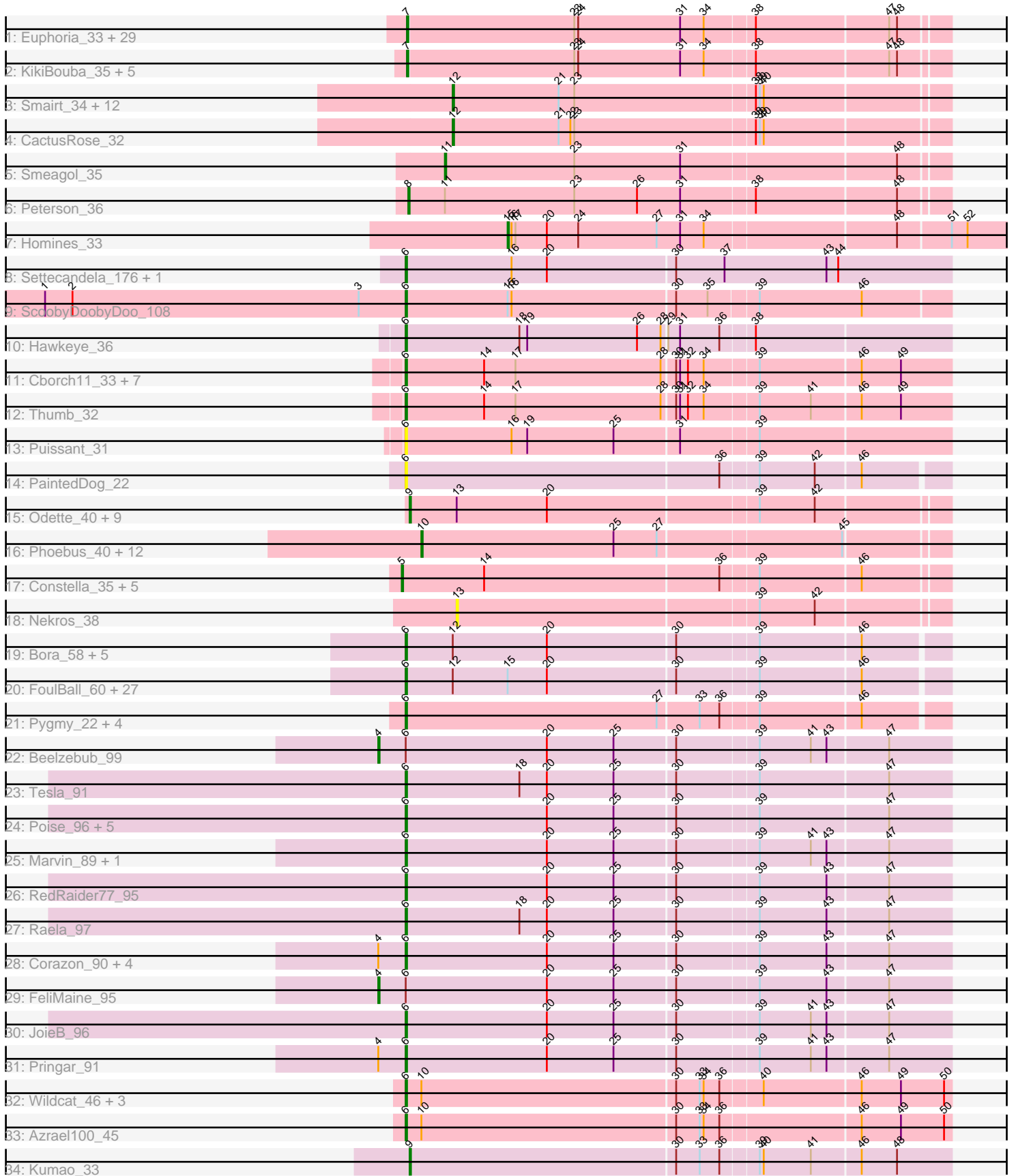


# Pham 296298



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 296298 Report

This analysis was run 04/25/26 on database version 644.

Pham number 296298 has 163 members, 24 are drafts.

Phages represented in each track:

- Track 1 : Euphoria\_33, Jasper\_34, MetalQZJ\_33, Eyeball\_33, Graduation\_35, SwissCheese\_35, PherrisBueller\_34, Kenmech\_36, Forsytheast\_33, BaconJack\_36, ILeeKay\_35, Bones\_33, RidgeCB\_33, MaryBeth\_33, LunarLander\_34, Bruns\_32, Dreamboat\_34, Violet\_32, Puppet\_33, Hope4ever\_33, Tripl3t\_34, Licorice\_35, Dussy\_34, Abbyshoes\_35, Corvo\_34, Cueyllyss\_33, GrecoEtereo\_35, Moose\_33, Papez\_35, Beatrix\_33
- Track 2 : KikiBouba\_35, DirtDevil\_35, Aldrich\_35, Hermia\_36, CatBus\_35, Noxious\_35
- Track 3 : Smairt\_34, IgnatiusPatJac\_33, ProMouse\_32, HanShotFirst\_33, PowerRanger\_36, Wilkins\_33, Topgun\_33, Dexes\_34, HarryOW\_34, JC27\_35, Pelly\_34, Phlippers\_32, LilBib\_34
- Track 4 : CactusRose\_32
- Track 5 : Smeagol\_35
- Track 6 : Peterson\_36
- Track 7 : Homines\_33
- Track 8 : Settecandela\_176, Phrappuccino\_176
- Track 9 : ScoobyDoobyDoo\_108
- Track 10 : Hawkeye\_36
- Track 11 : Cborch11\_33, Phreeze\_32, Beckerton\_32, BobtimousPrime\_31, Oaker\_32, Megatron06\_34, Konstantine\_37, Damien\_32
- Track 12 : Thumb\_32
- Track 13 : Puissant\_31
- Track 14 : PaintedDog\_22
- Track 15 : Odette\_40, Dove\_38, Rearden\_35, Yeet\_39, Schatzie\_38, NihilNomen\_40, Hughesyang\_39, Bombitas\_37, Ejimix\_41, Pound\_42
- Track 16 : Phoebus\_40, JuicyJay\_43, Halley\_41, ThreeRngTarjay\_39, HokkenD\_36, Klein\_41, Bagrid\_40, Beem\_41, Kalah2\_41, Dallas\_42, Zelink\_42, Redno2\_39, EricMillard\_41
- Track 17 : Constella\_35, Hidrated\_43, Marleymoo\_45, Xiaokay\_38, Thibault\_37, Bobby\_42
- Track 18 : Nekros\_38
- Track 19 : Bora\_58, Zakhe101\_60, Winget\_61, Firecracker\_61, Dylan\_60, Corndog\_63
- Track 20 : FoulBall\_60, YoyoKar\_58, Krili\_59, SchoolBus\_60, Idergollasper\_60, Vagabond\_60, Schuy\_61, YungJamal\_65, Blessica\_61, JangDynasty\_60, Alkhayr\_60, Wogge42\_59, Shida\_60, Catdawg\_60, NiebruSaylor\_59, Vorrps\_60, Ryadel\_64, Ashwin\_62, Wildflower\_60, Murai\_61, Smooch\_63, Familton\_61,

- Mori\_60, Imara\_58, MadKillah\_61, Zebo\_60, KingPhillip3\_59, TelAviv\_57
- Track 21 : Pygmy\_22, Island3\_23, Bogie\_22, Brujita\_23, Shipwreck\_22
  - Track 22 : Beelzebub\_99
  - Track 23 : Tesla\_91
  - Track 24 : Poise\_96, MosMoris\_91, Caprice\_88, Blackbeetle\_96, Gattaca\_94, GoongGoong\_96
  - Track 25 : Marvin\_89, VasuNzinga\_93
  - Track 26 : RedRaider77\_95
  - Track 27 : Raela\_97
  - Track 28 : Corazon\_90, LittleLaf\_93, Lilbit\_91, Clarkson\_96, Huphlebuff\_97
  - Track 29 : FeliMaine\_95
  - Track 30 : JoieB\_96
  - Track 31 : Pringar\_91
  - Track 32 : Wildcat\_46, MaryV\_46, EniyanLRS\_43, Cosmo\_46
  - Track 33 : Azrael100\_45
  - Track 34 : Kumao\_33

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

The start number called the most often in the published annotations is 6, it was called in 69 of the 139 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alkhayr\_60, Ashwin\_62, Azrael100\_45, Beckerton\_32, Blackbeetle\_96, Blessica\_61, BobtimousPrime\_31, Bogie\_22, Bora\_58, Brujita\_23, Caprice\_88, Catdawg\_60, Cborch11\_33, Clarkson\_96, Corazon\_90, Corndog\_63, Cosmo\_46, Damien\_32, Dylan\_60, EniyanLRS\_43, Familton\_61, Firecracker\_61, FoulBall\_60, Gattaca\_94, GoongGoong\_96, Hawkeye\_36, Huphlebuff\_97, Idergollasper\_60, Imara\_58, Island3\_23, JangDynasty\_60, JoieB\_96, KingPhillip3\_59, Konstantine\_37, Krili\_59, Lilbit\_91, LittleLaf\_93, MadKillah\_61, Marvin\_89, MaryV\_46, Megatron06\_34, Mori\_60, MosMoris\_91, Murai\_61, NiebruSaylor\_59, Oaker\_32, PaintedDog\_22, Phrappuccino\_176, Phreeze\_32, Poise\_96, Pringar\_91, Puissant\_31, Pygmy\_22, Raela\_97, RedRaider77\_95, Ryadel\_64, SchoolBus\_60, Schuy\_61, ScoobyDoobyDoo\_108, Settecandela\_176, Shida\_60, Shipwreck\_22, Smooch\_63, TelAviv\_57, Tesla\_91, Thumb\_32, Vagabond\_60, VasuNzinga\_93, Vorrrps\_60, Wildcat\_46, Wildflower\_60, Winget\_61, Wogge42\_59, YoyoKar\_58, YungJamal\_65, Zakhe101\_60, Zebo\_60,

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

- Beelzebub\_99, FeliMaine\_95,

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

- Abbyshoes\_35, Aldrich\_35, BaconJack\_36, Bagrid\_40, Beatrix\_33, Beem\_41, Bobby\_42, Bombitas\_37, Bones\_33, Bruns\_32, CactusRose\_32, CatBus\_35, Constella\_35, Corvo\_34, Cueylyss\_33, Dallas\_42, Dexes\_34, DirtDevil\_35, Dove\_38, Dreamboat\_34, Dussy\_34, Ejimix\_41, EricMillard\_41, Euphoria\_33, Eyeball\_33, Forsytheast\_33, Graduation\_35, GrecoEtereo\_35, Halley\_41, HanShotFirst\_33, HarryOW\_34, Hermia\_36, Hidrated\_43, HokkenD\_36, Homines\_33, Hope4ever\_33, Hughesyang\_39, lLeeKay\_35, IgnatiusPatJac\_33, JC27\_35, Jasper\_34, JuicyJay\_43, Kalah2\_41, Kenmech\_36, KikiBouba\_35, Klein\_41, Kumao\_33,

Licorice\_35, LilBib\_34, LunarLander\_34, Marleymoo\_45, MaryBeth\_33, MetalQZJ\_33, Moose\_33, Nekros\_38, NihilNomen\_40, Noxious\_35, Odette\_40, Papez\_35, Pelly\_34, Peterson\_36, PherrisBueller\_34, Phlippers\_32, Phoebus\_40, Pound\_42, PowerRanger\_36, ProMouse\_32, Puppet\_33, Rearden\_35, Redno2\_39, RidgeCB\_33, Schatzie\_38, Smairt\_34, Smeagol\_35, SwissCheese\_35, Thibault\_37, ThreeRngTarjay\_39, Topgun\_33, Tripl3t\_34, Violet\_32, Wilkins\_33, Xiaokay\_38, Yeet\_39, Zelink\_42,

### Summary by start number:

#### Start 4:

- Found in 8 of 163 ( 4.9% ) of genes in pham
- Manual Annotations of this start: 2 of 139
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Beelzebub\_99 (S), FeliMaine\_95 (S),

#### Start 5:

- Found in 6 of 163 ( 3.7% ) of genes in pham
- Manual Annotations of this start: 3 of 139
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bobby\_42 (J), Constella\_35 (J), Hidrated\_43 (J), Marleymoo\_45 (J), Thibault\_37 (J), Xiaokay\_38 (J),

#### Start 6:

- Found in 79 of 163 ( 48.5% ) of genes in pham
- Manual Annotations of this start: 69 of 139
- Called 97.5% of time when present
- Phage (with cluster) where this start called: Alkhayr\_60 (O), Ashwin\_62 (O), Azrael100\_45 (V), Beckerton\_32 (H1), Blackbeetle\_96 (S), Blessica\_61 (O), BobtimousPrime\_31 (H1), Bogie\_22 (P1), Bora\_58 (O), Brujita\_23 (I1), Caprice\_88 (S), Catdawg\_60 (O), Cborch11\_33 (H1), Clarkson\_96 (S), Corazon\_90 (S), Corndog\_63 (O), Cosmo\_46 (V), Damien\_32 (H1), Dylan\_60 (O), EniyanLRS\_43 (V), Familton\_61 (O), Firecracker\_61 (O), FoulBall\_60 (O), Gattaca\_94 (S), GoongGoong\_96 (S), Hawkeye\_36 (D2), Huphlepuuff\_97 (S), Idergollasper\_60 (O), Imara\_58 (O), Island3\_23 (I1), JangDynasty\_60 (O), JoieB\_96 (S), KingPhillip3\_59 (O), Konstantine\_37 (H1), Krili\_59 (O), Lilbit\_91 (S), LittleLaf\_93 (S), MadKillah\_61 (O), Marvin\_89 (S), MaryV\_46 (V), Megatron06\_34 (H1), Mori\_60 (O), MosMoris\_91 (S), Murai\_61 (O), NiebruSaylor\_59 (O), Oaker\_32 (H1), PaintedDog\_22 (I1), Phrappuccino\_176 (AA), Phreeze\_32 (H1), Poise\_96 (S), Pringar\_91 (S), Puissant\_31 (H1), Pygmy\_22 (P1), Raela\_97 (S), RedRaider77\_95 (S), Ryadel\_64 (O), SchoolBus\_60 (O), Schuy\_61 (O), ScoobyDoobyDoo\_108 (C2), Settecandela\_176 (AA), Shida\_60 (O), Shipwreck\_22 (P1), Smooch\_63 (O), TelAviv\_57 (O), Tesla\_91 (S), Thumb\_32 (H1), Vagabond\_60 (O), VasuNzinga\_93 (S), Vorrrps\_60 (O), Wildcat\_46 (V), Wildflower\_60 (O), Winget\_61 (O), Wogge42\_59 (O), YoyoKar\_58 (O), YungJamal\_65 (O), Zakhe101\_60 (O), Zebo\_60 (O),

#### Start 7:

- Found in 36 of 163 ( 22.1% ) of genes in pham
- Manual Annotations of this start: 30 of 139
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abbyshoes\_35 (A1), Aldrich\_35 (A1), BaconJack\_36 (A1), Beatrix\_33 (A1), Bones\_33 (A1), Bruns\_32 (A1), CatBus\_35 (A1), Corvo\_34 (A1), Cueyllyss\_33 (A1), DirtDevil\_35 (A1), Dreamboat\_34 (A1),

Dussy\_34 (A1), Euphoria\_33 (A1), Eyeball\_33 (A1), Forsytheast\_33 (A1), Graduation\_35 (A1), GrecoEtereo\_35 (A1), Hermia\_36 (A1), Hope4ever\_33 (A1), ILeeKay\_35 (A1), Jasper\_34 (A1), Kenmech\_36 (A1), KikiBouba\_35 (A1), Licorice\_35 (A1), LunarLander\_34 (A1), MaryBeth\_33 (A1), MetalQZJ\_33 (A1), Moose\_33 (A1), Noxious\_35 (A1), Papez\_35 (A1), PherrisBueller\_34 (A1), Puppet\_33 (A1), RidgeCB\_33 (A1), SwissCheese\_35 (A1), Tripl3t\_34 (A1), Violet\_32 (A1),

Start 8:

- Found in 1 of 163 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 139
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Peterson\_36 (A1),

Start 9:

- Found in 11 of 163 ( 6.7% ) of genes in pham
- Manual Annotations of this start: 9 of 139
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bombitas\_37 (J), Dove\_38 (J), Ejimix\_41 (J), Hughesyang\_39 (J), Kumao\_33 (singleton), NihilNomen\_40 (J), Odette\_40 (J), Pound\_42 (J), Rearden\_35 (J), Schatzie\_38 (J), Yeet\_39 (J),

Start 10:

- Found in 18 of 163 ( 11.0% ) of genes in pham
- Manual Annotations of this start: 12 of 139
- Called 72.2% of time when present
- Phage (with cluster) where this start called: Bagrid\_40 (J), Beem\_41 (J), Dallas\_42 (J), EricMillard\_41 (J), Halley\_41 (J), HokkenD\_36 (J), JuicyJay\_43 (J), Kalah2\_41 (J), Klein\_41 (J), Phoebus\_40 (J), Redno2\_39 (J), ThreeRngTarjay\_39 (J), Zelink\_42 (J),

Start 11:

- Found in 2 of 163 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 139
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Smeagol\_35 (A1),

Start 12:

- Found in 48 of 163 ( 29.4% ) of genes in pham
- Manual Annotations of this start: 11 of 139
- Called 29.2% of time when present
- Phage (with cluster) where this start called: CactusRose\_32 (A1), Dexes\_34 (A1), HanShotFirst\_33 (A1), HarryOW\_34 (A1), IgnatiusPatJac\_33 (A1), JC27\_35 (A1), LilBib\_34 (A1), Pelly\_34 (A1), Phlippers\_32 (A1), PowerRanger\_36 (A1), ProMouse\_32 (A1), Smairt\_34 (A1), Topgun\_33 (A1), Wilkins\_33 (A1),

Start 13:

- Found in 11 of 163 ( 6.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 9.1% of time when present
- Phage (with cluster) where this start called: Nekros\_38 (J),

Start 15:

- Found in 30 of 163 ( 18.4% ) of genes in pham

- Manual Annotations of this start: 1 of 139
- Called 3.3% of time when present
- Phage (with cluster) where this start called: Homines\_33 (A1),

### **Summary by clusters:**

There are 12 clusters represented in this pham: AA, singleton, H1, I1, J, O, A1, S, P1, V, C2, D2,

Info for manual annotations of cluster A1:

- Start number 7 was manually annotated 30 times for cluster A1.
- Start number 8 was manually annotated 1 time for cluster A1.
- Start number 11 was manually annotated 1 time for cluster A1.
- Start number 12 was manually annotated 11 times for cluster A1.
- Start number 15 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster AA:

- Start number 6 was manually annotated 2 times for cluster AA.

Info for manual annotations of cluster C2:

- Start number 6 was manually annotated 1 time for cluster C2.

Info for manual annotations of cluster D2:

- Start number 6 was manually annotated 1 time for cluster D2.

Info for manual annotations of cluster H1:

- Start number 6 was manually annotated 8 times for cluster H1.

Info for manual annotations of cluster I1:

- Start number 6 was manually annotated 2 times for cluster I1.

Info for manual annotations of cluster J:

- Start number 5 was manually annotated 3 times for cluster J.
- Start number 9 was manually annotated 8 times for cluster J.
- Start number 10 was manually annotated 12 times for cluster J.

Info for manual annotations of cluster O:

- Start number 6 was manually annotated 30 times for cluster O.

Info for manual annotations of cluster P1:

- Start number 6 was manually annotated 3 times for cluster P1.

Info for manual annotations of cluster S:

- Start number 4 was manually annotated 2 times for cluster S.
- Start number 6 was manually annotated 17 times for cluster S.

Info for manual annotations of cluster V:

- Start number 6 was manually annotated 5 times for cluster V.

### **Gene Information:**

Gene: Abbysshoes\_35 Start: 27637, Stop: 28038, Start Num: 7

Candidate Starts for Abbysshoes\_35:

(Start: 7 @27637 has 30 MA's), (23, 27763), (24, 27766), (31, 27844), (34, 27862), (38, 27898), (47, 27997), (48, 28003),

Gene: Aldrich\_35 Start: 28762, Stop: 29163, Start Num: 7

Candidate Starts for Aldrich\_35:

(Start: 7 @28762 has 30 MA's), (23, 28888), (24, 28891), (31, 28969), (34, 28987), (38, 29023), (47, 29122), (48, 29128),

Gene: Alkhayr\_60 Start: 39815, Stop: 40216, Start Num: 6

Candidate Starts for Alkhayr\_60:

(Start: 6 @39815 has 69 MA's), (Start: 12 @39851 has 11 MA's), (Start: 15 @39893 has 1 MA's), (20, 39923), (30, 40019), (39, 40079), (46, 40154),

Gene: Ashwin\_62 Start: 40585, Stop: 40986, Start Num: 6

Candidate Starts for Ashwin\_62:

(Start: 6 @40585 has 69 MA's), (Start: 12 @40621 has 11 MA's), (Start: 15 @40663 has 1 MA's), (20, 40693), (30, 40789), (39, 40849), (46, 40924),

Gene: Azrael100\_45 Start: 35022, Stop: 35429, Start Num: 6

Candidate Starts for Azrael100\_45:

(Start: 6 @35022 has 69 MA's), (Start: 10 @35034 has 12 MA's), (30, 35226), (33, 35244), (34, 35247), (36, 35259), (46, 35361), (49, 35391), (50, 35424),

Gene: BaconJack\_36 Start: 27957, Stop: 28358, Start Num: 7

Candidate Starts for BaconJack\_36:

(Start: 7 @27957 has 30 MA's), (23, 28083), (24, 28086), (31, 28164), (34, 28182), (38, 28218), (47, 28317), (48, 28323),

Gene: Bagrid\_40 Start: 33113, Stop: 33502, Start Num: 10

Candidate Starts for Bagrid\_40:

(Start: 10 @33113 has 12 MA's), (25, 33260), (27, 33293), (45, 33428),

Gene: Beatrix\_33 Start: 28872, Stop: 29273, Start Num: 7

Candidate Starts for Beatrix\_33:

(Start: 7 @28872 has 30 MA's), (23, 28998), (24, 29001), (31, 29079), (34, 29097), (38, 29133), (47, 29232), (48, 29238),

Gene: Beckerton\_32 Start: 31246, Stop: 31653, Start Num: 6

Candidate Starts for Beckerton\_32:

(Start: 6 @31246 has 69 MA's), (14, 31306), (17, 31330), (28, 31441), (30, 31450), (31, 31453), (32, 31459), (34, 31471), (39, 31510), (46, 31585), (49, 31615),

Gene: Beelzebub\_99 Start: 55639, Stop: 56067, Start Num: 4

Candidate Starts for Beelzebub\_99:

(Start: 4 @55639 has 2 MA's), (Start: 6 @55660 has 69 MA's), (20, 55768), (25, 55819), (30, 55864), (39, 55924), (41, 55963), (43, 55975), (47, 56020),

Gene: Beem\_41 Start: 33679, Stop: 34068, Start Num: 10

Candidate Starts for Beem\_41:

(Start: 10 @33679 has 12 MA's), (25, 33826), (27, 33859), (45, 33994),

Gene: Blackbeetle\_96 Start: 55161, Stop: 55568, Start Num: 6  
Candidate Starts for Blackbeetle\_96:  
(Start: 6 @55161 has 69 MA's), (20, 55269), (25, 55320), (30, 55365), (39, 55425), (47, 55521),

Gene: Blessica\_61 Start: 40414, Stop: 40815, Start Num: 6  
Candidate Starts for Blessica\_61:  
(Start: 6 @40414 has 69 MA's), (Start: 12 @40450 has 11 MA's), (Start: 15 @40492 has 1 MA's), (20, 40522), (30, 40618), (39, 40678), (46, 40753),

Gene: Bobby\_42 Start: 34506, Stop: 34910, Start Num: 5  
Candidate Starts for Bobby\_42:  
(Start: 5 @34506 has 3 MA's), (14, 34569), (36, 34746), (39, 34773), (46, 34848),

Gene: BobtimousPrime\_31 Start: 31166, Stop: 31573, Start Num: 6  
Candidate Starts for BobtimousPrime\_31:  
(Start: 6 @31166 has 69 MA's), (14, 31226), (17, 31250), (28, 31361), (30, 31370), (31, 31373), (32, 31379), (34, 31391), (39, 31430), (46, 31505), (49, 31535),

Gene: Bogie\_22 Start: 22761, Stop: 23162, Start Num: 6  
Candidate Starts for Bogie\_22:  
(Start: 6 @22761 has 69 MA's), (27, 22953), (33, 22983), (36, 22998), (39, 23025), (46, 23100),

Gene: Bombitas\_37 Start: 32684, Stop: 33082, Start Num: 9  
Candidate Starts for Bombitas\_37:  
(Start: 9 @32684 has 9 MA's), (13, 32720), (20, 32789), (39, 32945), (42, 32987),

Gene: Bones\_33 Start: 27330, Stop: 27731, Start Num: 7  
Candidate Starts for Bones\_33:  
(Start: 7 @27330 has 30 MA's), (23, 27456), (24, 27459), (31, 27537), (34, 27555), (38, 27591), (47, 27690), (48, 27696),

Gene: Bora\_58 Start: 39771, Stop: 40172, Start Num: 6  
Candidate Starts for Bora\_58:  
(Start: 6 @39771 has 69 MA's), (Start: 12 @39807 has 11 MA's), (20, 39879), (30, 39975), (39, 40035), (46, 40110),

Gene: Brujita\_23 Start: 23116, Stop: 23517, Start Num: 6  
Candidate Starts for Brujita\_23:  
(Start: 6 @23116 has 69 MA's), (27, 23308), (33, 23338), (36, 23353), (39, 23380), (46, 23455),

Gene: Bruns\_32 Start: 27352, Stop: 27753, Start Num: 7  
Candidate Starts for Bruns\_32:  
(Start: 7 @27352 has 30 MA's), (23, 27478), (24, 27481), (31, 27559), (34, 27577), (38, 27613), (47, 27712), (48, 27718),

Gene: CactusRose\_32 Start: 27357, Stop: 27725, Start Num: 12  
Candidate Starts for CactusRose\_32:  
(Start: 12 @27357 has 11 MA's), (21, 27438), (22, 27447), (23, 27450), (38, 27585), (39, 27588), (40, 27591),

Gene: Caprice\_88 Start: 55099, Stop: 55506, Start Num: 6  
Candidate Starts for Caprice\_88:  
(Start: 6 @55099 has 69 MA's), (20, 55207), (25, 55258), (30, 55303), (39, 55363), (47, 55459),

Gene: CatBus\_35 Start: 28954, Stop: 29355, Start Num: 7

Candidate Starts for CatBus\_35:

(Start: 7 @28954 has 30 MA's), (23, 29080), (24, 29083), (31, 29161), (34, 29179), (38, 29215), (47, 29314), (48, 29320),

Gene: Catdawg\_60 Start: 40150, Stop: 40551, Start Num: 6

Candidate Starts for Catdawg\_60:

(Start: 6 @40150 has 69 MA's), (Start: 12 @40186 has 11 MA's), (Start: 15 @40228 has 1 MA's), (20, 40258), (30, 40354), (39, 40414), (46, 40489),

Gene: Cborch11\_33 Start: 30711, Stop: 31118, Start Num: 6

Candidate Starts for Cborch11\_33:

(Start: 6 @30711 has 69 MA's), (14, 30771), (17, 30795), (28, 30906), (30, 30915), (31, 30918), (32, 30924), (34, 30936), (39, 30975), (46, 31050), (49, 31080),

Gene: Clarkson\_96 Start: 55340, Stop: 55747, Start Num: 6

Candidate Starts for Clarkson\_96:

(Start: 4 @55319 has 2 MA's), (Start: 6 @55340 has 69 MA's), (20, 55448), (25, 55499), (30, 55544), (39, 55604), (43, 55655), (47, 55700),

Gene: Constella\_35 Start: 32452, Stop: 32856, Start Num: 5

Candidate Starts for Constella\_35:

(Start: 5 @32452 has 3 MA's), (14, 32515), (36, 32692), (39, 32719), (46, 32794),

Gene: Corazon\_90 Start: 55534, Stop: 55941, Start Num: 6

Candidate Starts for Corazon\_90:

(Start: 4 @55513 has 2 MA's), (Start: 6 @55534 has 69 MA's), (20, 55642), (25, 55693), (30, 55738), (39, 55798), (43, 55849), (47, 55894),

Gene: Corndog\_63 Start: 41144, Stop: 41545, Start Num: 6

Candidate Starts for Corndog\_63:

(Start: 6 @41144 has 69 MA's), (Start: 12 @41180 has 11 MA's), (20, 41252), (30, 41348), (39, 41408), (46, 41483),

Gene: Corvo\_34 Start: 28389, Stop: 28790, Start Num: 7

Candidate Starts for Corvo\_34:

(Start: 7 @28389 has 30 MA's), (23, 28515), (24, 28518), (31, 28596), (34, 28614), (38, 28650), (47, 28749), (48, 28755),

Gene: Cosmo\_46 Start: 35023, Stop: 35430, Start Num: 6

Candidate Starts for Cosmo\_46:

(Start: 6 @35023 has 69 MA's), (Start: 10 @35035 has 12 MA's), (30, 35227), (33, 35245), (34, 35248), (36, 35260), (40, 35290), (46, 35362), (49, 35392), (50, 35425),

Gene: Cueyllyss\_33 Start: 27563, Stop: 27964, Start Num: 7

Candidate Starts for Cueyllyss\_33:

(Start: 7 @27563 has 30 MA's), (23, 27689), (24, 27692), (31, 27770), (34, 27788), (38, 27824), (47, 27923), (48, 27929),

Gene: Dallas\_42 Start: 33204, Stop: 33593, Start Num: 10

Candidate Starts for Dallas\_42:

(Start: 10 @33204 has 12 MA's), (25, 33351), (27, 33384), (45, 33519),

Gene: Damien\_32 Start: 30712, Stop: 31119, Start Num: 6

Candidate Starts for Damien\_32:

(Start: 6 @30712 has 69 MA's), (14, 30772), (17, 30796), (28, 30907), (30, 30916), (31, 30919), (32, 30925), (34, 30937), (39, 30976), (46, 31051), (49, 31081),

Gene: Dexes\_34 Start: 28150, Stop: 28518, Start Num: 12

Candidate Starts for Dexes\_34:

(Start: 12 @28150 has 11 MA's), (21, 28231), (23, 28243), (38, 28378), (39, 28381), (40, 28384),

Gene: DirtDevil\_35 Start: 28762, Stop: 29163, Start Num: 7

Candidate Starts for DirtDevil\_35:

(Start: 7 @28762 has 30 MA's), (23, 28888), (24, 28891), (31, 28969), (34, 28987), (38, 29023), (47, 29122), (48, 29128),

Gene: Dove\_38 Start: 32683, Stop: 33081, Start Num: 9

Candidate Starts for Dove\_38:

(Start: 9 @32683 has 9 MA's), (13, 32719), (20, 32788), (39, 32944), (42, 32986),

Gene: Dreamboat\_34 Start: 27395, Stop: 27796, Start Num: 7

Candidate Starts for Dreamboat\_34:

(Start: 7 @27395 has 30 MA's), (23, 27521), (24, 27524), (31, 27602), (34, 27620), (38, 27656), (47, 27755), (48, 27761),

Gene: Dussy\_34 Start: 27657, Stop: 28058, Start Num: 7

Candidate Starts for Dussy\_34:

(Start: 7 @27657 has 30 MA's), (23, 27783), (24, 27786), (31, 27864), (34, 27882), (38, 27918), (47, 28017), (48, 28023),

Gene: Dylan\_60 Start: 40195, Stop: 40596, Start Num: 6

Candidate Starts for Dylan\_60:

(Start: 6 @40195 has 69 MA's), (Start: 12 @40231 has 11 MA's), (20, 40303), (30, 40399), (39, 40459), (46, 40534),

Gene: Ejimix\_41 Start: 34413, Stop: 34811, Start Num: 9

Candidate Starts for Ejimix\_41:

(Start: 9 @34413 has 9 MA's), (13, 34449), (20, 34518), (39, 34674), (42, 34716),

Gene: EniyanLRS\_43 Start: 34721, Stop: 35128, Start Num: 6

Candidate Starts for EniyanLRS\_43:

(Start: 6 @34721 has 69 MA's), (Start: 10 @34733 has 12 MA's), (30, 34925), (33, 34943), (34, 34946), (36, 34958), (40, 34988), (46, 35060), (49, 35090), (50, 35123),

Gene: EricMillard\_41 Start: 33965, Stop: 34354, Start Num: 10

Candidate Starts for EricMillard\_41:

(Start: 10 @33965 has 12 MA's), (25, 34112), (27, 34145), (45, 34280),

Gene: Euphoria\_33 Start: 27428, Stop: 27829, Start Num: 7

Candidate Starts for Euphoria\_33:

(Start: 7 @27428 has 30 MA's), (23, 27554), (24, 27557), (31, 27635), (34, 27653), (38, 27689), (47, 27788), (48, 27794),

Gene: Eyeball\_33 Start: 27233, Stop: 27634, Start Num: 7

Candidate Starts for Eyeball\_33:

(Start: 7 @27233 has 30 MA's), (23, 27359), (24, 27362), (31, 27440), (34, 27458), (38, 27494), (47, 27593), (48, 27599),

Gene: Familton\_61 Start: 40107, Stop: 40508, Start Num: 6

Candidate Starts for Familton\_61:

(Start: 6 @40107 has 69 MA's), (Start: 12 @40143 has 11 MA's), (Start: 15 @40185 has 1 MA's), (20, 40215), (30, 40311), (39, 40371), (46, 40446),

Gene: FeliMaine\_95 Start: 55561, Stop: 55989, Start Num: 4

Candidate Starts for FeliMaine\_95:

(Start: 4 @55561 has 2 MA's), (Start: 6 @55582 has 69 MA's), (20, 55690), (25, 55741), (30, 55786), (39, 55846), (43, 55897), (47, 55942),

Gene: Firecracker\_61 Start: 40297, Stop: 40698, Start Num: 6

Candidate Starts for Firecracker\_61:

(Start: 6 @40297 has 69 MA's), (Start: 12 @40333 has 11 MA's), (20, 40405), (30, 40501), (39, 40561), (46, 40636),

Gene: Forsytheast\_33 Start: 27667, Stop: 28068, Start Num: 7

Candidate Starts for Forsytheast\_33:

(Start: 7 @27667 has 30 MA's), (23, 27793), (24, 27796), (31, 27874), (34, 27892), (38, 27928), (47, 28027), (48, 28033),

Gene: FoulBall\_60 Start: 40101, Stop: 40502, Start Num: 6

Candidate Starts for FoulBall\_60:

(Start: 6 @40101 has 69 MA's), (Start: 12 @40137 has 11 MA's), (Start: 15 @40179 has 1 MA's), (20, 40209), (30, 40305), (39, 40365), (46, 40440),

Gene: Gattaca\_94 Start: 55573, Stop: 55980, Start Num: 6

Candidate Starts for Gattaca\_94:

(Start: 6 @55573 has 69 MA's), (20, 55681), (25, 55732), (30, 55777), (39, 55837), (47, 55933),

Gene: GoongGoong\_96 Start: 55379, Stop: 55786, Start Num: 6

Candidate Starts for GoongGoong\_96:

(Start: 6 @55379 has 69 MA's), (20, 55487), (25, 55538), (30, 55583), (39, 55643), (47, 55739),

Gene: Graduation\_35 Start: 28150, Stop: 28551, Start Num: 7

Candidate Starts for Graduation\_35:

(Start: 7 @28150 has 30 MA's), (23, 28276), (24, 28279), (31, 28357), (34, 28375), (38, 28411), (47, 28510), (48, 28516),

Gene: GrecoEtereo\_35 Start: 28237, Stop: 28638, Start Num: 7

Candidate Starts for GrecoEtereo\_35:

(Start: 7 @28237 has 30 MA's), (23, 28363), (24, 28366), (31, 28444), (34, 28462), (38, 28498), (47, 28597), (48, 28603),

Gene: Halley\_41 Start: 33678, Stop: 34067, Start Num: 10

Candidate Starts for Halley\_41:

(Start: 10 @33678 has 12 MA's), (25, 33825), (27, 33858), (45, 33993),

Gene: HanShotFirst\_33 Start: 27403, Stop: 27771, Start Num: 12

Candidate Starts for HanShotFirst\_33:

(Start: 12 @27403 has 11 MA's), (21, 27484), (23, 27496), (38, 27631), (39, 27634), (40, 27637),

Gene: HarryOW\_34 Start: 27857, Stop: 28225, Start Num: 12

Candidate Starts for HarryOW\_34:

(Start: 12 @27857 has 11 MA's), (21, 27938), (23, 27950), (38, 28085), (39, 28088), (40, 28091),

Gene: Hawkeye\_36 Start: 29723, Stop: 30130, Start Num: 6

Candidate Starts for Hawkeye\_36:

(Start: 6 @29723 has 69 MA's), (18, 29810), (19, 29816), (26, 29900), (28, 29918), (29, 29921), (31, 29930), (36, 29960), (38, 29984),

Gene: Hermia\_36 Start: 28954, Stop: 29355, Start Num: 7

Candidate Starts for Hermia\_36:

(Start: 7 @28954 has 30 MA's), (23, 29080), (24, 29083), (31, 29161), (34, 29179), (38, 29215), (47, 29314), (48, 29320),

Gene: Hidrated\_43 Start: 35707, Stop: 36111, Start Num: 5

Candidate Starts for Hidrated\_43:

(Start: 5 @35707 has 3 MA's), (14, 35770), (36, 35947), (39, 35974), (46, 36049),

Gene: HokkenD\_36 Start: 33227, Stop: 33616, Start Num: 10

Candidate Starts for HokkenD\_36:

(Start: 10 @33227 has 12 MA's), (25, 33374), (27, 33407), (45, 33542),

Gene: Homines\_33 Start: 27796, Stop: 28203, Start Num: 15

Candidate Starts for Homines\_33:

(Start: 15 @27796 has 1 MA's), (16, 27799), (17, 27802), (20, 27826), (24, 27850), (27, 27910), (31, 27928), (34, 27946), (48, 28087), (51, 28126), (52, 28138),

Gene: Hope4ever\_33 Start: 27840, Stop: 28241, Start Num: 7

Candidate Starts for Hope4ever\_33:

(Start: 7 @27840 has 30 MA's), (23, 27966), (24, 27969), (31, 28047), (34, 28065), (38, 28101), (47, 28200), (48, 28206),

Gene: Hughesyang\_39 Start: 33556, Stop: 33954, Start Num: 9

Candidate Starts for Hughesyang\_39:

(Start: 9 @33556 has 9 MA's), (13, 33592), (20, 33661), (39, 33817), (42, 33859),

Gene: Huphlebuff\_97 Start: 55145, Stop: 55552, Start Num: 6

Candidate Starts for Huphlebuff\_97:

(Start: 4 @55124 has 2 MA's), (Start: 6 @55145 has 69 MA's), (20, 55253), (25, 55304), (30, 55349), (39, 55409), (43, 55460), (47, 55505),

Gene: ILeeKay\_35 Start: 27604, Stop: 28005, Start Num: 7

Candidate Starts for ILeeKay\_35:

(Start: 7 @27604 has 30 MA's), (23, 27730), (24, 27733), (31, 27811), (34, 27829), (38, 27865), (47, 27964), (48, 27970),

Gene: Idergollasper\_60 Start: 40101, Stop: 40502, Start Num: 6

Candidate Starts for Idergollasper\_60:

(Start: 6 @40101 has 69 MA's), (Start: 12 @40137 has 11 MA's), (Start: 15 @40179 has 1 MA's), (20, 40209), (30, 40305), (39, 40365), (46, 40440),

Gene: IgnatiusPatJac\_33 Start: 27718, Stop: 28086, Start Num: 12  
Candidate Starts for IgnatiusPatJac\_33:  
(Start: 12 @27718 has 11 MA's), (21, 27799), (23, 27811), (38, 27946), (39, 27949), (40, 27952),

Gene: Imara\_58 Start: 39901, Stop: 40302, Start Num: 6  
Candidate Starts for Imara\_58:  
(Start: 6 @39901 has 69 MA's), (Start: 12 @39937 has 11 MA's), (Start: 15 @39979 has 1 MA's), (20, 40009), (30, 40105), (39, 40165), (46, 40240),

Gene: Island3\_23 Start: 23116, Stop: 23517, Start Num: 6  
Candidate Starts for Island3\_23:  
(Start: 6 @23116 has 69 MA's), (27, 23308), (33, 23338), (36, 23353), (39, 23380), (46, 23455),

Gene: JC27\_35 Start: 28372, Stop: 28740, Start Num: 12  
Candidate Starts for JC27\_35:  
(Start: 12 @28372 has 11 MA's), (21, 28453), (23, 28465), (38, 28600), (39, 28603), (40, 28606),

Gene: JangDynasty\_60 Start: 40187, Stop: 40588, Start Num: 6  
Candidate Starts for JangDynasty\_60:  
(Start: 6 @40187 has 69 MA's), (Start: 12 @40223 has 11 MA's), (Start: 15 @40265 has 1 MA's), (20, 40295), (30, 40391), (39, 40451), (46, 40526),

Gene: Jasper\_34 Start: 27281, Stop: 27682, Start Num: 7  
Candidate Starts for Jasper\_34:  
(Start: 7 @27281 has 30 MA's), (23, 27407), (24, 27410), (31, 27488), (34, 27506), (38, 27542), (47, 27641), (48, 27647),

Gene: JoieB\_96 Start: 55748, Stop: 56155, Start Num: 6  
Candidate Starts for JoieB\_96:  
(Start: 6 @55748 has 69 MA's), (20, 55856), (25, 55907), (30, 55952), (39, 56012), (41, 56051), (43, 56063), (47, 56108),

Gene: JuicyJay\_43 Start: 35428, Stop: 35817, Start Num: 10  
Candidate Starts for JuicyJay\_43:  
(Start: 10 @35428 has 12 MA's), (25, 35575), (27, 35608), (45, 35743),

Gene: Kalah2\_41 Start: 34015, Stop: 34404, Start Num: 10  
Candidate Starts for Kalah2\_41:  
(Start: 10 @34015 has 12 MA's), (25, 34162), (27, 34195), (45, 34330),

Gene: Kenmech\_36 Start: 28744, Stop: 29145, Start Num: 7  
Candidate Starts for Kenmech\_36:  
(Start: 7 @28744 has 30 MA's), (23, 28870), (24, 28873), (31, 28951), (34, 28969), (38, 29005), (47, 29104), (48, 29110),

Gene: KikiBouba\_35 Start: 28763, Stop: 29164, Start Num: 7  
Candidate Starts for KikiBouba\_35:  
(Start: 7 @28763 has 30 MA's), (23, 28889), (24, 28892), (31, 28970), (34, 28988), (38, 29024), (47, 29123), (48, 29129),

Gene: KingPhillip3\_59 Start: 40116, Stop: 40517, Start Num: 6  
Candidate Starts for KingPhillip3\_59:

(Start: 6 @40116 has 69 MA's), (Start: 12 @40152 has 11 MA's), (Start: 15 @40194 has 1 MA's), (20, 40224), (30, 40320), (39, 40380), (46, 40455),

Gene: Klein\_41 Start: 33239, Stop: 33628, Start Num: 10

Candidate Starts for Klein\_41:

(Start: 10 @33239 has 12 MA's), (25, 33386), (27, 33419), (45, 33554),

Gene: Konstantine\_37 Start: 31913, Stop: 32320, Start Num: 6

Candidate Starts for Konstantine\_37:

(Start: 6 @31913 has 69 MA's), (14, 31973), (17, 31997), (28, 32108), (30, 32117), (31, 32120), (32, 32126), (34, 32138), (39, 32177), (46, 32252), (49, 32282),

Gene: Krili\_59 Start: 39611, Stop: 40012, Start Num: 6

Candidate Starts for Krili\_59:

(Start: 6 @39611 has 69 MA's), (Start: 12 @39647 has 11 MA's), (Start: 15 @39689 has 1 MA's), (20, 39719), (30, 39815), (39, 39875), (46, 39950),

Gene: Kumao\_33 Start: 30358, Stop: 30762, Start Num: 9

Candidate Starts for Kumao\_33:

(Start: 9 @30358 has 9 MA's), (30, 30559), (33, 30577), (36, 30592), (39, 30619), (40, 30622), (41, 30658), (46, 30694), (48, 30721),

Gene: Licorice\_35 Start: 28435, Stop: 28836, Start Num: 7

Candidate Starts for Licorice\_35:

(Start: 7 @28435 has 30 MA's), (23, 28561), (24, 28564), (31, 28642), (34, 28660), (38, 28696), (47, 28795), (48, 28801),

Gene: LilBib\_34 Start: 28680, Stop: 29048, Start Num: 12

Candidate Starts for LilBib\_34:

(Start: 12 @28680 has 11 MA's), (21, 28761), (23, 28773), (38, 28908), (39, 28911), (40, 28914),

Gene: Lilbit\_91 Start: 55705, Stop: 56112, Start Num: 6

Candidate Starts for Lilbit\_91:

(Start: 4 @55684 has 2 MA's), (Start: 6 @55705 has 69 MA's), (20, 55813), (25, 55864), (30, 55909), (39, 55969), (43, 56020), (47, 56065),

Gene: LittleLaf\_93 Start: 55434, Stop: 55841, Start Num: 6

Candidate Starts for LittleLaf\_93:

(Start: 4 @55413 has 2 MA's), (Start: 6 @55434 has 69 MA's), (20, 55542), (25, 55593), (30, 55638), (39, 55698), (43, 55749), (47, 55794),

Gene: LunarLander\_34 Start: 27551, Stop: 27952, Start Num: 7

Candidate Starts for LunarLander\_34:

(Start: 7 @27551 has 30 MA's), (23, 27677), (24, 27680), (31, 27758), (34, 27776), (38, 27812), (47, 27911), (48, 27917),

Gene: MadKillah\_61 Start: 39880, Stop: 40281, Start Num: 6

Candidate Starts for MadKillah\_61:

(Start: 6 @39880 has 69 MA's), (Start: 12 @39916 has 11 MA's), (Start: 15 @39958 has 1 MA's), (20, 39988), (30, 40084), (39, 40144), (46, 40219),

Gene: Marleymoo\_45 Start: 36252, Stop: 36656, Start Num: 5

Candidate Starts for Marleymoo\_45:

(Start: 5 @36252 has 3 MA's), (14, 36315), (36, 36492), (39, 36519), (46, 36594),

Gene: Marvin\_89 Start: 55227, Stop: 55634, Start Num: 6

Candidate Starts for Marvin\_89:

(Start: 6 @55227 has 69 MA's), (20, 55335), (25, 55386), (30, 55431), (39, 55491), (41, 55530), (43, 55542), (47, 55587),

Gene: MaryBeth\_33 Start: 27595, Stop: 27996, Start Num: 7

Candidate Starts for MaryBeth\_33:

(Start: 7 @27595 has 30 MA's), (23, 27721), (24, 27724), (31, 27802), (34, 27820), (38, 27856), (47, 27955), (48, 27961),

Gene: MaryV\_46 Start: 35008, Stop: 35415, Start Num: 6

Candidate Starts for MaryV\_46:

(Start: 6 @35008 has 69 MA's), (Start: 10 @35020 has 12 MA's), (30, 35212), (33, 35230), (34, 35233), (36, 35245), (40, 35275), (46, 35347), (49, 35377), (50, 35410),

Gene: Megatron06\_34 Start: 31245, Stop: 31652, Start Num: 6

Candidate Starts for Megatron06\_34:

(Start: 6 @31245 has 69 MA's), (14, 31305), (17, 31329), (28, 31440), (30, 31449), (31, 31452), (32, 31458), (34, 31470), (39, 31509), (46, 31584), (49, 31614),

Gene: MetalQZJ\_33 Start: 27595, Stop: 27996, Start Num: 7

Candidate Starts for MetalQZJ\_33:

(Start: 7 @27595 has 30 MA's), (23, 27721), (24, 27724), (31, 27802), (34, 27820), (38, 27856), (47, 27955), (48, 27961),

Gene: Moose\_33 Start: 27667, Stop: 28068, Start Num: 7

Candidate Starts for Moose\_33:

(Start: 7 @27667 has 30 MA's), (23, 27793), (24, 27796), (31, 27874), (34, 27892), (38, 27928), (47, 28027), (48, 28033),

Gene: Mori\_60 Start: 40142, Stop: 40543, Start Num: 6

Candidate Starts for Mori\_60:

(Start: 6 @40142 has 69 MA's), (Start: 12 @40178 has 11 MA's), (Start: 15 @40220 has 1 MA's), (20, 40250), (30, 40346), (39, 40406), (46, 40481),

Gene: MosMoris\_91 Start: 55579, Stop: 55986, Start Num: 6

Candidate Starts for MosMoris\_91:

(Start: 6 @55579 has 69 MA's), (20, 55687), (25, 55738), (30, 55783), (39, 55843), (47, 55939),

Gene: Murai\_61 Start: 40323, Stop: 40724, Start Num: 6

Candidate Starts for Murai\_61:

(Start: 6 @40323 has 69 MA's), (Start: 12 @40359 has 11 MA's), (Start: 15 @40401 has 1 MA's), (20, 40431), (30, 40527), (39, 40587), (46, 40662),

Gene: Nekros\_38 Start: 33219, Stop: 33581, Start Num: 13

Candidate Starts for Nekros\_38:

(13, 33219), (39, 33444), (42, 33486),

Gene: NiebruSaylor\_59 Start: 39530, Stop: 39931, Start Num: 6

Candidate Starts for NiebruSaylor\_59:

(Start: 6 @39530 has 69 MA's), (Start: 12 @39566 has 11 MA's), (Start: 15 @39608 has 1 MA's), (20, 39638), (30, 39734), (39, 39794), (46, 39869),

Gene: NihilNomen\_40 Start: 33704, Stop: 34102, Start Num: 9

Candidate Starts for NihilNomen\_40:

(Start: 9 @33704 has 9 MA's), (13, 33740), (20, 33809), (39, 33965), (42, 34007),

Gene: Noxious\_35 Start: 28954, Stop: 29355, Start Num: 7

Candidate Starts for Noxious\_35:

(Start: 7 @28954 has 30 MA's), (23, 29080), (24, 29083), (31, 29161), (34, 29179), (38, 29215), (47, 29314), (48, 29320),

Gene: Oaker\_32 Start: 30969, Stop: 31376, Start Num: 6

Candidate Starts for Oaker\_32:

(Start: 6 @30969 has 69 MA's), (14, 31029), (17, 31053), (28, 31164), (30, 31173), (31, 31176), (32, 31182), (34, 31194), (39, 31233), (46, 31308), (49, 31338),

Gene: Odette\_40 Start: 32937, Stop: 33335, Start Num: 9

Candidate Starts for Odette\_40:

(Start: 9 @32937 has 9 MA's), (13, 32973), (20, 33042), (39, 33198), (42, 33240),

Gene: PaintedDog\_22 Start: 22562, Stop: 22963, Start Num: 6

Candidate Starts for PaintedDog\_22:

(Start: 6 @22562 has 69 MA's), (36, 22799), (39, 22826), (42, 22868), (46, 22901),

Gene: Papez\_35 Start: 29148, Stop: 29549, Start Num: 7

Candidate Starts for Papez\_35:

(Start: 7 @29148 has 30 MA's), (23, 29274), (24, 29277), (31, 29355), (34, 29373), (38, 29409), (47, 29508), (48, 29514),

Gene: Pelly\_34 Start: 28171, Stop: 28539, Start Num: 12

Candidate Starts for Pelly\_34:

(Start: 12 @28171 has 11 MA's), (21, 28252), (23, 28264), (38, 28399), (39, 28402), (40, 28405),

Gene: Peterson\_36 Start: 29362, Stop: 29763, Start Num: 8

Candidate Starts for Peterson\_36:

(Start: 8 @29362 has 1 MA's), (Start: 11 @29389 has 1 MA's), (23, 29488), (26, 29536), (31, 29569), (38, 29623), (48, 29728),

Gene: PherrisBueller\_34 Start: 27304, Stop: 27705, Start Num: 7

Candidate Starts for PherrisBueller\_34:

(Start: 7 @27304 has 30 MA's), (23, 27430), (24, 27433), (31, 27511), (34, 27529), (38, 27565), (47, 27664), (48, 27670),

Gene: Phlippers\_32 Start: 28552, Stop: 28920, Start Num: 12

Candidate Starts for Phlippers\_32:

(Start: 12 @28552 has 11 MA's), (21, 28633), (23, 28645), (38, 28780), (39, 28783), (40, 28786),

Gene: Phoebus\_40 Start: 33965, Stop: 34354, Start Num: 10

Candidate Starts for Phoebus\_40:

(Start: 10 @33965 has 12 MA's), (25, 34112), (27, 34145), (45, 34280),

Gene: Phrappuccino\_176 Start: 115819, Stop: 116232, Start Num: 6

Candidate Starts for Phrappuccino\_176:

(Start: 6 @115819 has 69 MA's), (16, 115900), (20, 115927), (30, 116023), (37, 116059), (43, 116137), (44, 116146),

Gene: Phreeze\_32 Start: 30712, Stop: 31119, Start Num: 6

Candidate Starts for Phreeze\_32:

(Start: 6 @30712 has 69 MA's), (14, 30772), (17, 30796), (28, 30907), (30, 30916), (31, 30919), (32, 30925), (34, 30937), (39, 30976), (46, 31051), (49, 31081),

Gene: Poise\_96 Start: 55161, Stop: 55568, Start Num: 6

Candidate Starts for Poise\_96:

(Start: 6 @55161 has 69 MA's), (20, 55269), (25, 55320), (30, 55365), (39, 55425), (47, 55521),

Gene: Pound\_42 Start: 34935, Stop: 35333, Start Num: 9

Candidate Starts for Pound\_42:

(Start: 9 @34935 has 9 MA's), (13, 34971), (20, 35040), (39, 35196), (42, 35238),

Gene: PowerRanger\_36 Start: 28987, Stop: 29355, Start Num: 12

Candidate Starts for PowerRanger\_36:

(Start: 12 @28987 has 11 MA's), (21, 29068), (23, 29080), (38, 29215), (39, 29218), (40, 29221),

Gene: Pringar\_91 Start: 54946, Stop: 55353, Start Num: 6

Candidate Starts for Pringar\_91:

(Start: 4 @54925 has 2 MA's), (Start: 6 @54946 has 69 MA's), (20, 55054), (25, 55105), (30, 55150), (39, 55210), (41, 55249), (43, 55261), (47, 55306),

Gene: ProMouse\_32 Start: 27975, Stop: 28343, Start Num: 12

Candidate Starts for ProMouse\_32:

(Start: 12 @27975 has 11 MA's), (21, 28056), (23, 28068), (38, 28203), (39, 28206), (40, 28209),

Gene: Puissant\_31 Start: 31180, Stop: 31587, Start Num: 6

Candidate Starts for Puissant\_31:

(Start: 6 @31180 has 69 MA's), (16, 31261), (19, 31273), (25, 31339), (31, 31387), (39, 31444),

Gene: Puppet\_33 Start: 27502, Stop: 27903, Start Num: 7

Candidate Starts for Puppet\_33:

(Start: 7 @27502 has 30 MA's), (23, 27628), (24, 27631), (31, 27709), (34, 27727), (38, 27763), (47, 27862), (48, 27868),

Gene: Pygmy\_22 Start: 22761, Stop: 23162, Start Num: 6

Candidate Starts for Pygmy\_22:

(Start: 6 @22761 has 69 MA's), (27, 22953), (33, 22983), (36, 22998), (39, 23025), (46, 23100),

Gene: Raela\_97 Start: 55712, Stop: 56119, Start Num: 6

Candidate Starts for Raela\_97:

(Start: 6 @55712 has 69 MA's), (18, 55799), (20, 55820), (25, 55871), (30, 55916), (39, 55976), (43, 56027), (47, 56072),

Gene: Rearden\_35 Start: 29956, Stop: 30354, Start Num: 9

Candidate Starts for Rearden\_35:

(Start: 9 @29956 has 9 MA's), (13, 29992), (20, 30061), (39, 30217), (42, 30259),

Gene: RedRaider77\_95 Start: 55106, Stop: 55513, Start Num: 6

Candidate Starts for RedRaider77\_95:

(Start: 6 @55106 has 69 MA's), (20, 55214), (25, 55265), (30, 55310), (39, 55370), (43, 55421), (47, 55466),

Gene: Redno2\_39 Start: 33428, Stop: 33817, Start Num: 10

Candidate Starts for Redno2\_39:

(Start: 10 @33428 has 12 MA's), (25, 33575), (27, 33608), (45, 33743),

Gene: RidgeCB\_33 Start: 27235, Stop: 27636, Start Num: 7

Candidate Starts for RidgeCB\_33:

(Start: 7 @27235 has 30 MA's), (23, 27361), (24, 27364), (31, 27442), (34, 27460), (38, 27496), (47, 27595), (48, 27601),

Gene: Ryadel\_64 Start: 40911, Stop: 41312, Start Num: 6

Candidate Starts for Ryadel\_64:

(Start: 6 @40911 has 69 MA's), (Start: 12 @40947 has 11 MA's), (Start: 15 @40989 has 1 MA's), (20, 41019), (30, 41115), (39, 41175), (46, 41250),

Gene: Schatzie\_38 Start: 32685, Stop: 33083, Start Num: 9

Candidate Starts for Schatzie\_38:

(Start: 9 @32685 has 9 MA's), (13, 32721), (20, 32790), (39, 32946), (42, 32988),

Gene: SchoolBus\_60 Start: 40095, Stop: 40496, Start Num: 6

Candidate Starts for SchoolBus\_60:

(Start: 6 @40095 has 69 MA's), (Start: 12 @40131 has 11 MA's), (Start: 15 @40173 has 1 MA's), (20, 40203), (30, 40299), (39, 40359), (46, 40434),

Gene: Schuy\_61 Start: 39886, Stop: 40287, Start Num: 6

Candidate Starts for Schuy\_61:

(Start: 6 @39886 has 69 MA's), (Start: 12 @39922 has 11 MA's), (Start: 15 @39964 has 1 MA's), (20, 39994), (30, 40090), (39, 40150), (46, 40225),

Gene: ScoobyDoobyDoo\_108 Start: 59606, Stop: 60013, Start Num: 6

Candidate Starts for ScoobyDoobyDoo\_108:

(1, 59330), (2, 59351), (3, 59570), (Start: 6 @59606 has 69 MA's), (Start: 15 @59684 has 1 MA's), (16, 59687), (30, 59810), (35, 59834), (39, 59870), (46, 59948),

Gene: Settecandela\_176 Start: 115819, Stop: 116232, Start Num: 6

Candidate Starts for Settecandela\_176:

(Start: 6 @115819 has 69 MA's), (16, 115900), (20, 115927), (30, 116023), (37, 116059), (43, 116137), (44, 116146),

Gene: Shida\_60 Start: 39793, Stop: 40194, Start Num: 6

Candidate Starts for Shida\_60:

(Start: 6 @39793 has 69 MA's), (Start: 12 @39829 has 11 MA's), (Start: 15 @39871 has 1 MA's), (20, 39901), (30, 39997), (39, 40057), (46, 40132),

Gene: Shipwreck\_22 Start: 22739, Stop: 23140, Start Num: 6

Candidate Starts for Shipwreck\_22:

(Start: 6 @22739 has 69 MA's), (27, 22931), (33, 22961), (36, 22976), (39, 23003), (46, 23078),

Gene: Smairt\_34 Start: 28184, Stop: 28552, Start Num: 12

Candidate Starts for Smairt\_34:

(Start: 12 @28184 has 11 MA's), (21, 28265), (23, 28277), (38, 28412), (39, 28415), (40, 28418),

Gene: Smeagol\_35 Start: 28818, Stop: 29192, Start Num: 11

Candidate Starts for Smeagol\_35:

(Start: 11 @28818 has 1 MA's), (23, 28917), (31, 28998), (48, 29157),

Gene: Smooch\_63 Start: 41815, Stop: 42216, Start Num: 6

Candidate Starts for Smooch\_63:

(Start: 6 @41815 has 69 MA's), (Start: 12 @41851 has 11 MA's), (Start: 15 @41893 has 1 MA's), (20, 41923), (30, 42019), (39, 42079), (46, 42154),

Gene: SwissCheese\_35 Start: 28167, Stop: 28568, Start Num: 7

Candidate Starts for SwissCheese\_35:

(Start: 7 @28167 has 30 MA's), (23, 28293), (24, 28296), (31, 28374), (34, 28392), (38, 28428), (47, 28527), (48, 28533),

Gene: TelAviv\_57 Start: 40068, Stop: 40469, Start Num: 6

Candidate Starts for TelAviv\_57:

(Start: 6 @40068 has 69 MA's), (Start: 12 @40104 has 11 MA's), (Start: 15 @40146 has 1 MA's), (20, 40176), (30, 40272), (39, 40332), (46, 40407),

Gene: Tesla\_91 Start: 54955, Stop: 55362, Start Num: 6

Candidate Starts for Tesla\_91:

(Start: 6 @54955 has 69 MA's), (18, 55042), (20, 55063), (25, 55114), (30, 55159), (39, 55219), (47, 55315),

Gene: Thibault\_37 Start: 33811, Stop: 34215, Start Num: 5

Candidate Starts for Thibault\_37:

(Start: 5 @33811 has 3 MA's), (14, 33874), (36, 34051), (39, 34078), (46, 34153),

Gene: ThreeRngTarjay\_39 Start: 33815, Stop: 34204, Start Num: 10

Candidate Starts for ThreeRngTarjay\_39:

(Start: 10 @33815 has 12 MA's), (25, 33962), (27, 33995), (45, 34130),

Gene: Thumb\_32 Start: 30709, Stop: 31116, Start Num: 6

Candidate Starts for Thumb\_32:

(Start: 6 @30709 has 69 MA's), (14, 30769), (17, 30793), (28, 30904), (30, 30913), (31, 30916), (32, 30922), (34, 30934), (39, 30973), (41, 31012), (46, 31048), (49, 31078),

Gene: Topgun\_33 Start: 27344, Stop: 27712, Start Num: 12

Candidate Starts for Topgun\_33:

(Start: 12 @27344 has 11 MA's), (21, 27425), (23, 27437), (38, 27572), (39, 27575), (40, 27578),

Gene: Tripl3t\_34 Start: 28311, Stop: 28712, Start Num: 7

Candidate Starts for Tripl3t\_34:

(Start: 7 @28311 has 30 MA's), (23, 28437), (24, 28440), (31, 28518), (34, 28536), (38, 28572), (47, 28671), (48, 28677),

Gene: Vagabond\_60 Start: 39931, Stop: 40332, Start Num: 6

Candidate Starts for Vagabond\_60:

(Start: 6 @39931 has 69 MA's), (Start: 12 @39967 has 11 MA's), (Start: 15 @40009 has 1 MA's), (20, 40039), (30, 40135), (39, 40195), (46, 40270),

Gene: VasuNzinga\_93 Start: 55038, Stop: 55445, Start Num: 6  
Candidate Starts for VasuNzinga\_93:  
(Start: 6 @55038 has 69 MA's), (20, 55146), (25, 55197), (30, 55242), (39, 55302), (41, 55341), (43, 55353), (47, 55398),

Gene: Violet\_32 Start: 27984, Stop: 28385, Start Num: 7  
Candidate Starts for Violet\_32:  
(Start: 7 @27984 has 30 MA's), (23, 28110), (24, 28113), (31, 28191), (34, 28209), (38, 28245), (47, 28344), (48, 28350),

Gene: Vorrps\_60 Start: 40143, Stop: 40544, Start Num: 6  
Candidate Starts for Vorrps\_60:  
(Start: 6 @40143 has 69 MA's), (Start: 12 @40179 has 11 MA's), (Start: 15 @40221 has 1 MA's), (20, 40251), (30, 40347), (39, 40407), (46, 40482),

Gene: Wildcat\_46 Start: 35018, Stop: 35425, Start Num: 6  
Candidate Starts for Wildcat\_46:  
(Start: 6 @35018 has 69 MA's), (Start: 10 @35030 has 12 MA's), (30, 35222), (33, 35240), (34, 35243), (36, 35255), (40, 35285), (46, 35357), (49, 35387), (50, 35420),

Gene: Wildflower\_60 Start: 39655, Stop: 40056, Start Num: 6  
Candidate Starts for Wildflower\_60:  
(Start: 6 @39655 has 69 MA's), (Start: 12 @39691 has 11 MA's), (Start: 15 @39733 has 1 MA's), (20, 39763), (30, 39859), (39, 39919), (46, 39994),

Gene: Wilkins\_33 Start: 27275, Stop: 27643, Start Num: 12  
Candidate Starts for Wilkins\_33:  
(Start: 12 @27275 has 11 MA's), (21, 27356), (23, 27368), (38, 27503), (39, 27506), (40, 27509),

Gene: Winget\_61 Start: 40361, Stop: 40762, Start Num: 6  
Candidate Starts for Winget\_61:  
(Start: 6 @40361 has 69 MA's), (Start: 12 @40397 has 11 MA's), (20, 40469), (30, 40565), (39, 40625), (46, 40700),

Gene: Wogge42\_59 Start: 39802, Stop: 40203, Start Num: 6  
Candidate Starts for Wogge42\_59:  
(Start: 6 @39802 has 69 MA's), (Start: 12 @39838 has 11 MA's), (Start: 15 @39880 has 1 MA's), (20, 39910), (30, 40006), (39, 40066), (46, 40141),

Gene: Xiaokay\_38 Start: 33215, Stop: 33619, Start Num: 5  
Candidate Starts for Xiaokay\_38:  
(Start: 5 @33215 has 3 MA's), (14, 33278), (36, 33455), (39, 33482), (46, 33557),

Gene: Yeet\_39 Start: 32930, Stop: 33328, Start Num: 9  
Candidate Starts for Yeet\_39:  
(Start: 9 @32930 has 9 MA's), (13, 32966), (20, 33035), (39, 33191), (42, 33233),

Gene: YoyoKar\_58 Start: 39645, Stop: 40046, Start Num: 6  
Candidate Starts for YoyoKar\_58:  
(Start: 6 @39645 has 69 MA's), (Start: 12 @39681 has 11 MA's), (Start: 15 @39723 has 1 MA's), (20, 39753), (30, 39849), (39, 39909), (46, 39984),

Gene: YungJamal\_65 Start: 41553, Stop: 41954, Start Num: 6

Candidate Starts for YungJamal\_65:

(Start: 6 @41553 has 69 MA's), (Start: 12 @41589 has 11 MA's), (Start: 15 @41631 has 1 MA's), (20, 41661), (30, 41757), (39, 41817), (46, 41892),

Gene: Zakhe101\_60 Start: 40199, Stop: 40600, Start Num: 6

Candidate Starts for Zakhe101\_60:

(Start: 6 @40199 has 69 MA's), (Start: 12 @40235 has 11 MA's), (20, 40307), (30, 40403), (39, 40463), (46, 40538),

Gene: Zebo\_60 Start: 40104, Stop: 40505, Start Num: 6

Candidate Starts for Zebo\_60:

(Start: 6 @40104 has 69 MA's), (Start: 12 @40140 has 11 MA's), (Start: 15 @40182 has 1 MA's), (20, 40212), (30, 40308), (39, 40368), (46, 40443),

Gene: Zelink\_42 Start: 34759, Stop: 35148, Start Num: 10

Candidate Starts for Zelink\_42:

(Start: 10 @34759 has 12 MA's), (25, 34906), (27, 34939), (45, 35074),