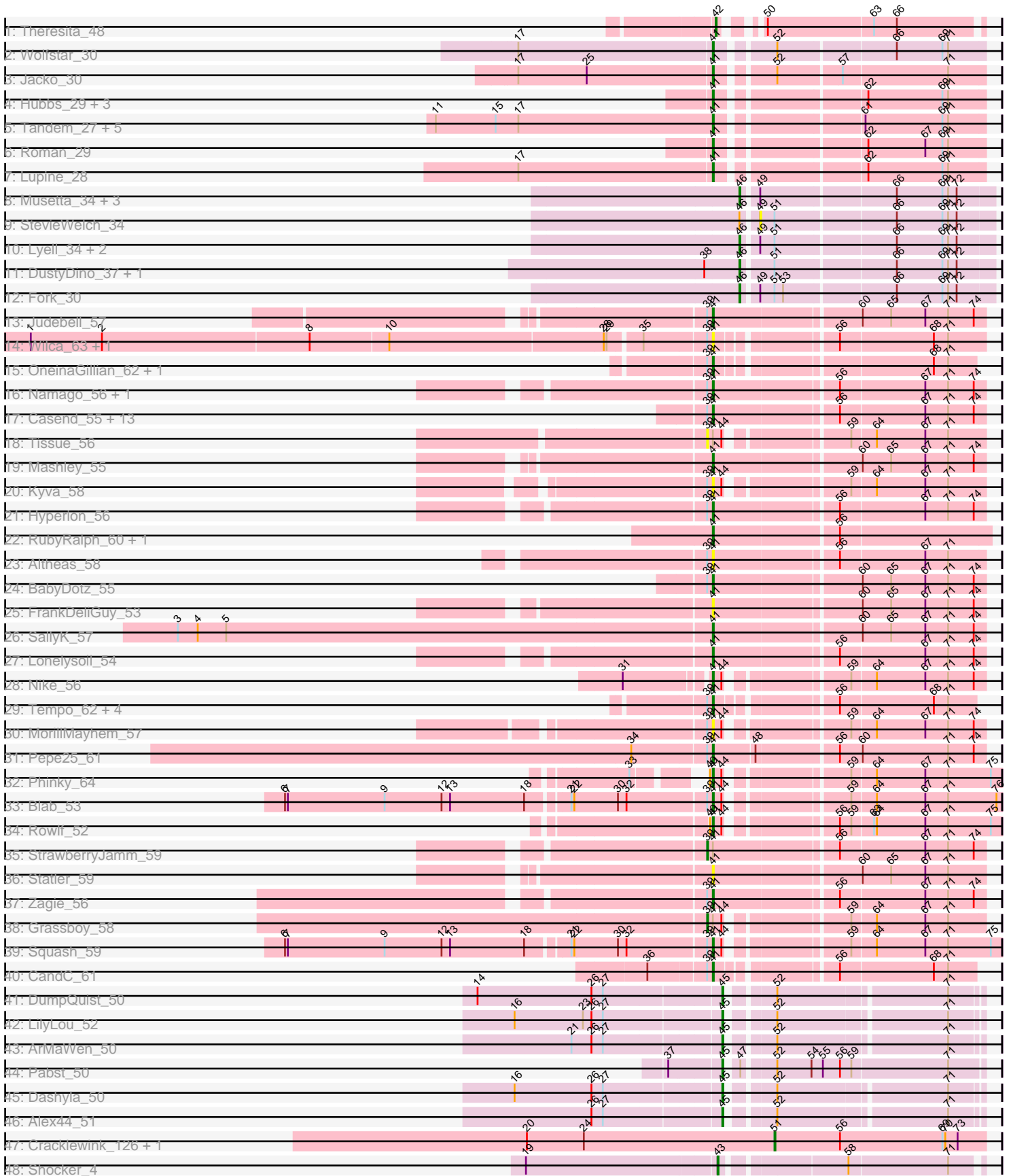


Pham 193927



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 193927 Report

This analysis was run 11/02/24 on database version 579.

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 193927 has 84 members, 16 are drafts.

Phages represented in each track:

- Track 1 : Theresita\_48
- Track 2 : Wolfstar\_30
- Track 3 : Jacko\_30
- Track 4 : Hubbs\_29, PhillyPhilly\_29, Pavlo\_28, DejaVu\_30
- Track 5 : Tandem\_27, Platte\_27, Alleb\_28, Pioneer3\_27, OlinDD\_27, Hortus1\_27
- Track 6 : Roman\_29
- Track 7 : Lupine\_28
- Track 8 : Musetta\_34, Yuma\_33, Welcome\_35, ASegato\_33
- Track 9 : StevieWelch\_34
- Track 10 : Lyell\_34, Necrophoxinus\_36, Erenyeager\_34
- Track 11 : DustyDino\_37, RunningBrook\_36
- Track 12 : Fork\_30
- Track 13 : Judebell\_57
- Track 14 : Wilca\_63, BirdInFrench\_63
- Track 15 : OneinaGillian\_62, Marcie\_67
- Track 16 : Namago\_56, Gazebo\_55
- Track 17 : Casend\_55, Quammi\_52, DonaldDuck\_54, EverythinBagel\_54, Wheelie\_54, Viceroy\_53, Rudy\_52, Wayne3\_56, Zhafia\_57, Jehoshaphat\_56, Llemily\_54, Phabia\_54, Sillytadpoles\_55, Teehee\_55
- Track 18 : Tissue\_56
- Track 19 : Mashley\_55
- Track 20 : Kyva\_58
- Track 21 : Hyperion\_56
- Track 22 : RubyRalph\_60, Fransoyer\_58
- Track 23 : Altheas\_58
- Track 24 : BabyDotz\_55
- Track 25 : FrankDeliGuy\_53
- Track 26 : SallyK\_57
- Track 27 : Lonelysoil\_54
- Track 28 : Nike\_56
- Track 29 : Tempo\_62, Romm\_64, Kelcole\_60, Fregley\_62, RobinRose\_64
- Track 30 : MorillMayhem\_57
- Track 31 : Pepe25\_61

- Track 32 : Phinky\_64
- Track 33 : Blab\_53
- Track 34 : Rowlf\_52
- Track 35 : StrawberryJamm\_59
- Track 36 : Statler\_59
- Track 37 : Zagie\_56
- Track 38 : Grassboy\_58
- Track 39 : Squash\_59
- Track 40 : CandC\_61
- Track 41 : DumpQuist\_50
- Track 42 : LilyLou\_52
- Track 43 : ArMaWen\_50
- Track 44 : Pabst\_50
- Track 45 : Dashyla\_50
- Track 46 : Alex44\_51
- Track 47 : Cracklewink\_126, Bipper\_125
- Track 48 : Shocker\_4

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

The start number called the most often in the published annotations is 41, it was called in 47 of the 68 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alleb\_28, Altheas\_58, BabyDotz\_55, BirdInFrench\_63, Blab\_53, CandC\_61, Casend\_55, DejaVu\_30, DonaldDuck\_54, EverythinBagel\_54, FrankDeliGuy\_53, Fransoyer\_58, Fregley\_62, Gazebo\_55, Hortus1\_27, Hubbs\_29, Hyperion\_56, Jacko\_30, Jehoshaphat\_56, Judebell\_57, Kelcole\_60, Kyva\_58, Llemily\_54, Lonelysoil\_54, Lupine\_28, Marcie\_67, Mashley\_55, MorillMayhem\_57, Namago\_56, Nike\_56, OlinDD\_27, OneinaGillian\_62, Pavlo\_28, Pepe25\_61, Phabia\_54, PhillyPhilly\_29, Phinky\_64, Pioneer3\_27, Platte\_27, Quammi\_52, RobinRose\_64, Roman\_29, Romm\_64, Rowlf\_52, RubyRalph\_60, Rudy\_52, SallyK\_57, Sillytadpoles\_55, Squash\_59, Statler\_59, Tandem\_27, Teehee\_55, Tempo\_62, Viceroy\_53, Wayne3\_56, Wheelie\_54, Wilca\_63, Wolfstar\_30, Zagie\_56, Zhafia\_57,

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

- Grassboy\_58, StrawberryJamm\_59, Tissue\_56,

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

- ASegato\_33, Alex44\_51, ArMaWen\_50, Bipper\_125, Cracklewink\_126, Dashyla\_50, DumpQuist\_50, DustyDino\_37, Erenyeager\_34, Fork\_30, LilyLou\_52, Lyell\_34, Musetta\_34, Necrophoxinus\_36, Pabst\_50, RunningBrook\_36, Shocker\_4, StevieWelch\_34, Theresita\_48, Welcome\_35, Yuma\_33,

**Summary by start number:**

Start 39:

- Found in 39 of 84 ( 46.4% ) of genes in pham
- Manual Annotations of this start: 2 of 68
- Called 7.7% of time when present

- Phage (with cluster) where this start called: Grassboy\_58 (EG), StrawberryJamm\_59 (EG), Tissue\_56 (EG),

#### Start 41:

- Found in 63 of 84 ( 75.0% ) of genes in pham
- Manual Annotations of this start: 47 of 68
- Called 95.2% of time when present
- Phage (with cluster) where this start called: Alleb\_28 (ED1), Altheas\_58 (EG), BabyDotz\_55 (EG), BirdInFrench\_63 (EG), Blab\_53 (EG), CandC\_61 (EG), Casend\_55 (EG), DejaVu\_30 (ED1), DonaldDuck\_54 (EG), EverythinBagel\_54 (EG), FrankDeliGuy\_53 (EG), Fransoyer\_58 (EG), Fregley\_62 (EG), Gazebo\_55 (EG), Hortus1\_27 (ED1), Hubbs\_29 (ED1), Hyperion\_56 (EG), Jacko\_30 (ED1), Jehoshaphat\_56 (EG), Judebell\_57 (EG), Kelcole\_60 (EG), Kyva\_58 (EG), Llemily\_54 (EG), Lonelysoil\_54 (EG), Lupine\_28 (ED1), Marcie\_67 (EG), Mashley\_55 (EG), MorillMayhem\_57 (EG), Namago\_56 (EG), Nike\_56 (EG), OlinDD\_27 (ED1), OneinaGillian\_62 (EG), Pavlo\_28 (ED1), Pepe25\_61 (EG), Phabia\_54 (EG), PhillyPhilly\_29 (ED1), Phinky\_64 (EG), Pioneer3\_27 (ED1), Platte\_27 (ED1), Quammi\_52 (EG), RobinRose\_64 (EG), Roman\_29 (ED1), Romm\_64 (EG), Rowlf\_52 (EG), RubyRalph\_60 (EG), Rudy\_52 (EG), SallyK\_57 (EG), Sillytadpoles\_55 (EG), Squash\_59 (EG), Statler\_59 (EG), Tandem\_27 (ED1), Teehee\_55 (EG), Tempo\_62 (EG), Viceroy\_53 (EG), Wayne3\_56 (EG), Wheelie\_54 (EG), Wilca\_63 (EG), Wolfstar\_30 (ED), Zagie\_56 (EG), Zhafia\_57 (EG),

#### Start 42:

- Found in 1 of 84 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 68
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Theresita\_48 (EA7),

#### Start 43:

- Found in 1 of 84 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 68
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Shocker\_4 (singleton),

#### Start 45:

- Found in 6 of 84 ( 7.1% ) of genes in pham
- Manual Annotations of this start: 6 of 68
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alex44\_51 (EK1), ArMaWen\_50 (EK1), Dashyla\_50 (EK1), DumpQuist\_50 (EK1), LilyLou\_52 (EK1), Pabst\_50 (EK1),

#### Start 46:

- Found in 11 of 84 ( 13.1% ) of genes in pham
- Manual Annotations of this start: 9 of 68
- Called 90.9% of time when present
- Phage (with cluster) where this start called: ASegato\_33 (ED2), DustyDino\_37 (ED2), Erenyeager\_34 (ED2), Fork\_30 (ED2), Lyell\_34 (ED2), Musetta\_34 (ED2), Necrophoxinus\_36 (ED2), RunningBrook\_36 (ED2), Welcome\_35 (ED2), Yuma\_33 (ED2),

#### Start 49:

- Found in 9 of 84 ( 10.7% ) of genes in pham

- No Manual Annotations of this start.
- Called 11.1% of time when present
- Phage (with cluster) where this start called: StevieWelch\_34 (ED2),

Start 51:

- Found in 9 of 84 ( 10.7% ) of genes in pham
- Manual Annotations of this start: 2 of 68
- Called 22.2% of time when present
- Phage (with cluster) where this start called: Bipper\_125 (Y), Cracklewink\_126 (Y),

### **Summary by clusters:**

There are 8 clusters represented in this pham: singleton, ED, EG, ED2, ED1, EA7, Y, EK1,

Info for manual annotations of cluster EA7:

- Start number 42 was manually annotated 1 time for cluster EA7.

Info for manual annotations of cluster ED:

- Start number 41 was manually annotated 1 time for cluster ED.

Info for manual annotations of cluster ED1:

- Start number 41 was manually annotated 13 times for cluster ED1.

Info for manual annotations of cluster ED2:

- Start number 46 was manually annotated 9 times for cluster ED2.

Info for manual annotations of cluster EG:

- Start number 39 was manually annotated 2 times for cluster EG.
- Start number 41 was manually annotated 33 times for cluster EG.

Info for manual annotations of cluster EK1:

- Start number 45 was manually annotated 6 times for cluster EK1.

Info for manual annotations of cluster Y:

- Start number 51 was manually annotated 2 times for cluster Y.

### **Gene Information:**

Gene: ASegato\_33 Start: 9624, Stop: 9875, Start Num: 46

Candidate Starts for ASegato\_33:

(Start: 46 @9624 has 9 MA's), (49, 9639), (66, 9774), (69, 9822), (71, 9828), (72, 9837),

Gene: Alex44\_51 Start: 51379, Stop: 51618, Start Num: 45

Candidate Starts for Alex44\_51:

(26, 51250), (27, 51262), (Start: 45 @51379 has 6 MA's), (52, 51418), (71, 51586),

Gene: Alleb\_28 Start: 8830, Stop: 9090, Start Num: 41

Candidate Starts for Alleb\_28:

(11, 8539), (15, 8602), (17, 8626), (Start: 41 @8830 has 47 MA's), (61, 8965), (69, 9046), (71, 9052),

Gene: Altheas\_58 Start: 42617, Stop: 42345, Start Num: 41  
Candidate Starts for Altheas\_58:  
(Start: 39 @42623 has 2 MA's), (Start: 41 @42617 has 47 MA's), (56, 42494), (67, 42407), (71, 42383),

Gene: ArMaWen\_50 Start: 50919, Stop: 51158, Start Num: 45  
Candidate Starts for ArMaWen\_50:  
(21, 50769), (26, 50790), (27, 50802), (Start: 45 @50919 has 6 MA's), (52, 50958), (71, 51126),

Gene: BabyDotz\_55 Start: 42840, Stop: 42568, Start Num: 41  
Candidate Starts for BabyDotz\_55:  
(Start: 39 @42843 has 2 MA's), (Start: 41 @42840 has 47 MA's), (60, 42696), (65, 42666), (67, 42630), (71, 42606), (74, 42579),

Gene: Bipper\_125 Start: 73005, Stop: 73226, Start Num: 51  
Candidate Starts for Bipper\_125:  
(20, 72744), (24, 72804), (Start: 51 @73005 has 2 MA's), (56, 73074), (69, 73182), (70, 73185), (73, 73197),

Gene: BirdInFrench\_63 Start: 42918, Stop: 42661, Start Num: 41  
Candidate Starts for BirdInFrench\_63:  
(1, 43611), (2, 43536), (8, 43320), (10, 43239), (28, 43017), (29, 43014), (35, 42984), (Start: 39 @42921 has 2 MA's), (Start: 41 @42918 has 47 MA's), (56, 42810), (68, 42714), (71, 42699),

Gene: Blab\_53 Start: 41667, Stop: 41395, Start Num: 41  
Candidate Starts for Blab\_53:  
(6, 42102), (7, 42099), (9, 41997), (12, 41937), (13, 41928), (18, 41850), (21, 41811), (22, 41808), (30, 41763), (32, 41754), (Start: 39 @41673 has 2 MA's), (Start: 41 @41667 has 47 MA's), (44, 41658), (59, 41550), (64, 41526), (67, 41475), (71, 41451), (76, 41400),

Gene: CandC\_61 Start: 42136, Stop: 41888, Start Num: 41  
Candidate Starts for CandC\_61:  
(36, 42196), (Start: 39 @42139 has 2 MA's), (Start: 41 @42136 has 47 MA's), (56, 42028), (68, 41932), (71, 41917),

Gene: Casend\_55 Start: 42251, Stop: 41979, Start Num: 41  
Candidate Starts for Casend\_55:  
(Start: 39 @42254 has 2 MA's), (Start: 41 @42251 has 47 MA's), (56, 42128), (67, 42041), (71, 42017), (74, 41990),

Gene: Cracklewink\_126 Start: 72157, Stop: 72378, Start Num: 51  
Candidate Starts for Cracklewink\_126:  
(20, 71896), (24, 71956), (Start: 51 @72157 has 2 MA's), (56, 72226), (69, 72334), (70, 72337), (73, 72349),

Gene: Dashyla\_50 Start: 51053, Stop: 51292, Start Num: 45  
Candidate Starts for Dashyla\_50:  
(16, 50843), (26, 50924), (27, 50936), (Start: 45 @51053 has 6 MA's), (52, 51092), (71, 51260),

Gene: DejaVu\_30 Start: 9028, Stop: 9288, Start Num: 41  
Candidate Starts for DejaVu\_30:  
(Start: 41 @9028 has 47 MA's), (62, 9166), (69, 9244), (71, 9250),

Gene: DonaldDuck\_54 Start: 41600, Stop: 41328, Start Num: 41  
Candidate Starts for DonaldDuck\_54:  
(Start: 39 @41603 has 2 MA's), (Start: 41 @41600 has 47 MA's), (56, 41477), (67, 41390), (71, 41366), (74, 41339),

Gene: DumpQuist\_50 Start: 50907, Stop: 51146, Start Num: 45  
Candidate Starts for DumpQuist\_50:  
(14, 50658), (26, 50778), (27, 50790), (Start: 45 @50907 has 6 MA's), (52, 50946), (71, 51114),

Gene: DustyDino\_37 Start: 10571, Stop: 10822, Start Num: 46  
Candidate Starts for DustyDino\_37:  
(38, 10535), (Start: 46 @10571 has 9 MA's), (Start: 51 @10601 has 2 MA's), (66, 10721), (69, 10769), (71, 10775), (72, 10784),

Gene: Erenyeager\_34 Start: 9965, Stop: 10216, Start Num: 46  
Candidate Starts for Erenyeager\_34:  
(Start: 46 @9965 has 9 MA's), (49, 9980), (Start: 51 @9995 has 2 MA's), (66, 10115), (69, 10163), (71, 10169), (72, 10178),

Gene: EverythinBagel\_54 Start: 41961, Stop: 41689, Start Num: 41  
Candidate Starts for EverythinBagel\_54:  
(Start: 39 @41964 has 2 MA's), (Start: 41 @41961 has 47 MA's), (56, 41838), (67, 41751), (71, 41727), (74, 41700),

Gene: Fork\_30 Start: 9281, Stop: 9532, Start Num: 46  
Candidate Starts for Fork\_30:  
(Start: 46 @9281 has 9 MA's), (49, 9296), (Start: 51 @9311 has 2 MA's), (53, 9320), (66, 9431), (69, 9479), (71, 9485), (72, 9494),

Gene: FrankDeliGuy\_53 Start: 41773, Stop: 41501, Start Num: 41  
Candidate Starts for FrankDeliGuy\_53:  
(Start: 41 @41773 has 47 MA's), (60, 41629), (65, 41599), (67, 41563), (71, 41539), (74, 41512),

Gene: Fransoyer\_58 Start: 44153, Stop: 43872, Start Num: 41  
Candidate Starts for Fransoyer\_58:  
(Start: 41 @44153 has 47 MA's), (56, 44027),

Gene: Fregley\_62 Start: 42305, Stop: 42057, Start Num: 41  
Candidate Starts for Fregley\_62:  
(Start: 39 @42308 has 2 MA's), (Start: 41 @42305 has 47 MA's), (56, 42197), (68, 42101), (71, 42086),

Gene: Gazebo\_55 Start: 42275, Stop: 42003, Start Num: 41  
Candidate Starts for Gazebo\_55:  
(Start: 39 @42281 has 2 MA's), (Start: 41 @42275 has 47 MA's), (56, 42152), (67, 42065), (71, 42041), (74, 42014),

Gene: Grassboy\_58 Start: 42646, Stop: 42386, Start Num: 39  
Candidate Starts for Grassboy\_58:  
(Start: 39 @42646 has 2 MA's), (Start: 41 @42640 has 47 MA's), (44, 42631), (59, 42523), (64, 42499), (67, 42448), (71, 42424),

Gene: Hortus1\_27 Start: 8829, Stop: 9089, Start Num: 41

Candidate Starts for Hortus1\_27:  
(11, 8538), (15, 8601), (17, 8625), (Start: 41 @8829 has 47 MA's), (61, 8964), (69, 9045), (71, 9051),

Gene: Hubbs\_29 Start: 9240, Stop: 9500, Start Num: 41  
Candidate Starts for Hubbs\_29:  
(Start: 41 @9240 has 47 MA's), (62, 9378), (69, 9456), (71, 9462),

Gene: Hyperion\_56 Start: 42456, Stop: 42184, Start Num: 41  
Candidate Starts for Hyperion\_56:  
(Start: 39 @42459 has 2 MA's), (Start: 41 @42456 has 47 MA's), (56, 42333), (67, 42246), (71, 42222), (74, 42195),

Gene: Jacko\_30 Start: 9333, Stop: 9593, Start Num: 41  
Candidate Starts for Jacko\_30:  
(17, 9132), (25, 9204), (Start: 41 @9333 has 47 MA's), (52, 9384), (57, 9447), (71, 9555),

Gene: Jehoshaphat\_56 Start: 42519, Stop: 42247, Start Num: 41  
Candidate Starts for Jehoshaphat\_56:  
(Start: 39 @42522 has 2 MA's), (Start: 41 @42519 has 47 MA's), (56, 42396), (67, 42309), (71, 42285), (74, 42258),

Gene: Judebell\_57 Start: 42165, Stop: 41893, Start Num: 41  
Candidate Starts for Judebell\_57:  
(Start: 39 @42168 has 2 MA's), (Start: 41 @42165 has 47 MA's), (60, 42021), (65, 41991), (67, 41955), (71, 41931), (74, 41904),

Gene: Kelcole\_60 Start: 42364, Stop: 42116, Start Num: 41  
Candidate Starts for Kelcole\_60:  
(Start: 39 @42367 has 2 MA's), (Start: 41 @42364 has 47 MA's), (56, 42256), (68, 42160), (71, 42145),

Gene: Kyva\_58 Start: 42697, Stop: 42443, Start Num: 41  
Candidate Starts for Kyva\_58:  
(Start: 39 @42703 has 2 MA's), (Start: 41 @42697 has 47 MA's), (44, 42688), (59, 42580), (64, 42556), (67, 42505), (71, 42481),

Gene: LilyLou\_52 Start: 51371, Stop: 51610, Start Num: 45  
Candidate Starts for LilyLou\_52:  
(16, 51161), (23, 51233), (26, 51242), (27, 51254), (Start: 45 @51371 has 6 MA's), (52, 51410), (71, 51578),

Gene: Llemily\_54 Start: 41295, Stop: 41023, Start Num: 41  
Candidate Starts for Llemily\_54:  
(Start: 39 @41298 has 2 MA's), (Start: 41 @41295 has 47 MA's), (56, 41172), (67, 41085), (71, 41061), (74, 41034),

Gene: Lonelysoil\_54 Start: 41648, Stop: 41376, Start Num: 41  
Candidate Starts for Lonelysoil\_54:  
(Start: 41 @41648 has 47 MA's), (56, 41525), (67, 41438), (71, 41414), (74, 41387),

Gene: Lupine\_28 Start: 8912, Stop: 9172, Start Num: 41  
Candidate Starts for Lupine\_28:  
(17, 8711), (Start: 41 @8912 has 47 MA's), (62, 9050), (69, 9128), (71, 9134),



Gene: Lyell\_34 Start: 9883, Stop: 10134, Start Num: 46

Candidate Starts for Lyell\_34:

(Start: 46 @9883 has 9 MA's), (49, 9898), (Start: 51 @9913 has 2 MA's), (66, 10033), (69, 10081), (71, 10087), (72, 10096),

Gene: Marcie\_67 Start: 43263, Stop: 43015, Start Num: 41

Candidate Starts for Marcie\_67:

(Start: 39 @43266 has 2 MA's), (Start: 41 @43263 has 47 MA's), (68, 43059), (71, 43044),

Gene: Mashley\_55 Start: 42232, Stop: 41960, Start Num: 41

Candidate Starts for Mashley\_55:

(Start: 41 @42232 has 47 MA's), (60, 42088), (65, 42058), (67, 42022), (71, 41998), (74, 41971),

Gene: MorillMayhem\_57 Start: 42562, Stop: 42308, Start Num: 41

Candidate Starts for MorillMayhem\_57:

(Start: 39 @42568 has 2 MA's), (Start: 41 @42562 has 47 MA's), (44, 42553), (59, 42445), (64, 42421), (67, 42370), (71, 42346), (74, 42319),

Gene: Musetta\_34 Start: 9992, Stop: 10243, Start Num: 46

Candidate Starts for Musetta\_34:

(Start: 46 @9992 has 9 MA's), (49, 10007), (66, 10142), (69, 10190), (71, 10196), (72, 10205),

Gene: Namago\_56 Start: 41635, Stop: 41363, Start Num: 41

Candidate Starts for Namago\_56:

(Start: 39 @41641 has 2 MA's), (Start: 41 @41635 has 47 MA's), (56, 41512), (67, 41425), (71, 41401), (74, 41374),

Gene: Necrophoxinus\_36 Start: 10579, Stop: 10830, Start Num: 46

Candidate Starts for Necrophoxinus\_36:

(Start: 46 @10579 has 9 MA's), (49, 10594), (Start: 51 @10609 has 2 MA's), (66, 10729), (69, 10777), (71, 10783), (72, 10792),

Gene: Nike\_56 Start: 42603, Stop: 42349, Start Num: 41

Candidate Starts for Nike\_56:

(31, 42684), (Start: 41 @42603 has 47 MA's), (44, 42594), (59, 42486), (64, 42462), (67, 42411), (71, 42387), (74, 42360),

Gene: OlinDD\_27 Start: 8828, Stop: 9088, Start Num: 41

Candidate Starts for OlinDD\_27:

(11, 8537), (15, 8600), (17, 8624), (Start: 41 @8828 has 47 MA's), (61, 8963), (69, 9044), (71, 9050),

Gene: OneinaGillian\_62 Start: 42266, Stop: 42018, Start Num: 41

Candidate Starts for OneinaGillian\_62:

(Start: 39 @42269 has 2 MA's), (Start: 41 @42266 has 47 MA's), (68, 42062), (71, 42047),

Gene: Pabst\_50 Start: 50450, Stop: 50701, Start Num: 45

Candidate Starts for Pabst\_50:

(37, 50399), (Start: 45 @50450 has 6 MA's), (47, 50459), (52, 50489), (54, 50525), (55, 50537), (56, 50555), (59, 50567), (71, 50666),

Gene: Pavlo\_28 Start: 9187, Stop: 9447, Start Num: 41

Candidate Starts for Pavlo\_28:

(Start: 41 @9187 has 47 MA's), (62, 9325), (69, 9403), (71, 9409),

Gene: Pepe25\_61 Start: 41821, Stop: 41549, Start Num: 41

Candidate Starts for Pepe25\_61:

(34, 41899), (Start: 39 @41824 has 2 MA's), (Start: 41 @41821 has 47 MA's), (48, 41779), (56, 41698), (60, 41677), (71, 41587), (74, 41560),

Gene: Phabia\_54 Start: 41710, Stop: 41438, Start Num: 41

Candidate Starts for Phabia\_54:

(Start: 39 @41713 has 2 MA's), (Start: 41 @41710 has 47 MA's), (56, 41587), (67, 41500), (71, 41476), (74, 41449),

Gene: PhillyPhilly\_29 Start: 9092, Stop: 9352, Start Num: 41

Candidate Starts for PhillyPhilly\_29:

(Start: 41 @9092 has 47 MA's), (62, 9230), (69, 9308), (71, 9314),

Gene: Phinky\_64 Start: 44342, Stop: 44070, Start Num: 41

Candidate Starts for Phinky\_64:

(33, 44396), (40, 44345), (Start: 41 @44342 has 47 MA's), (44, 44333), (59, 44225), (64, 44201), (67, 44150), (71, 44126), (75, 44081),

Gene: Pioneer3\_27 Start: 8827, Stop: 9087, Start Num: 41

Candidate Starts for Pioneer3\_27:

(11, 8536), (15, 8599), (17, 8623), (Start: 41 @8827 has 47 MA's), (61, 8962), (69, 9043), (71, 9049),

Gene: Platte\_27 Start: 8597, Stop: 8857, Start Num: 41

Candidate Starts for Platte\_27:

(11, 8306), (15, 8369), (17, 8393), (Start: 41 @8597 has 47 MA's), (61, 8732), (69, 8813), (71, 8819),

Gene: Quammi\_52 Start: 41410, Stop: 41138, Start Num: 41

Candidate Starts for Quammi\_52:

(Start: 39 @41413 has 2 MA's), (Start: 41 @41410 has 47 MA's), (56, 41287), (67, 41200), (71, 41176), (74, 41149),

Gene: RobinRose\_64 Start: 42778, Stop: 42530, Start Num: 41

Candidate Starts for RobinRose\_64:

(Start: 39 @42781 has 2 MA's), (Start: 41 @42778 has 47 MA's), (56, 42670), (68, 42574), (71, 42559),

Gene: Roman\_29 Start: 9087, Stop: 9347, Start Num: 41

Candidate Starts for Roman\_29:

(Start: 41 @9087 has 47 MA's), (62, 9225), (67, 9285), (69, 9303), (71, 9309),

Gene: Romm\_64 Start: 42775, Stop: 42527, Start Num: 41

Candidate Starts for Romm\_64:

(Start: 39 @42778 has 2 MA's), (Start: 41 @42775 has 47 MA's), (56, 42667), (68, 42571), (71, 42556),

Gene: Rowlf\_52 Start: 41508, Stop: 41236, Start Num: 41

Candidate Starts for Rowlf\_52:

(40, 41511), (Start: 41 @41508 has 47 MA's), (44, 41499), (56, 41403), (59, 41391), (63, 41370), (64, 41367), (67, 41316), (71, 41292), (75, 41247),

Gene: RubyRalph\_60 Start: 44491, Stop: 44210, Start Num: 41  
Candidate Starts for RubyRalph\_60:  
(Start: 41 @44491 has 47 MA's), (56, 44365),

Gene: Rudy\_52 Start: 41446, Stop: 41174, Start Num: 41  
Candidate Starts for Rudy\_52:  
(Start: 39 @41449 has 2 MA's), (Start: 41 @41446 has 47 MA's), (56, 41323), (67, 41236), (71, 41212), (74, 41185),

Gene: RunningBrook\_36 Start: 10571, Stop: 10822, Start Num: 46  
Candidate Starts for RunningBrook\_36:  
(38, 10535), (Start: 46 @10571 has 9 MA's), (Start: 51 @10601 has 2 MA's), (66, 10721), (69, 10769), (71, 10775), (72, 10784),

Gene: SallyK\_57 Start: 42760, Stop: 42488, Start Num: 41  
Candidate Starts for SallyK\_57:  
(3, 43315), (4, 43294), (5, 43264), (Start: 41 @42760 has 47 MA's), (60, 42616), (65, 42586), (67, 42550), (71, 42526), (74, 42499),

Gene: Shocker\_4 Start: 1170, Stop: 1418, Start Num: 43  
Candidate Starts for Shocker\_4:  
(19, 975), (Start: 43 @1170 has 1 MA's), (58, 1287), (71, 1389),

Gene: Sillytadpoles\_55 Start: 41283, Stop: 41011, Start Num: 41  
Candidate Starts for Sillytadpoles\_55:  
(Start: 39 @41286 has 2 MA's), (Start: 41 @41283 has 47 MA's), (56, 41160), (67, 41073), (71, 41049), (74, 41022),

Gene: Squash\_59 Start: 42626, Stop: 42354, Start Num: 41  
Candidate Starts for Squash\_59:  
(6, 43061), (7, 43058), (9, 42956), (12, 42896), (13, 42887), (18, 42809), (21, 42770), (22, 42767), (30, 42722), (32, 42713), (Start: 39 @42632 has 2 MA's), (Start: 41 @42626 has 47 MA's), (44, 42617), (59, 42509), (64, 42485), (67, 42434), (71, 42410), (75, 42365),

Gene: Statler\_59 Start: 42227, Stop: 41955, Start Num: 41  
Candidate Starts for Statler\_59:  
(Start: 41 @42227 has 47 MA's), (60, 42083), (65, 42053), (67, 42017), (71, 41993),

Gene: StevieWelch\_34 Start: 9986, Stop: 10222, Start Num: 49  
Candidate Starts for StevieWelch\_34:  
(Start: 46 @9971 has 9 MA's), (49, 9986), (Start: 51 @10001 has 2 MA's), (66, 10121), (69, 10169), (71, 10175), (72, 10184),

Gene: StrawberryJamm\_59 Start: 41944, Stop: 41666, Start Num: 39  
Candidate Starts for StrawberryJamm\_59:  
(Start: 39 @41944 has 2 MA's), (Start: 41 @41938 has 47 MA's), (56, 41815), (67, 41728), (71, 41704), (74, 41677),

Gene: Tandem\_27 Start: 8766, Stop: 9026, Start Num: 41  
Candidate Starts for Tandem\_27:  
(11, 8475), (15, 8538), (17, 8562), (Start: 41 @8766 has 47 MA's), (61, 8901), (69, 8982), (71, 8988),

Gene: Teehee\_55 Start: 42516, Stop: 42244, Start Num: 41

Candidate Starts for Teehee\_55:

(Start: 39 @42519 has 2 MA's), (Start: 41 @42516 has 47 MA's), (56, 42393), (67, 42306), (71, 42282), (74, 42255),

Gene: Tempo\_62 Start: 42643, Stop: 42395, Start Num: 41

Candidate Starts for Tempo\_62:

(Start: 39 @42646 has 2 MA's), (Start: 41 @42643 has 47 MA's), (56, 42535), (68, 42439), (71, 42424),

Gene: Theresita\_48 Start: 29943, Stop: 30182, Start Num: 42

Candidate Starts for Theresita\_48:

(Start: 42 @29943 has 1 MA's), (50, 29967), (63, 30075), (66, 30099),

Gene: Tissue\_56 Start: 42542, Stop: 42282, Start Num: 39

Candidate Starts for Tissue\_56:

(Start: 39 @42542 has 2 MA's), (Start: 41 @42536 has 47 MA's), (44, 42527), (59, 42419), (64, 42395), (67, 42344), (71, 42320),

Gene: Viceroy\_53 Start: 41416, Stop: 41144, Start Num: 41

Candidate Starts for Viceroy\_53:

(Start: 39 @41419 has 2 MA's), (Start: 41 @41416 has 47 MA's), (56, 41293), (67, 41206), (71, 41182), (74, 41155),

Gene: Wayne3\_56 Start: 42279, Stop: 42007, Start Num: 41

Candidate Starts for Wayne3\_56:

(Start: 39 @42282 has 2 MA's), (Start: 41 @42279 has 47 MA's), (56, 42156), (67, 42069), (71, 42045), (74, 42018),

Gene: Welcome\_35 Start: 9988, Stop: 10239, Start Num: 46

Candidate Starts for Welcome\_35:

(Start: 46 @9988 has 9 MA's), (49, 10003), (66, 10138), (69, 10186), (71, 10192), (72, 10201),

Gene: Wheelie\_54 Start: 41600, Stop: 41328, Start Num: 41

Candidate Starts for Wheelie\_54:

(Start: 39 @41603 has 2 MA's), (Start: 41 @41600 has 47 MA's), (56, 41477), (67, 41390), (71, 41366), (74, 41339),

Gene: Wilca\_63 Start: 42918, Stop: 42661, Start Num: 41

Candidate Starts for Wilca\_63:

(1, 43611), (2, 43536), (8, 43320), (10, 43239), (28, 43017), (29, 43014), (35, 42984), (Start: 39 @42921 has 2 MA's), (Start: 41 @42918 has 47 MA's), (56, 42810), (68, 42714), (71, 42699),

Gene: Wolfstar\_30 Start: 9600, Stop: 9860, Start Num: 41

Candidate Starts for Wolfstar\_30:

(17, 9399), (Start: 41 @9600 has 47 MA's), (52, 9651), (66, 9768), (69, 9816), (71, 9822),

Gene: Yuma\_33 Start: 9891, Stop: 10142, Start Num: 46

Candidate Starts for Yuma\_33:

(Start: 46 @9891 has 9 MA's), (49, 9906), (66, 10041), (69, 10089), (71, 10095), (72, 10104),

Gene: Zagie\_56 Start: 42135, Stop: 41863, Start Num: 41

Candidate Starts for Zagie\_56:

(Start: 39 @42141 has 2 MA's), (Start: 41 @42135 has 47 MA's), (56, 42012), (67, 41925), (71, 41901), (74, 41874),

Gene: Zhafia\_57 Start: 42080, Stop: 41808, Start Num: 41

Candidate Starts for Zhafia\_57:

(Start: 39 @42083 has 2 MA's), (Start: 41 @42080 has 47 MA's), (56, 41957), (67, 41870), (71, 41846), (74, 41819),