Schatzie\_94:

(1, 58937), (2, 58943), (3, 58973), (7, 59084), (8, 59093), (10, 59117), (Start: 20 @59258 has 42 MA's), (24, 59288), (32, 59369), (35, 59387), (38, 59402), (47, 59447), (51, 59462), (61, 59546),

Gene: SchoolBus\_100 Start: 62561, Stop: 62130, Start Num: 13

Candidate Starts for SchoolBus\_100:

(Start: 13 @62561 has 22 MA's), (22, 62495), (24, 62480), (31, 62399), (34, 62375), (37, 62354), (39, 62339), (41, 62333), (43, 62324),

Gene: Schuy\_98 Start: 62180, Stop: 61749, Start Num: 13

Candidate Starts for Schuy\_98:

(Start: 13 @62180 has 22 MA's), (22, 62114), (24, 62099), (31, 62018), (34, 61994), (37, 61973), (39, 61958), (41, 61952), (43, 61943),

Gene: Shida\_103 Start: 63065, Stop: 62631, Start Num: 13

Candidate Starts for Shida\_103:

(9, 63167), (Start: 13 @63065 has 22 MA's), (22, 62999), (24, 62984), (31, 62903), (34, 62879), (37, 62858), (39, 62843), (41, 62837), (43, 62828),

Gene: Smooch\_100 Start: 62946, Stop: 62518, Start Num: 13

Candidate Starts for Smooch\_100:

(9, 63048), (Start: 13 @62946 has 22 MA's), (22, 62880), (24, 62865), (31, 62784), (34, 62760), (37, 62739), (39, 62724), (41, 62718), (43, 62709), (69, 62526),

Gene: Squint\_93 Start: 55550, Stop: 55915, Start Num: 20

Candidate Starts for Squint\_93:

(Start: 20 @55550 has 42 MA's), (24, 55580), (61, 55844),

Gene: Superphikiman\_92 Start: 54641, Stop: 55006, Start Num: 20

Candidate Starts for Superphikiman\_92:

(Start: 20 @54641 has 42 MA's), (24, 54671), (61, 54935),

Gene: TelAviv\_98 Start: 62790, Stop: 62356, Start Num: 13

Candidate Starts for TelAviv\_98:

(9, 62892), (11, 62868), (Start: 13 @62790 has 22 MA's), (22, 62724), (24, 62709), (31, 62628), (34, 62604), (37, 62583), (39, 62568), (41, 62562), (43, 62553),

Gene: Thibault\_84 Start: 55167, Stop: 55523, Start Num: 20

Candidate Starts for Thibault\_84:

(1, 54846), (2, 54852), (3, 54882), (7, 54993), (8, 55002), (10, 55026), (Start: 20 @55167 has 42 MA's), (24, 55197), (41, 55326), (42, 55332), (51, 55368), (53, 55380), (54, 55383), (60, 55449), (61, 55452),

Gene: ThreeRngTarjay\_96 Start: 60543, Stop: 60902, Start Num: 20

Candidate Starts for ThreeRngTarjay\_96:

(1, 60222), (2, 60228), (3, 60258), (7, 60369), (8, 60378), (10, 60402), (Start: 20 @60543 has 42 MA's), (24, 60573), (32, 60654), (35, 60672), (38, 60687), (47, 60732), (51, 60747), (61, 60831),

Gene: Trina\_185 Start: 102486, Stop: 102851, Start Num: 20

Candidate Starts for Trina\_185:

(Start: 20 @102486 has 42 MA's), (28, 102555), (33, 102615), (44, 102672), (46, 102687), (48, 102699), (55, 102732), (58, 102771), (65, 102822), (67, 102837),

Gene: VanLee\_105 Start: 56038, Stop: 56412, Start Num: 19

Candidate Starts for VanLee\_105:

(14, 56002), (15, 56008), (Start: 19 @56038 has 5 MA's), (22, 56056), (25, 56098), (59, 56335), (68, 56401),

Gene: Vorrrps\_101 Start: 62971, Stop: 62540, Start Num: 13

Candidate Starts for Vorrrps\_101:

(Start: 13 @62971 has 22 MA's), (22, 62905), (24, 62890), (31, 62809), (34, 62785), (37, 62764), (39, 62749), (41, 62743), (43, 62734),

Gene: Wanda\_103 Start: 59659, Stop: 60018, Start Num: 20

Candidate Starts for Wanda\_103:

(1, 59338), (2, 59344), (3, 59374), (7, 59485), (8, 59494), (10, 59518), (Start: 20 @59659 has 42 MA's), (24, 59689), (32, 59770), (35, 59788), (38, 59803), (47, 59848), (51, 59863), (61, 59947),

Gene: Wildflower\_95 Start: 60971, Stop: 60525, Start Num: 13

Candidate Starts for Wildflower\_95:

(Start: 13 @60971 has 22 MA's), (22, 60905), (24, 60890), (31, 60809), (34, 60785), (37, 60764), (39, 60749), (41, 60743), (43, 60734), (70, 60545), (72, 60533),

Gene: Winget\_101 Start: 62865, Stop: 62434, Start Num: 13

Candidate Starts for Winget\_101:

(Start: 13 @62865 has 22 MA's), (22, 62799), (24, 62784), (31, 62703), (34, 62679), (37, 62658), (39, 62643), (41, 62637), (43, 62628),

Gene: Yeet\_92 Start: 58760, Stop: 59119, Start Num: 20

Candidate Starts for Yeet\_92:

(1, 58439), (2, 58445), (3, 58475), (7, 58586), (8, 58595), (10, 58619), (Start: 20 @58760 has 42 MA's), (24, 58790), (32, 58871), (35, 58889), (38, 58904), (47, 58949), (51, 58964), (61, 59048),

Gene: YungJamal\_100 Start: 62022, Stop: 61594, Start Num: 13

Candidate Starts for YungJamal\_100:

(Start: 13 @62022 has 22 MA's), (22, 61956), (24, 61941), (31, 61860), (34, 61836), (37, 61815), (39, 61800), (41, 61794), (43, 61785), (69, 61602),

Gene: Yvonnetastic\_90 Start: 54178, Stop: 54519, Start Num: 19

Candidate Starts for Yvonnetastic\_90:

(4, 53926), (12, 54106), (Start: 19 @54178 has 5 MA's), (21, 54190), (45, 54364), (50, 54388), (63, 54472),

Gene: Yvonnetastic\_91 Start: 54516, Stop: 54887, Start Num: 19

Candidate Starts for Yvonnetastic\_91:

(Start: 19 @54516 has 5 MA's), (30, 54621), (33, 54648), (53, 54753),

Gene: Zakhe101\_96 Start: 61076, Stop: 60630, Start Num: 13

Candidate Starts for Zakhe101\_96:

(Start: 13 @61076 has 22 MA's), (22, 61010), (24, 60995), (31, 60914), (34, 60890), (37, 60869), (39, 60854), (41, 60848), (70, 60650), (72, 60638),

Gene: Zelink\_96 Start: 60854, Stop: 61213, Start Num: 20

Candidate Starts for Zelink\_96:

(1, 60533), (2, 60539), (3, 60569), (7, 60680), (8, 60689), (10, 60713), (Start: 20 @60854 has 42 MA's), (24, 60884), (32, 60965), (35, 60983), (38, 60998), (47, 61043), (51, 61058), (61, 61142),