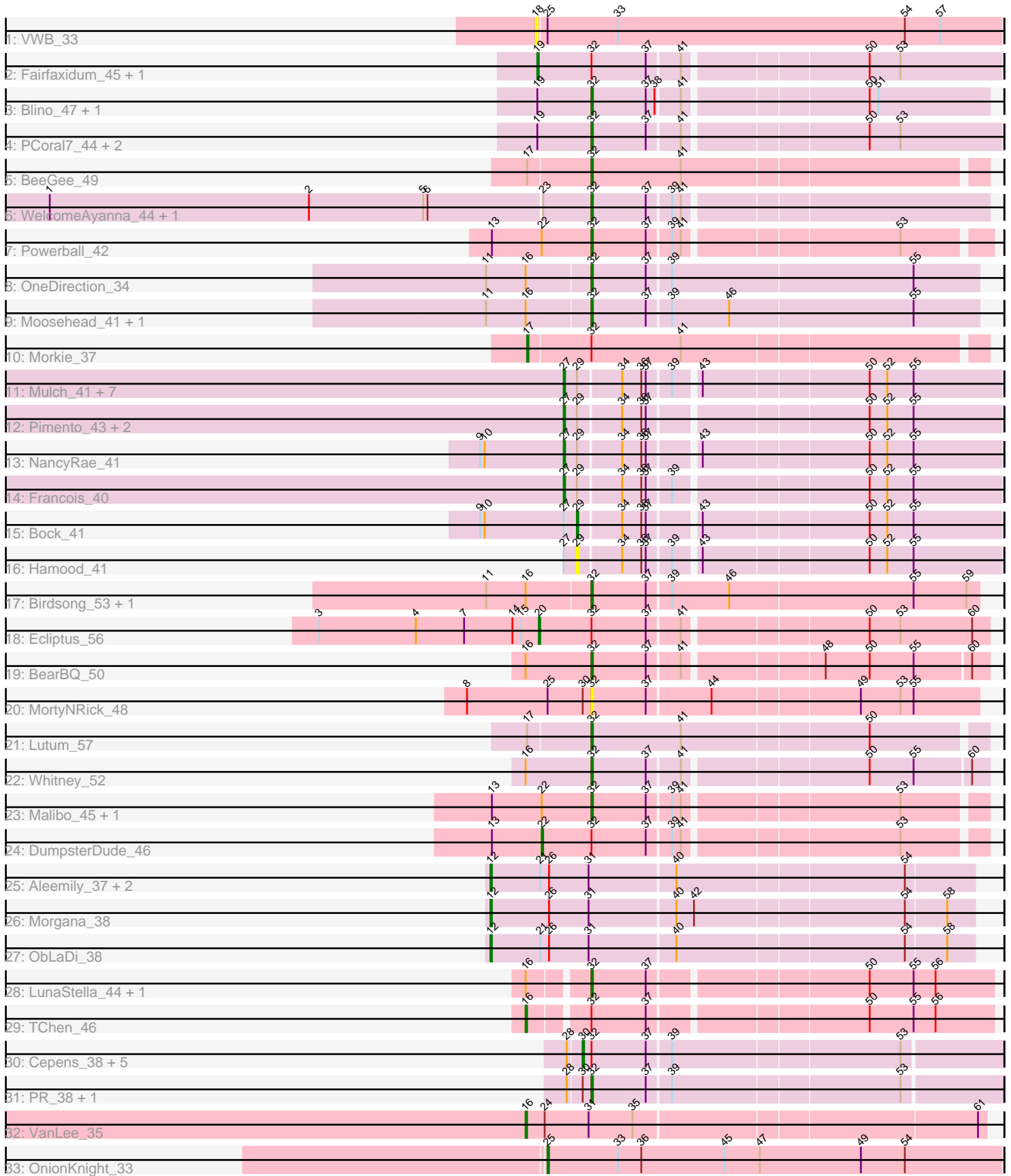


# Pham 171468



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 171468 Report

This analysis was run 07/10/24 on database version 566.

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 171468 has 59 members, 5 are drafts.

Phages represented in each track:

- Track 1 : VWB\_33
- Track 2 : Fairfaxidum\_45, Toast\_44
- Track 3 : Blino\_47, CarolAnn\_46
- Track 4 : PCoral7\_44, PrincePatrick\_43, William\_45
- Track 5 : BeeGee\_49
- Track 6 : WelcomeAyanna\_44, ThankyouJordi\_44
- Track 7 : Powerball\_42
- Track 8 : OneDirection\_34
- Track 9 : Moosehead\_41, Phabuloso\_54
- Track 10 : Morkie\_37
- Track 11 : Mulch\_41, Ayotoya\_41, GrandSlam\_41, Nadeem\_41, WheatThin\_41, Parada\_41, Brylie\_41, Chop\_41
- Track 12 : Pimento\_43, BetterKatz\_41, DelRio\_42
- Track 13 : NancyRae\_41
- Track 14 : Francois\_40
- Track 15 : Bock\_41
- Track 16 : Hamood\_41
- Track 17 : Birdsong\_53, Asapag\_53
- Track 18 : Ecliptus\_56
- Track 19 : BearBQ\_50
- Track 20 : MortyNRick\_48
- Track 21 : Lutum\_57
- Track 22 : Whitney\_52
- Track 23 : Malibo\_45, Ruthy\_44
- Track 24 : DumpsterDude\_46
- Track 25 : Aleemily\_37, Cafasso\_38, ModicumRichard\_38
- Track 26 : Morgana\_38
- Track 27 : ObLaDi\_38
- Track 28 : LunaStella\_44, MooMoo\_43
- Track 29 : TChen\_46
- Track 30 : Cepens\_38, Argie\_39, Jeon\_38, GodPhather\_39, Taptic\_38, Megabear\_38
- Track 31 : PR\_38, D12\_37

- Track 32 : VanLee\_35
- Track 33 : OnionKnight\_33

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

The start number called the most often in the published annotations is 32, it was called in 23 of the 54 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Asapag\_53, BearBQ\_50, BeeGee\_49, Birdsong\_53, Blino\_47, CarolAnn\_46, D12\_37, LunaStella\_44, Lutum\_57, Malibo\_45, MooMoo\_43, Moosehead\_41, MortyNRick\_48, OneDirection\_34, PCoral7\_44, PR\_38, Phabuloso\_54, Powerball\_42, PrincePatrick\_43, Ruthy\_44, ThankyouJordi\_44, WelcomeAyanna\_44, Whitney\_52, William\_45,

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

- Argie\_39, Cepens\_38, DumpsterDude\_46, Ecliptus\_56, Fairfaxidum\_45, GodPhather\_39, Jeon\_38, Megabear\_38, Morkie\_37, TChen\_46, Taptic\_38, Toast\_44,

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

- Aleemily\_37, Ayotoya\_41, BetterKatz\_41, Bock\_41, Brylie\_41, Cafasso\_38, Chop\_41, DelRio\_42, Francois\_40, GrandSlam\_41, Hamood\_41, ModicumRichard\_38, Morgana\_38, Mulch\_41, Nadeem\_41, NancyRae\_41, ObLaDi\_38, OnionKnight\_33, Parada\_41, Pimento\_43, VWB\_33, VanLee\_35, WheatThin\_41,

**Summary by start number:**

Start 12:

- Found in 5 of 59 ( 8.5% ) of genes in pham
- Manual Annotations of this start: 4 of 54
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aleemily\_37 (DZ), Cafasso\_38 (DZ), ModicumRichard\_38 (DZ), Morgana\_38 (DZ), ObLaDi\_38 (DZ),

Start 16:

- Found in 11 of 59 ( 18.6% ) of genes in pham
- Manual Annotations of this start: 2 of 54
- Called 18.2% of time when present
- Phage (with cluster) where this start called: TChen\_46 (F4), VanLee\_35 (singleton),

Start 17:

- Found in 3 of 59 ( 5.1% ) of genes in pham
- Manual Annotations of this start: 1 of 54
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Morkie\_37 (DH),

Start 18:

- Found in 1 of 59 ( 1.7% ) of genes in pham

- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: VWB\_33 (BA),

Start 19:

- Found in 7 of 59 ( 11.9% ) of genes in pham
- Manual Annotations of this start: 2 of 54
- Called 28.6% of time when present
- Phage (with cluster) where this start called: Fairfaxidum\_45 (CV), Toast\_44 (CV),

Start 20:

- Found in 1 of 59 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 1 of 54
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ecliptus\_56 (DN),

Start 22:

- Found in 4 of 59 ( 6.8% ) of genes in pham
- Manual Annotations of this start: 1 of 54
- Called 25.0% of time when present
- Phage (with cluster) where this start called: DumpsterDude\_46 (DW),

Start 25:

- Found in 3 of 59 ( 5.1% ) of genes in pham
- Manual Annotations of this start: 1 of 54
- Called 33.3% of time when present
- Phage (with cluster) where this start called: OnionKnight\_33 (singleton),

Start 27:

- Found in 15 of 59 ( 25.4% ) of genes in pham
- Manual Annotations of this start: 12 of 54
- Called 86.7% of time when present
- Phage (with cluster) where this start called: Ayotoya\_41 (DI), BetterKatz\_41 (DI), Brylie\_41 (DI), Chop\_41 (DI), DelRio\_42 (DI), Francois\_40 (DI), GrandSlam\_41 (DI), Mulch\_41 (DI), Nadeem\_41 (DI), NancyRae\_41 (DI), Parada\_41 (DI), Pimento\_43 (DI), WheatThin\_41 (DI),

Start 29:

- Found in 15 of 59 ( 25.4% ) of genes in pham
- Manual Annotations of this start: 1 of 54
- Called 13.3% of time when present
- Phage (with cluster) where this start called: Bock\_41 (DI), Hamood\_41 (DI),

Start 30:

- Found in 9 of 59 ( 15.3% ) of genes in pham
- Manual Annotations of this start: 6 of 54
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Argie\_39 (W), Cepens\_38 (W), GodPhather\_39 (W), Jeon\_38 (W), Megabear\_38 (W), Taptic\_38 (W),

Start 32:

- Found in 36 of 59 ( 61.0% ) of genes in pham
- Manual Annotations of this start: 23 of 54

- Called 66.7% of time when present
- Phage (with cluster) where this start called: Asapag\_53 (DN1), BearBQ\_50 (DN), BeeGee\_49 (CY), Birdsong\_53 (DN), Blino\_47 (CV), CarolAnn\_46 (CV), D12\_37 (W), LunaStella\_44 (F4), Lutum\_57 (DN1), Malibo\_45 (DW), MooMoo\_43 (singleton), Moosehead\_41 (CZ6), MortyNRick\_48 (DN), OneDirection\_34 (CZ6), PCoral7\_44 (CV), PR\_38 (W), Phabuloso\_54 (DN1), Powerball\_42 (CZ4), PrincePatrick\_43 (CV), Ruthy\_44 (DW), ThankyouJordi\_44 (CZ1), WelcomeAyanna\_44 (CZ1), Whitney\_52 (DN1), William\_45 (CV),

### **Summary by clusters:**

There are 15 clusters represented in this pham: DN, singleton, F4, BA, DH, DI, CZ1, CZ6, CZ4, CY, DZ, W, DW, DN1, CV,

Info for manual annotations of cluster CV:

- Start number 19 was manually annotated 2 times for cluster CV.
- Start number 32 was manually annotated 5 times for cluster CV.

Info for manual annotations of cluster CY:

- Start number 32 was manually annotated 1 time for cluster CY.

Info for manual annotations of cluster CZ1:

- Start number 32 was manually annotated 2 times for cluster CZ1.

Info for manual annotations of cluster CZ4:

- Start number 32 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster CZ6:

- Start number 32 was manually annotated 2 times for cluster CZ6.

Info for manual annotations of cluster DH:

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

Info for manual annotations of cluster DI:

- Start number 27 was manually annotated 12 times for cluster DI.
- Start number 29 was manually annotated 1 time for cluster DI.

Info for manual annotations of cluster DN:

- Start number 20 was manually annotated 1 time for cluster DN.
- Start number 32 was manually annotated 2 times for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 32 was manually annotated 4 times for cluster DN1.

Info for manual annotations of cluster DW:

- Start number 22 was manually annotated 1 time for cluster DW.
- Start number 32 was manually annotated 2 times for cluster DW.

Info for manual annotations of cluster DZ:

- Start number 12 was manually annotated 4 times for cluster DZ.

Info for manual annotations of cluster F4:

- Start number 16 was manually annotated 1 time for cluster F4.
- Start number 32 was manually annotated 1 time for cluster F4.

Info for manual annotations of cluster W:

- Start number 30 was manually annotated 6 times for cluster W.
- Start number 32 was manually annotated 2 times for cluster W.

### **Gene Information:**

Gene: Aleemily\_37 Start: 31413, Stop: 31730, Start Num: 12

Candidate Starts for Aleemily\_37:

(Start: 12 @31413 has 4 MA's), (21, 31446), (26, 31452), (31, 31479), (40, 31536), (54, 31686),

Gene: Argie\_39 Start: 38767, Stop: 39039, Start Num: 30

Candidate Starts for Argie\_39:

(28, 38758), (Start: 30 @38767 has 6 MA's), (Start: 32 @38773 has 23 MA's), (37, 38809), (39, 38824), (53, 38974),

Gene: Asapag\_53 Start: 35734, Stop: 35991, Start Num: 32

Candidate Starts for Asapag\_53:

(11, 35665), (Start: 16 @35692 has 2 MA's), (Start: 32 @35734 has 23 MA's), (37, 35770), (39, 35785), (46, 35824), (55, 35947), (59, 35983),

Gene: Ayotoya\_41 Start: 33075, Stop: 33353, Start Num: 27

Candidate Starts for Ayotoya\_41:

(Start: 27 @33075 has 12 MA's), (Start: 29 @33084 has 1 MA's), (34, 33111), (36, 33123), (37, 33126), (39, 33141), (43, 33156), (50, 33264), (52, 33276), (55, 33294),

Gene: BearBQ\_50 Start: 36850, Stop: 37101, Start Num: 32

Candidate Starts for BearBQ\_50:

(Start: 16 @36805 has 2 MA's), (Start: 32 @36850 has 23 MA's), (37, 36886), (41, 36907), (48, 36994), (50, 37024), (55, 37054), (60, 37090),

Gene: BeeGee\_49 Start: 36014, Stop: 36271, Start Num: 32

Candidate Starts for BeeGee\_49:

(Start: 17 @35972 has 1 MA's), (Start: 32 @36014 has 23 MA's), (41, 36074),

Gene: BetterKatz\_41 Start: 32601, Stop: 32837, Start Num: 27

Candidate Starts for BetterKatz\_41:

(Start: 27 @32601 has 12 MA's), (Start: 29 @32610 has 1 MA's), (34, 32637), (36, 32649), (37, 32652), (50, 32790), (52, 32802), (55, 32820),

Gene: Birdsong\_53 Start: 35955, Stop: 36212, Start Num: 32

Candidate Starts for Birdsong\_53:

(11, 35886), (Start: 16 @35913 has 2 MA's), (Start: 32 @35955 has 23 MA's), (37, 35991), (39, 36006), (46, 36045), (55, 36168), (59, 36204),

Gene: Blino\_47 Start: 38067, Stop: 38321, Start Num: 32

Candidate Starts for Blino\_47:

(Start: 19 @38031 has 2 MA's), (Start: 32 @38067 has 23 MA's), (37, 38103), (38, 38109), (41, 38124), (50, 38241), (51, 38247),

Gene: Bock\_41 Start: 32304, Stop: 32573, Start Num: 29

Candidate Starts for Bock\_41:

(9, 32238), (10, 32241), (Start: 27 @32295 has 12 MA's), (Start: 29 @32304 has 1 MA's), (34, 32331), (36, 32343), (37, 32346), (43, 32376), (50, 32484), (52, 32496), (55, 32514),

Gene: Brylie\_41 Start: 32342, Stop: 32620, Start Num: 27

Candidate Starts for Brylie\_41:

(Start: 27 @32342 has 12 MA's), (Start: 29 @32351 has 1 MA's), (34, 32378), (36, 32390), (37, 32393), (39, 32408), (43, 32423), (50, 32531), (52, 32543), (55, 32561),

Gene: Cafasso\_38 Start: 31987, Stop: 32304, Start Num: 12

Candidate Starts for Cafasso\_38:

(Start: 12 @31987 has 4 MA's), (21, 32020), (26, 32026), (31, 32053), (40, 32110), (54, 32260),

Gene: CarolAnn\_46 Start: 38066, Stop: 38320, Start Num: 32

Candidate Starts for CarolAnn\_46:

(Start: 19 @38030 has 2 MA's), (Start: 32 @38066 has 23 MA's), (37, 38102), (38, 38108), (41, 38123), (50, 38240), (51, 38246),

Gene: Cepens\_38 Start: 38482, Stop: 38754, Start Num: 30

Candidate Starts for Cepens\_38:

(28, 38473), (Start: 30 @38482 has 6 MA's), (Start: 32 @38488 has 23 MA's), (37, 38524), (39, 38539), (53, 38689),

Gene: Chop\_41 Start: 32822, Stop: 33100, Start Num: 27

Candidate Starts for Chop\_41:

(Start: 27 @32822 has 12 MA's), (Start: 29 @32831 has 1 MA's), (34, 32858), (36, 32870), (37, 32873), (39, 32888), (43, 32903), (50, 33011), (52, 33023), (55, 33041),

Gene: D12\_37 Start: 39036, Stop: 39302, Start Num: 32

Candidate Starts for D12\_37:

(28, 39021), (Start: 30 @39030 has 6 MA's), (Start: 32 @39036 has 23 MA's), (37, 39072), (39, 39087), (53, 39237),

Gene: DelRio\_42 Start: 33530, Stop: 33808, Start Num: 27

Candidate Starts for DelRio\_42:

(Start: 27 @33530 has 12 MA's), (Start: 29 @33539 has 1 MA's), (34, 33566), (36, 33578), (37, 33581), (50, 33719), (52, 33731), (55, 33749),

Gene: DumpsterDude\_46 Start: 38205, Stop: 38486, Start Num: 22

Candidate Starts for DumpsterDude\_46:

(13, 38172), (Start: 22 @38205 has 1 MA's), (Start: 32 @38238 has 23 MA's), (37, 38274), (39, 38289), (41, 38295), (53, 38433),

Gene: Ecliptus\_56 Start: 37774, Stop: 38064, Start Num: 20

Candidate Starts for Ecliptus\_56:

(3, 37624), (4, 37690), (7, 37723), (14, 37756), (15, 37762), (Start: 20 @37774 has 1 MA's), (Start: 32 @37810 has 23 MA's), (37, 37846), (41, 37867), (50, 37984), (53, 38005), (60, 38053),

Gene: Fairfaxidum\_45 Start: 35457, Stop: 35756, Start Num: 19

Candidate Starts for Fairfaxidum\_45:

(Start: 19 @35457 has 2 MA's), (Start: 32 @35493 has 23 MA's), (37, 35529), (41, 35550), (50, 35667), (53, 35688),

Gene: Francois\_40 Start: 32426, Stop: 32704, Start Num: 27

Candidate Starts for Francois\_40:

(Start: 27 @32426 has 12 MA's), (Start: 29 @32435 has 1 MA's), (34, 32462), (36, 32474), (37, 32477), (39, 32492), (50, 32615), (52, 32627), (55, 32645),

Gene: GodPhather\_39 Start: 39246, Stop: 39518, Start Num: 30

Candidate Starts for GodPhather\_39:

(28, 39237), (Start: 30 @39246 has 6 MA's), (Start: 32 @39252 has 23 MA's), (37, 39288), (39, 39303), (53, 39453),

Gene: GrandSlam\_41 Start: 32822, Stop: 33100, Start Num: 27

Candidate Starts for GrandSlam\_41:

(Start: 27 @32822 has 12 MA's), (Start: 29 @32831 has 1 MA's), (34, 32858), (36, 32870), (37, 32873), (39, 32888), (43, 32903), (50, 33011), (52, 33023), (55, 33041),

Gene: Hamood\_41 Start: 32831, Stop: 33100, Start Num: 29

Candidate Starts for Hamood\_41:

(Start: 27 @32822 has 12 MA's), (Start: 29 @32831 has 1 MA's), (34, 32858), (36, 32870), (37, 32873), (39, 32888), (43, 32903), (50, 33011), (52, 33023), (55, 33041),

Gene: Jeon\_38 Start: 38988, Stop: 39260, Start Num: 30

Candidate Starts for Jeon\_38:

(28, 38979), (Start: 30 @38988 has 6 MA's), (Start: 32 @38994 has 23 MA's), (37, 39030), (39, 39045), (53, 39195),

Gene: LunaStella\_44 Start: 33802, Stop: 34059, Start Num: 32

Candidate Starts for LunaStella\_44:

(Start: 16 @33766 has 2 MA's), (Start: 32 @33802 has 23 MA's), (37, 33838), (50, 33976), (55, 34006), (56, 34021),

Gene: Lutum\_57 Start: 36995, Stop: 37252, Start Num: 32

Candidate Starts for Lutum\_57:

(Start: 17 @36953 has 1 MA's), (Start: 32 @36995 has 23 MA's), (41, 37055), (50, 37178),

Gene: Malibo\_45 Start: 35237, Stop: 35485, Start Num: 32

Candidate Starts for Malibo\_45:

(13, 35171), (Start: 22 @35204 has 1 MA's), (Start: 32 @35237 has 23 MA's), (37, 35273), (39, 35288), (41, 35294), (53, 35432),

Gene: Megabear\_38 Start: 38403, Stop: 38675, Start Num: 30

Candidate Starts for Megabear\_38:

(28, 38394), (Start: 30 @38403 has 6 MA's), (Start: 32 @38409 has 23 MA's), (37, 38445), (39, 38460), (53, 38610),

Gene: ModicumRichard\_38 Start: 31986, Stop: 32303, Start Num: 12

Candidate Starts for ModicumRichard\_38:

(Start: 12 @31986 has 4 MA's), (21, 32019), (26, 32025), (31, 32052), (40, 32109), (54, 32259),

Gene: MooMoo\_43 Start: 34078, Stop: 34335, Start Num: 32

Candidate Starts for MooMoo\_43:



(Start: 16 @34042 has 2 MA's), (Start: 32 @34078 has 23 MA's), (37, 34114), (50, 34252), (55, 34282), (56, 34297),

Gene: Moosehead\_41 Start: 28984, Stop: 29241, Start Num: 32

Candidate Starts for Moosehead\_41:

(11, 28915), (Start: 16 @28942 has 2 MA's), (Start: 32 @28984 has 23 MA's), (37, 29020), (39, 29035), (46, 29074), (55, 29197),

Gene: Morgana\_38 Start: 31938, Stop: 32255, Start Num: 12

Candidate Starts for Morgana\_38:

(Start: 12 @31938 has 4 MA's), (26, 31977), (31, 32004), (40, 32061), (42, 32073), (54, 32211), (58, 32238),

Gene: Morkie\_37 Start: 28817, Stop: 29116, Start Num: 17

Candidate Starts for Morkie\_37:

(Start: 17 @28817 has 1 MA's), (Start: 32 @28859 has 23 MA's), (41, 28919),

Gene: MortyNRick\_48 Start: 36007, Stop: 36261, Start Num: 32

Candidate Starts for MortyNRick\_48:

(8, 35923), (Start: 25 @35977 has 1 MA's), (Start: 30 @36001 has 6 MA's), (Start: 32 @36007 has 23 MA's), (37, 36043), (44, 36085), (49, 36181), (53, 36208), (55, 36217),

Gene: Mulch\_41 Start: 32342, Stop: 32620, Start Num: 27

Candidate Starts for Mulch\_41:

(Start: 27 @32342 has 12 MA's), (Start: 29 @32351 has 1 MA's), (34, 32378), (36, 32390), (37, 32393), (39, 32408), (43, 32423), (50, 32531), (52, 32543), (55, 32561),

Gene: Nadeem\_41 Start: 32342, Stop: 32620, Start Num: 27

Candidate Starts for Nadeem\_41:

(Start: 27 @32342 has 12 MA's), (Start: 29 @32351 has 1 MA's), (34, 32378), (36, 32390), (37, 32393), (39, 32408), (43, 32423), (50, 32531), (52, 32543), (55, 32561),

Gene: NancyRae\_41 Start: 32352, Stop: 32630, Start Num: 27

Candidate Starts for NancyRae\_41:

(9, 32295), (10, 32298), (Start: 27 @32352 has 12 MA's), (Start: 29 @32361 has 1 MA's), (34, 32388), (36, 32400), (37, 32403), (43, 32433), (50, 32541), (52, 32553), (55, 32571),

Gene: ObLaDi\_38 Start: 31970, Stop: 32287, Start Num: 12

Candidate Starts for ObLaDi\_38:

(Start: 12 @31970 has 4 MA's), (21, 32003), (26, 32009), (31, 32036), (40, 32093), (54, 32243), (58, 32270),

Gene: OneDirection\_34 Start: 27370, Stop: 27627, Start Num: 32

Candidate Starts for OneDirection\_34:

(11, 27301), (Start: 16 @27328 has 2 MA's), (Start: 32 @27370 has 23 MA's), (37, 27406), (39, 27421), (55, 27583),

Gene: OnionKnight\_33 Start: 25282, Stop: 25590, Start Num: 25

Candidate Starts for OnionKnight\_33:

(Start: 25 @25282 has 1 MA's), (33, 25330), (36, 25345), (45, 25402), (47, 25426), (49, 25495), (54, 25525),

Gene: PCoral7\_44 Start: 34911, Stop: 35174, Start Num: 32

Candidate Starts for PCoral7\_44:

(Start: 19 @34875 has 2 MA's), (Start: 32 @34911 has 23 MA's), (37, 34947), (41, 34968), (50, 35085), (53, 35106),

Gene: PR\_38 Start: 39013, Stop: 39279, Start Num: 32

Candidate Starts for PR\_38:

(28, 38998), (Start: 30 @39007 has 6 MA's), (Start: 32 @39013 has 23 MA's), (37, 39049), (39, 39064), (53, 39214),

Gene: Parada\_41 Start: 32342, Stop: 32620, Start Num: 27

Candidate Starts for Parada\_41:

(Start: 27 @32342 has 12 MA's), (Start: 29 @32351 has 1 MA's), (34, 32378), (36, 32390), (37, 32393), (39, 32408), (43, 32423), (50, 32531), (52, 32543), (55, 32561),

Gene: Phabuloso\_54 Start: 36332, Stop: 36589, Start Num: 32

Candidate Starts for Phabuloso\_54:

(11, 36263), (Start: 16 @36290 has 2 MA's), (Start: 32 @36332 has 23 MA's), (37, 36368), (39, 36383), (46, 36422), (55, 36545),

Gene: Pimento\_43 Start: 31999, Stop: 32277, Start Num: 27

Candidate Starts for Pimento\_43:

(Start: 27 @31999 has 12 MA's), (Start: 29 @32008 has 1 MA's), (34, 32035), (36, 32047), (37, 32050), (50, 32188), (52, 32200), (55, 32218),

Gene: Powerball\_42 Start: 33050, Stop: 33301, Start Num: 32

Candidate Starts for Powerball\_42:

(13, 32984), (Start: 22 @33017 has 1 MA's), (Start: 32 @33050 has 23 MA's), (37, 33086), (39, 33101), (41, 33107), (53, 33245),

Gene: PrincePatrick\_43 Start: 33264, Stop: 33527, Start Num: 32

Candidate Starts for PrincePatrick\_43:

(Start: 19 @33228 has 2 MA's), (Start: 32 @33264 has 23 MA's), (37, 33300), (41, 33321), (50, 33438), (53, 33459),

Gene: Ruthy\_44 Start: 35600, Stop: 35848, Start Num: 32

Candidate Starts for Ruthy\_44:

(13, 35534), (Start: 22 @35567 has 1 MA's), (Start: 32 @35600 has 23 MA's), (37, 35636), (39, 35651), (41, 35657), (53, 35795),

Gene: TChen\_46 Start: 35717, Stop: 36010, Start Num: 16

Candidate Starts for TChen\_46:

(Start: 16 @35717 has 2 MA's), (Start: 32 @35753 has 23 MA's), (37, 35789), (50, 35927), (55, 35957), (56, 35972),

Gene: Taptic\_38 Start: 38403, Stop: 38675, Start Num: 30

Candidate Starts for Taptic\_38:

(28, 38394), (Start: 30 @38403 has 6 MA's), (Start: 32 @38409 has 23 MA's), (37, 38445), (39, 38460), (53, 38610),

Gene: ThankyouJordi\_44 Start: 36245, Stop: 36499, Start Num: 32

Candidate Starts for ThankyouJordi\_44:

(1, 35879), (2, 36056), (5, 36134), (6, 36137), (23, 36212), (Start: 32 @36245 has 23 MA's), (37, 36281), (39, 36296), (41, 36302),

Gene: Toast\_44 Start: 34875, Stop: 35174, Start Num: 19

Candidate Starts for Toast\_44:

(Start: 19 @34875 has 2 MA's), (Start: 32 @34911 has 23 MA's), (37, 34947), (41, 34968), (50, 35085), (53, 35106),

Gene: VWB\_33 Start: 28495, Stop: 28809, Start Num: 18

Candidate Starts for VWB\_33:

(18, 28495), (Start: 25 @28501 has 1 MA's), (33, 28549), (54, 28744), (57, 28768),

Gene: VanLee\_35 Start: 29075, Stop: 29377, Start Num: 16

Candidate Starts for VanLee\_35:

(Start: 16 @29075 has 2 MA's), (24, 29087), (31, 29117), (35, 29147), (61, 29372),

Gene: WelcomeAyanna\_44 Start: 36392, Stop: 36646, Start Num: 32

Candidate Starts for WelcomeAyanna\_44:

(1, 36026), (2, 36203), (5, 36281), (6, 36284), (23, 36359), (Start: 32 @36392 has 23 MA's), (37, 36428), (39, 36443), (41, 36449),

Gene: WheatThin\_41 Start: 32342, Stop: 32620, Start Num: 27

Candidate Starts for WheatThin\_41:

(Start: 27 @32342 has 12 MA's), (Start: 29 @32351 has 1 MA's), (34, 32378), (36, 32390), (37, 32393), (39, 32408), (43, 32423), (50, 32531), (52, 32543), (55, 32561),

Gene: Whitney\_52 Start: 37087, Stop: 37338, Start Num: 32

Candidate Starts for Whitney\_52:

(Start: 16 @37042 has 2 MA's), (Start: 32 @37087 has 23 MA's), (37, 37123), (41, 37144), (50, 37261), (55, 37291), (60, 37327),

Gene: William\_45 Start: 34949, Stop: 35212, Start Num: 32

Candidate Starts for William\_45:

(Start: 19 @34913 has 2 MA's), (Start: 32 @34949 has 23 MA's), (37, 34985), (41, 35006), (50, 35123), (53, 35144),