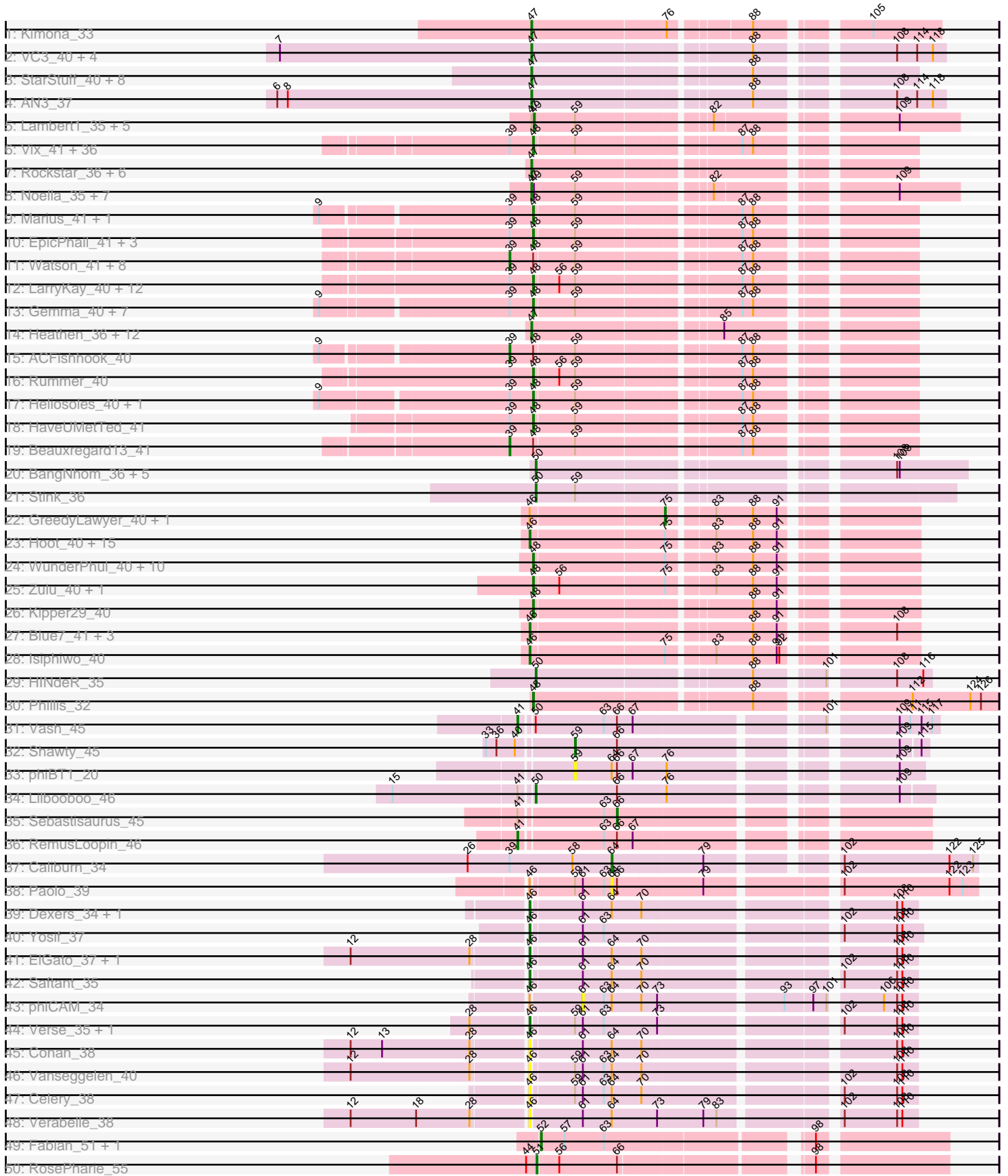
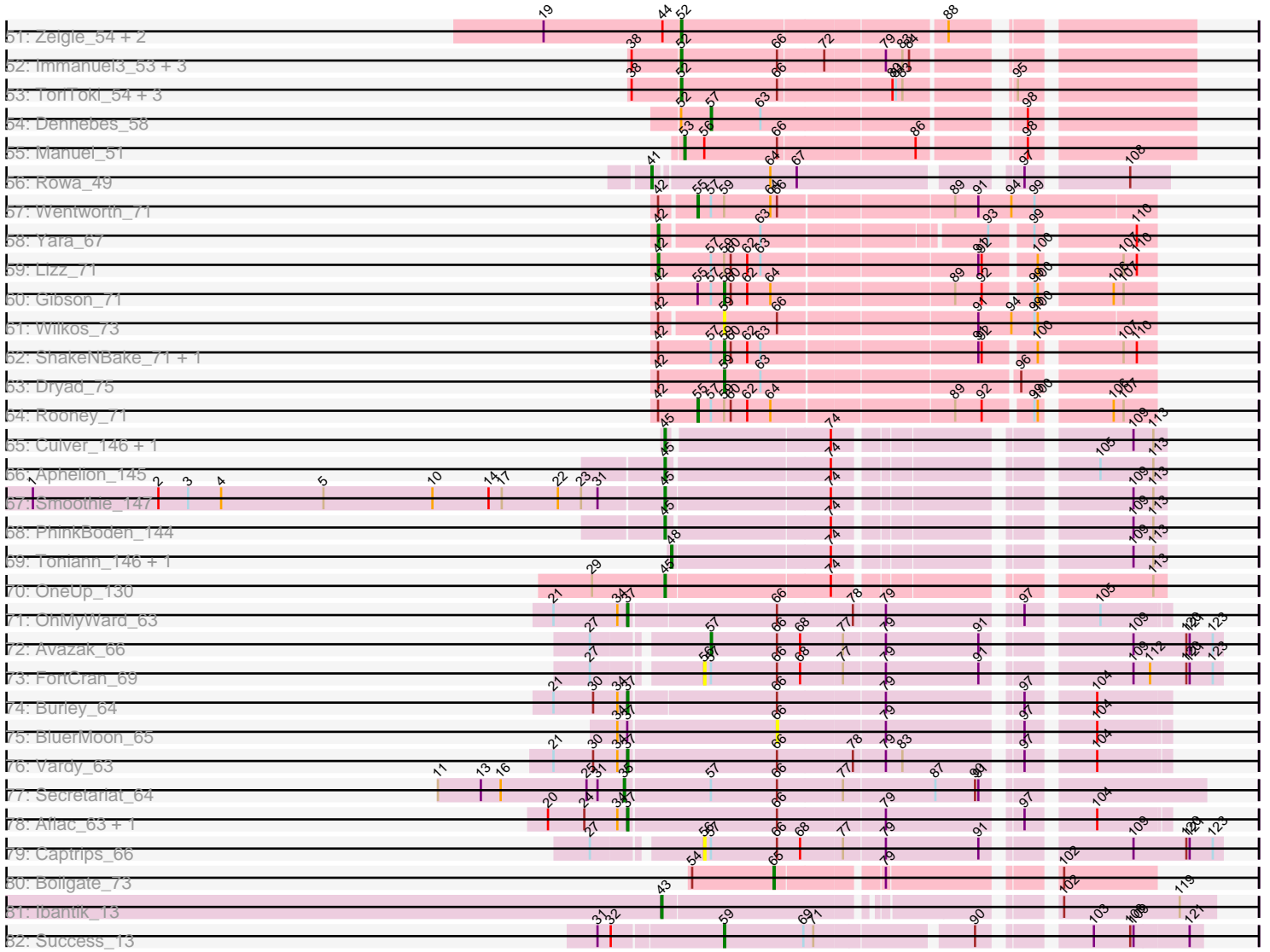


Pham 163326



Pham 163326



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 163326 Report

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

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 163326 has 243 members, 17 are drafts.

Phages represented in each track:

- Track 1 : Kimona\_33
- Track 2 : VC3\_40, ANI8\_40, C3\_35, AN9\_40, VA6\_37
- Track 3 : StarStuff\_40, Pomar16\_40, Naji\_40, DBQu4n\_40, Duplo\_40, Tomathan\_40, Kerberos\_40, D32\_40, D29\_36.1
- Track 4 : AN3\_37
- Track 5 : Lambert1\_35, Popcicle\_35, ResDef\_36, Hookmount\_35, Caviar\_35, Pocahontas\_35
- Track 6 : Vix\_41, Taurus\_41, Microwolf\_41, AugsMagnumOpus\_43, Dieselweasel\_41, MadMarie\_41, StepMih\_41, Fernando\_41, Pembroke\_41, Ollie\_41, Aglet\_41, Farber\_41, Tiffany\_41, MarQuardt\_41, JHC117\_41, MuchMore\_43, DaHudson\_41, Anubis\_43, BreSam8\_41, Phoebe\_41, P28Green\_41, Jobu08\_40, JenCasNa\_41, LugYA\_43, Grif\_41, Mainiac\_41, Cullens\_41, PGHhamlin\_43, SoilDragon\_40, GtownJaz\_41, Marie\_41, OlanP\_40, Sabinator\_40, Stagni\_41, Zetzy\_40, Lilith\_41, Malinsilva\_43
- Track 7 : Rockstar\_36, JF4\_36, JF2\_36, MK4\_36, Isca\_36, Phantastic\_36, B1\_34
- Track 8 : Noella\_35, Texage\_34, Norbert\_34, Todacoro\_35, Margo\_35, QuinnKiro\_34, Veracruz\_34, Panamaxus\_34
- Track 9 : Marius\_41, Kalnoky\_41
- Track 10 : EpicPhail\_41, PotatoSplit\_42, LBerry\_41, Penny1\_41
- Track 11 : Watson\_41, Grum1\_41, GinkgoMaracino\_41, SoYo\_41, Hercules11\_41, Grub\_41, MoneyMay\_41, Wooldri\_43, Sabia\_41
- Track 12 : LarryKay\_40, Daishi\_39, Misomonster\_42, BuzzBuzz\_39, KADY\_41, Spike509\_40, Methuselah\_39, Phoxy\_40, Soshari\_42, HashRod\_41, Louie6\_40, AgronaGT15\_40, Bxz2\_38
- Track 13 : Gemma\_40, Kalb97\_41, Groupthink\_41, Manu\_41, Phranny\_41, PurpleHaze\_40, Reba\_41, PhishRPhriends\_39
- Track 14 : Heathen\_36, Puppy\_37, MA5\_36, Bugatti\_36, Fred313\_36, Idleandcovert\_36, Pistachio\_37, SaturnRing\_36, BabyRay\_36, BlueBird\_37, TNguyen7\_36, HelDan\_36, Scout\_36
- Track 15 : ACFishhook\_40
- Track 16 : Rummer\_40
- Track 17 : Heliosoles\_40, JeppNRM\_41
- Track 18 : HaveUMetTed\_41

- Track 19 : Beauxregard13\_41
- Track 20 : BangNhom\_36, SheldonCooper\_37, ChampagnePapi\_37, Cerulean\_37, LHTSCC\_37, Obama12\_37
- Track 21 : Stink\_36
- Track 22 : GreedyLawyer\_40, DaVinci\_40
- Track 23 : Hoot\_40, BABullseye\_40, Gruunaga\_40, JewelBug\_41, Cookiedough\_40, Indra\_42, Roksolana\_41, Gladiator\_40, SuperAwesome\_40, Blinn1\_41, VohminGhazi\_40, Jordennis\_40, Newrala\_40, Kazan\_41, SmellyB\_40, McFly\_40
- Track 24 : WunderPhul\_40, Priamo\_41, Yokurt\_40, CloudWang3\_40, Wiks\_39, Zaka\_40, Hexamo\_40, Jeffabunny\_40, Lilbunny\_38, ToneTone\_37, Artemis2UCLA\_40
- Track 25 : Zulu\_40, Tucker\_40
- Track 26 : Kipper29\_40
- Track 27 : Blue7\_41, Rifter\_40, Hammer\_40, Koko\_40
- Track 28 : Isiphiwo\_40
- Track 29 : HINdeR\_35
- Track 30 : Phillis\_32
- Track 31 : Vash\_45
- Track 32 : Shawty\_45
- Track 33 : phiBT1\_20
- Track 34 : Lilbooboo\_46
- Track 35 : Sebastisaurus\_45
- Track 36 : RemusLoopin\_46
- Track 37 : Caliburn\_34
- Track 38 : Paolo\_39
- Track 39 : Dexers\_34, Alsaber\_36
- Track 40 : Yosif\_37
- Track 41 : ElGato\_37, Provolone\_36
- Track 42 : Saftant\_35
- Track 43 : phiCAM\_34
- Track 44 : Verse\_35, Amela\_35
- Track 45 : Conan\_38
- Track 46 : Vanseggelen\_40
- Track 47 : Celery\_38
- Track 48 : Verabelle\_38
- Track 49 : Fabian\_51, Vorvolakos\_54
- Track 50 : RosePharie\_55
- Track 51 : Zeigle\_54, WRightOn\_58, Kumquat\_54
- Track 52 : Immanuel3\_53, Romero\_54, Treat\_54, Olicious\_54
- Track 53 : ToriToki\_54, HaugeAnator\_54, ZooBear\_54, Percastrophe\_54
- Track 54 : Dennebes\_58
- Track 55 : Manuel\_51
- Track 56 : Rowa\_49
- Track 57 : Wentworth\_71
- Track 58 : Yara\_67
- Track 59 : Lizz\_71
- Track 60 : Gibson\_71
- Track 61 : Wilkos\_73
- Track 62 : ShakeNBake\_71, PHTowN\_71
- Track 63 : Dryad\_75
- Track 64 : Rooney\_71
- Track 65 : Culver\_146, Cucurbita\_145

- Track 66 : Aphelion\_145
- Track 67 : Smoothie\_147
- Track 68 : PhinkBoden\_144
- Track 69 : Toniann\_146, Lozinak\_146
- Track 70 : OneUp\_130
- Track 71 : OhMyWard\_63
- Track 72 : Avazak\_66
- Track 73 : FortCran\_69
- Track 74 : Burley\_64
- Track 75 : BluerMoon\_65
- Track 76 : Vardy\_63
- Track 77 : Secretariat\_64
- Track 78 : Aflac\_63, TenaciousP\_69
- Track 79 : Captrips\_66
- Track 80 : Boilgate\_73
- Track 81 : Ibantik\_13
- Track 82 : Success\_13

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

The start number called the most often in the published annotations is 48, it was called in 84 of the 226 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aglet\_41, AgronaGT15\_40, Anubis\_43, Artemis2UCLA\_40, AugsMagnumOpus\_43, BreSam8\_41, BuzzBuzz\_39, Bxz2\_38, CloudWang3\_40, Cullens\_41, DaHudson\_41, Daishi\_39, Dieselweasel\_41, EpicPhail\_41, Farber\_41, Fernando\_41, Gemma\_40, Grif\_41, Groupthink\_41, GtownJaz\_41, HashRod\_41, HaveUMetTed\_41, Heliosoles\_40, Hexamo\_40, JHC117\_41, Jeffabunny\_40, JenCasNa\_41, JeppNRM\_41, Jobu08\_40, KADY\_41, Kalb97\_41, Kalnoky\_41, Kipper29\_40, LBerry\_41, LarryKay\_40, Lilbunny\_38, Lilith\_41, Louie6\_40, Lozinak\_146, LugYA\_43, MadMarie\_41, Mainiac\_41, Malinsilva\_43, Manu\_41, MarQuardt\_41, Marie\_41, Marius\_41, Methuselah\_39, Microwolf\_41, Misomonster\_42, MuchMore\_43, OlanP\_40, Ollie\_41, P28Green\_41, PGHhamlin\_43, Pembroke\_41, Penny1\_41, Phillis\_32, PhishRPhriends\_39, Phoebe\_41, Phoxy\_40, Phranny\_41, PotatoSplit\_42, Priamo\_41, PurpleHaze\_40, Reba\_41, Rummer\_40, Sabinator\_40, SoilDragon\_40, Soshari\_42, Spike509\_40, Stagni\_41, StepMih\_41, Taurus\_41, Tiffany\_41, ToneTone\_37, Toniann\_146, Tucker\_40, Vix\_41, Wiks\_39, WunderPhul\_40, Yokurt\_40, Zaka\_40, Zetzy\_40, Zulu\_40,

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

- ACFishhook\_40, Beauxregard13\_41, GingkoMaracino\_41, Grub\_41, Grum1\_41, Hercules11\_41, MoneyMay\_41, Sabia\_41, SoYo\_41, Watson\_41, Wooldri\_43,

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

- AN3\_37, AN9\_40, ANI8\_40, Aflac\_63, Alsaber\_36, Amela\_35, Aphelion\_145, Avazak\_66, B1\_34, BABullseye\_40, BabyRay\_36, BangNhom\_36, Blinn1\_41, Blue7\_41, BlueBird\_37, BluerMoon\_65, Boilgate\_73, Bugatti\_36, Burley\_64, C3\_35, Caliburn\_34, Captrips\_66, Caviar\_35, Celery\_38, Cerulean\_37, ChampagnePapi\_37, Conan\_38, Cookiedough\_40, Cucurbita\_145, Culver\_146, D29\_36.1, D32\_40,

DBQu4n\_40, DaVinci\_40, Dennebes\_58, Dexers\_34, Dryad\_75, Duplo\_40, ElGato\_37, Fabian\_51, FortCran\_69, Fred313\_36, Gibson\_71, Gladiator\_40, GreedyLawyer\_40, Gruunaga\_40, HINdeR\_35, Hammer\_40, HaugeAnator\_54, Heathen\_36, HelDan\_36, Hookmount\_35, Hoot\_40, Ibantik\_13, Idleandcovert\_36, Immanuel3\_53, Indra\_42, Isca\_36, Isiphiwo\_40, JF2\_36, JF4\_36, JewelBug\_41, Jordennis\_40, Kazan\_41, Kerberos\_40, Kimona\_33, Koko\_40, Kumquat\_54, LHTSCC\_37, Lambert1\_35, Lilbooboo\_46, Lizz\_71, MA5\_36, MK4\_36, Manuel\_51, Margo\_35, McFly\_40, Naji\_40, Newrala\_40, Noella\_35, Norbert\_34, Obama12\_37, OhMyWard\_63, Olicious\_54, OneUp\_130, PHTown\_71, Panamaxus\_34, Paolo\_39, Percastrophe\_54, Phantastic\_36, PhinkBoden\_144, Pistachio\_37, Pocahontas\_35, Pomar16\_40, Popcicle\_35, Provolone\_36, Puppy\_37, QuinnKiro\_34, RemusLoopin\_46, ResDef\_36, Rifter\_40, Rockstar\_36, Roksolana\_41, Romero\_54, Rooney\_71, RosePharie\_55, Rowa\_49, Saftant\_35, SaturnRing\_36, Scout\_36, Sebastisaurus\_45, Secretariat\_64, ShakeNBake\_71, Shawty\_45, SheldonCooper\_37, SmellyB\_40, Smoothie\_147, StarStuff\_40, Stink\_36, Success\_13, SuperAwesome\_40, TNguyen7\_36, TenaciousP\_69, Texage\_34, Todacoro\_35, Tomathan\_40, ToriToki\_54, Treat\_54, VA6\_37, VC3\_40, Vanseggelen\_40, Vardy\_63, Vash\_45, Verabelle\_38, Veracruz\_34, Verse\_35, VohminGhazi\_40, Vorvolakos\_54, WRightOn\_58, Wentworth\_71, Wilkos\_73, Yara\_67, Yosif\_37, Zeigle\_54, ZooBear\_54, phiBT1\_20, phiCAM\_34,

### Summary by start number:

#### Start 35:

- Found in 1 of 243 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 226
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Secretariat\_64 (DJ),

#### Start 37:

- Found in 6 of 243 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 4 of 226
- Called 83.3% of time when present
- Phage (with cluster) where this start called: Aflac\_63 (DJ), Burley\_64 (DJ), OhMyWard\_63 (DJ), TenaciousP\_69 (DJ), Vardy\_63 (DJ),

#### Start 39:

- Found in 80 of 243 ( 32.9% ) of genes in pham
- Manual Annotations of this start: 11 of 226
- Called 13.8% of time when present
- Phage (with cluster) where this start called: ACFishhook\_40 (A3), Beauxregard13\_41 (A3), GingkoMaracino\_41 (A3), Grub\_41 (A3), Grum1\_41 (A3), Hercules11\_41 (A3), MoneyMay\_41 (A3), Sabia\_41 (A3), SoYo\_41 (A3), Watson\_41 (A3), Wooldri\_43 (A3),

#### Start 41:

- Found in 5 of 243 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 3 of 226
- Called 60.0% of time when present
- Phage (with cluster) where this start called: RemusLoopin\_46 (BB2), Rowa\_49 (BL), Vash\_45 (BB1),

#### Start 42:

- Found in 9 of 243 ( 3.7% ) of genes in pham
- Manual Annotations of this start: 2 of 226
- Called 22.2% of time when present
- Phage (with cluster) where this start called: Lizz\_71 (BN), Yara\_67 (BN),

#### Start 43:

- Found in 1 of 243 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 226
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ibantik\_13 (singleton),

#### Start 45:

- Found in 6 of 243 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 6 of 226
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aphelion\_145 (CQ1), Cucurbita\_145 (CQ1), Culver\_146 (CQ1), OneUp\_130 (CQ2), PhinkBoden\_144 (CQ1), Smoothie\_147 (CQ1),

#### Start 46:

- Found in 37 of 243 ( 15.2% ) of genes in pham
- Manual Annotations of this start: 28 of 226
- Called 89.2% of time when present
- Phage (with cluster) where this start called: Alsaber\_36 (BD3), Amela\_35 (BD3), BABullseye\_40 (A6), Blinn1\_41 (A6), Blue7\_41 (A6), Celery\_38 (BD3), Conan\_38 (BD3), Cookiedough\_40 (A6), Dexters\_34 (BD3), ElGato\_37 (BD3), Gladiator\_40 (A6), Gruunaga\_40 (A6), Hammer\_40 (A6), Hoot\_40 (A6), Indra\_42 (A6), Isiphiwo\_40 (A6), JewelBug\_41 (A6), Jordennis\_40 (A6), Kazan\_41 (A6), Koko\_40 (A6), McFly\_40 (A6), Newrala\_40 (A6), Provolone\_36 (BD3), Rifter\_40 (A6), Roksolana\_41 (A6), Saftant\_35 (BD3), SmellyB\_40 (A6), SuperAwesome\_40 (A6), Vanseggelen\_40 (BD3), Verabelle\_38 (BD3), Verse\_35 (BD3), VohminGhazi\_40 (A6), Yosif\_37 (BD3),

#### Start 47:

- Found in 50 of 243 ( 20.6% ) of genes in pham
- Manual Annotations of this start: 42 of 226
- Called 88.0% of time when present
- Phage (with cluster) where this start called: AN3\_37 (A2), AN9\_40 (A2), ANI8\_40 (A2), B1\_34 (A3), BabyRay\_36 (A3), BlueBird\_37 (A3), Bugatti\_36 (A3), C3\_35 (A2), D29\_36.1 (A2), D32\_40 (A2), DBQu4n\_40 (A2), Duplo\_40 (A2), Fred313\_36 (A3), Heathen\_36 (A3), HelDan\_36 (A3), Idleandcovert\_36 (A3), Isca\_36 (A3), JF2\_36 (A3), JF4\_36 (A3), Kerberos\_40 (A2), Kimona\_33 (A19), MA5\_36 (A3), MK4\_36 (A3), Margo\_35 (A3), Naji\_40 (A2), Noella\_35 (A3), Norbert\_34 (A3), Panamaxus\_34 (A3), Phantastic\_36 (A3), Pistachio\_37 (A3), Pomar16\_40 (A2), Puppy\_37 (A3), QuinnKiro\_34 (A3), Rockstar\_36 (A3), SaturnRing\_36 (A3), Scout\_36 (A3), StarStuff\_40 (A2), TNguyen7\_36 (A3), Texage\_34 (A3), Todacoro\_35 (A3), Tomathan\_40 (A2), VA6\_37 (A2), VC3\_40 (A2), Veracruz\_34 (A3),

#### Start 48:

- Found in 96 of 243 ( 39.5% ) of genes in pham
- Manual Annotations of this start: 84 of 226
- Called 88.5% of time when present
- Phage (with cluster) where this start called: Aglet\_41 (A3), AgronaGT15\_40 (A3), Anubis\_43 (A3), Artemis2UCLA\_40 (A6), AugsMagnumOpus\_43 (A3), BreSam8\_41

(A3), BuzzBuzz\_39 (A3), Bxz2\_38 (A3), CloudWang3\_40 (A6), Cullens\_41 (A3), DaHudson\_41 (A3), Daishi\_39 (A3), Dieselweasel\_41 (A3), EpicPhail\_41 (A3), Farber\_41 (A3), Fernando\_41 (A3), Gemma\_40 (A3), Grif\_41 (A3), Groupthink\_41 (A3), GtownJaz\_41 (A3), HashRod\_41 (A3), HaveUMetTed\_41 (A3), Heliosoles\_40 (A3), Hexamo\_40 (A6), JHC117\_41 (A3), Jeffabunny\_40 (A6), JenCasNa\_41 (A3), JeppNRM\_41 (A3), Jobu08\_40 (A3), KADY\_41 (A3), Kalb97\_41 (A3), Kalnoky\_41 (A3), Kipper29\_40 (A6), LBerry\_41 (A3), LarryKay\_40 (A3), Lilbunny\_38 (A6), Lilith\_41 (A3), Louie6\_40 (A3), Lozinak\_146 (CQ1), LugYA\_43 (A3), MadMarie\_41 (A3), Mainiac\_41 (A3), Malinsilva\_43 (A3), Manu\_41 (A3), MarQuardt\_41 (A3), Marie\_41 (A3), Marius\_41 (A3), Methuselah\_39 (A3), Microwolf\_41 (A3), Misomonster\_42 (A3), MuchMore\_43 (A3), OlanP\_40 (A3), Ollie\_41 (A3), P28Green\_41 (A3), PGHhamlin\_43 (A3), Pembroke\_41 (A3), Penny1\_41 (A3), Phillis\_32 (A8), PhishRPhriends\_39 (A3), Phoebe\_41 (A3), Phoxy\_40 (A3), Phranny\_41 (A3), PotatoSplit\_42 (A3), Priamo\_41 (A6), PurpleHaze\_40 (A3), Reba\_41 (A3), Rummer\_40 (A3), Sabinator\_40 (A3), SoilDragon\_40 (A3), Soshari\_42 (A3), Spike509\_40 (A3), Stagni\_41 (A3), StepMih\_41 (A3), Taurus\_41 (A3), Tiffany\_41 (A3), ToneTone\_37 (A6), Toniann\_146 (CQ1), Tucker\_40 (A6), Vix\_41 (A3), Wiks\_39 (A6), WunderPhul\_40 (A6), Yokurt\_40 (A6), Zaka\_40 (A6), Zetzy\_40 (A3), Zulu\_40 (A6),

#### Start 49:

- Found in 14 of 243 ( 5.8% ) of genes in pham
- Manual Annotations of this start: 5 of 226
- Called 42.9% of time when present
- Phage (with cluster) where this start called: Caviar\_35 (A3), Hookmount\_35 (A3), Lambert1\_35 (A3), Pocahontas\_35 (A3), Popcicle\_35 (A3), ResDef\_36 (A3),

#### Start 50:

- Found in 10 of 243 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 9 of 226
- Called 90.0% of time when present
- Phage (with cluster) where this start called: BangNhom\_36 (A4), Cerulean\_37 (A4), ChampagnePapi\_37 (A4), HINdeR\_35 (A7), LHTSCC\_37 (A4), Lilbooboo\_46 (BB1), Obama12\_37 (A4), SheldonCooper\_37 (A4), Stink\_36 (A4),

#### Start 51:

- Found in 1 of 243 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 226
- Called 100.0% of time when present
- Phage (with cluster) where this start called: RosePharie\_55 (BF),

#### Start 52:

- Found in 14 of 243 ( 5.8% ) of genes in pham
- Manual Annotations of this start: 13 of 226
- Called 92.9% of time when present
- Phage (with cluster) where this start called: Fabian\_51 (BF), HaugeAnator\_54 (BF), Immanuel3\_53 (BF), Kumquat\_54 (BF), Olicious\_54 (BF), Percastrophe\_54 (BF), Romero\_54 (BF), ToriToki\_54 (BF), Treat\_54 (BF), Vorvolakos\_54 (BF), WRightOn\_58 (BF), Zeigle\_54 (BF), ZooBear\_54 (BF),

#### Start 53:

- Found in 1 of 243 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 226



- Called 100.0% of time when present
- Phage (with cluster) where this start called: Manuel\_51 (BF),

Start 55:

- Found in 3 of 243 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 2 of 226
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Rooney\_71 (BN), Wentworth\_71 (BN),

Start 56:

- Found in 20 of 243 ( 8.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 10.0% of time when present
- Phage (with cluster) where this start called: Captrips\_66 (DJ), FortCran\_69 (DJ),

Start 57:

- Found in 13 of 243 ( 5.3% ) of genes in pham
- Manual Annotations of this start: 2 of 226
- Called 15.4% of time when present
- Phage (with cluster) where this start called: Avazak\_66 (DJ), Dennebes\_58 (BF),

Start 59:

- Found in 110 of 243 ( 45.3% ) of genes in pham
- Manual Annotations of this start: 6 of 226
- Called 7.3% of time when present
- Phage (with cluster) where this start called: Dryad\_75 (BN), Gibson\_71 (BN), PHTown\_71 (BN), ShakeNBake\_71 (BN), Shawty\_45 (BB1), Success\_13 (singleton), Wilkos\_73 (BN), phiBT1\_20 (BB1),

Start 61:

- Found in 14 of 243 ( 5.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 7.1% of time when present
- Phage (with cluster) where this start called: phiCAM\_34 (BD3),

Start 64:

- Found in 17 of 243 ( 7.0% ) of genes in pham
- Manual Annotations of this start: 1 of 226
- Called 11.8% of time when present
- Phage (with cluster) where this start called: Caliburn\_34 (BD1), Paolo\_39 (BD2),

Start 65:

- Found in 1 of 243 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 226
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Boilgate\_73 (K8),

Start 66:

- Found in 29 of 243 ( 11.9% ) of genes in pham
- Manual Annotations of this start: 1 of 226
- Called 6.9% of time when present
- Phage (with cluster) where this start called: BluerMoon\_65 (DJ), Sebastisaurus\_45 (BB2),

Start 75:

- Found in 32 of 243 ( 13.2% ) of genes in pham
- Manual Annotations of this start: 2 of 226
- Called 6.2% of time when present
- Phage (with cluster) where this start called: DaVinci\_40 (A6), GreedyLawyer\_40 (A6),

### **Summary by clusters:**

There are 20 clusters represented in this pham: singleton, DJ, BD3, BL, BN, BD2, A19, BF, A8, A3, A2, BD1, A4, A7, A6, CQ2, CQ1, K8, BB2, BB1,

Info for manual annotations of cluster A19:

- Start number 47 was manually annotated 1 time for cluster A19.

Info for manual annotations of cluster A2:

- Start number 47 was manually annotated 15 times for cluster A2.

Info for manual annotations of cluster A3:

- Start number 39 was manually annotated 11 times for cluster A3.
- Start number 47 was manually annotated 26 times for cluster A3.
- Start number 48 was manually annotated 68 times for cluster A3.
- Start number 49 was manually annotated 5 times for cluster A3.

Info for manual annotations of cluster A4:

- Start number 50 was manually annotated 7 times for cluster A4.

Info for manual annotations of cluster A6:

- Start number 46 was manually annotated 21 times for cluster A6.
- Start number 48 was manually annotated 13 times for cluster A6.
- Start number 75 was manually annotated 2 times for cluster A6.

Info for manual annotations of cluster A7:

- Start number 50 was manually annotated 1 time for cluster A7.

Info for manual annotations of cluster A8:

- Start number 48 was manually annotated 1 time for cluster A8.

Info for manual annotations of cluster BB1:

- Start number 41 was manually annotated 1 time for cluster BB1.
- Start number 50 was manually annotated 1 time for cluster BB1.
- Start number 59 was manually annotated 1 time for cluster BB1.

Info for manual annotations of cluster BB2:

- Start number 41 was manually annotated 1 time for cluster BB2.
- Start number 66 was manually annotated 1 time for cluster BB2.

Info for manual annotations of cluster BD1:

- Start number 64 was manually annotated 1 time for cluster BD1.

Info for manual annotations of cluster BD3:

- Start number 46 was manually annotated 7 times for cluster BD3.

Info for manual annotations of cluster BF:

- Start number 51 was manually annotated 1 time for cluster BF.
- Start number 52 was manually annotated 13 times for cluster BF.
- Start number 53 was manually annotated 1 time for cluster BF.
- Start number 57 was manually annotated 1 time for cluster BF.

Info for manual annotations of cluster BL:

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

Info for manual annotations of cluster BN:

- Start number 42 was manually annotated 2 times for cluster BN.
- Start number 55 was manually annotated 2 times for cluster BN.
- Start number 59 was manually annotated 4 times for cluster BN.

Info for manual annotations of cluster CQ1:

- Start number 45 was manually annotated 5 times for cluster CQ1.
- Start number 48 was manually annotated 2 times for cluster CQ1.

Info for manual annotations of cluster CQ2:

- Start number 45 was manually annotated 1 time for cluster CQ2.

Info for manual annotations of cluster DJ:

- Start number 35 was manually annotated 1 time for cluster DJ.
- Start number 37 was manually annotated 4 times for cluster DJ.
- Start number 57 was manually annotated 1 time for cluster DJ.

Info for manual annotations of cluster K8:

- Start number 65 was manually annotated 1 time for cluster K8.

### ***Gene Information:***

Gene: ACFishhook\_40 Start: 28503, Stop: 28093, Start Num: 39

Candidate Starts for ACFishhook\_40:

(9, 28701), (Start: 39 @28503 has 11 MA's), (Start: 48 @28476 has 84 MA's), (Start: 59 @28431 has 6 MA's), (87, 28260), (88, 28248),

Gene: AN3\_37 Start: 28097, Stop: 27681, Start Num: 47

Candidate Starts for AN3\_37:

(6, 28388), (8, 28376), (Start: 47 @28097 has 42 MA's), (88, 27866), (108, 27734), (114, 27713), (118, 27695),

Gene: AN9\_40 Start: 28082, Stop: 27666, Start Num: 47

Candidate Starts for AN9\_40:

(7, 28370), (Start: 47 @28082 has 42 MA's), (88, 27851), (108, 27719), (114, 27698), (118, 27680),

Gene: ANI8\_40 Start: 28082, Stop: 27666, Start Num: 47

Candidate Starts for ANI8\_40:

(7, 28370), (Start: 47 @28082 has 42 MA's), (88, 27851), (108, 27719), (114, 27698), (118, 27680),

Gene: Aflac\_63 Start: 46335, Stop: 46781, Start Num: 37

Candidate Starts for Aflac\_63:

(20, 46263), (24, 46296), (34, 46326), (Start: 37 @46335 has 4 MA's), (Start: 66 @46467 has 1 MA's), (79, 46560), (97, 46668), (104, 46719),

Gene: Aglet\_41 Start: 28577, Stop: 28194, Start Num: 48

Candidate Starts for Aglet\_41:

(Start: 39 @28604 has 11 MA's), (Start: 48 @28577 has 84 MA's), (Start: 59 @28532 has 6 MA's), (87, 28361), (88, 28349),

Gene: AgronaGT15\_40 Start: 28395, Stop: 28012, Start Num: 48

Candidate Starts for AgronaGT15\_40:

(Start: 39 @28422 has 11 MA's), (Start: 48 @28395 has 84 MA's), (56, 28368), (Start: 59 @28350 has 6 MA's), (87, 28179), (88, 28167),

Gene: Alsaber\_36 Start: 27554, Stop: 27958, Start Num: 46

Candidate Starts for Alsaber\_36:

(Start: 46 @27554 has 28 MA's), (61, 27608), (Start: 64 @27641 has 1 MA's), (70, 27674), (108, 27935), (110, 27941),

Gene: Amela\_35 Start: 28386, Stop: 28790, Start Num: 46

Candidate Starts for Amela\_35:

(28, 28323), (Start: 46 @28386 has 28 MA's), (Start: 59 @28431 has 6 MA's), (61, 28440), (63, 28464), (73, 28524), (102, 28707), (108, 28767), (110, 28773),

Gene: Anubis\_43 Start: 28462, Stop: 28079, Start Num: 48

Candidate Starts for Anubis\_43:

(Start: 39 @28489 has 11 MA's), (Start: 48 @28462 has 84 MA's), (Start: 59 @28417 has 6 MA's), (87, 28246), (88, 28234),

Gene: Aphelion\_145 Start: 79977, Stop: 80369, Start Num: 45

Candidate Starts for Aphelion\_145:

(Start: 45 @79977 has 6 MA's), (74, 80118), (105, 80310), (113, 80358),

Gene: Artemis2UCLA\_40 Start: 26288, Stop: 25899, Start Num: 48

Candidate Starts for Artemis2UCLA\_40:

(Start: 48 @26288 has 84 MA's), (Start: 75 @26144 has 2 MA's), (83, 26099), (88, 26057), (91, 26030),

Gene: AugsMagnumOpus\_43 Start: 28568, Stop: 28185, Start Num: 48

Candidate Starts for AugsMagnumOpus\_43:

(Start: 39 @28595 has 11 MA's), (Start: 48 @28568 has 84 MA's), (Start: 59 @28523 has 6 MA's), (87, 28352), (88, 28340),

Gene: Avazak\_66 Start: 46911, Stop: 47336, Start Num: 57

Candidate Starts for Avazak\_66:

(27, 46821), (Start: 57 @46911 has 2 MA's), (Start: 66 @46971 has 1 MA's), (68, 46992), (77, 47028), (79, 47064), (91, 47148), (109, 47256), (120, 47304), (121, 47307), (123, 47328),

Gene: B1\_34 Start: 27319, Stop: 26933, Start Num: 47

Candidate Starts for B1\_34:

(Start: 47 @27319 has 42 MA's),

Gene: BABullseye\_40 Start: 26694, Stop: 26302, Start Num: 46  
Candidate Starts for BABullseye\_40:  
(Start: 46 @26694 has 28 MA's), (Start: 75 @26547 has 2 MA's), (83, 26502), (88, 26460), (91, 26433),

Gene: BabyRay\_36 Start: 27870, Stop: 27484, Start Num: 47  
Candidate Starts for BabyRay\_36:  
(Start: 47 @27870 has 42 MA's), (85, 27672),

Gene: BangNhom\_36 Start: 28100, Stop: 27660, Start Num: 50  
Candidate Starts for BangNhom\_36:  
(Start: 50 @28100 has 9 MA's), (108, 27740), (109, 27737),

Gene: Beauxregard13\_41 Start: 28603, Stop: 28193, Start Num: 39  
Candidate Starts for Beauxregard13\_41:  
(Start: 39 @28603 has 11 MA's), (Start: 48 @28576 has 84 MA's), (Start: 59 @28531 has 6 MA's), (87, 28360), (88, 28348),

Gene: Blinn1\_41 Start: 26683, Stop: 26291, Start Num: 46  
Candidate Starts for Blinn1\_41:  
(Start: 46 @26683 has 28 MA's), (Start: 75 @26536 has 2 MA's), (83, 26491), (88, 26449), (91, 26422),

Gene: Blue7\_41 Start: 26619, Stop: 26230, Start Num: 46  
Candidate Starts for Blue7\_41:  
(Start: 46 @26619 has 28 MA's), (88, 26388), (91, 26361), (108, 26256),

Gene: BlueBird\_37 Start: 27799, Stop: 27413, Start Num: 47  
Candidate Starts for BlueBird\_37:  
(Start: 47 @27799 has 42 MA's), (85, 27601),

Gene: BluerMoon\_65 Start: 46505, Stop: 46819, Start Num: 66  
Candidate Starts for BluerMoon\_65:  
(34, 46364), (Start: 37 @46373 has 4 MA's), (Start: 66 @46505 has 1 MA's), (79, 46598), (97, 46706), (104, 46757),

Gene: Boilgate\_73 Start: 53314, Stop: 53607, Start Num: 65  
Candidate Starts for Boilgate\_73:  
(54, 53242), (Start: 65 @53314 has 1 MA's), (79, 53398), (102, 53524),

Gene: BreSam8\_41 Start: 28569, Stop: 28186, Start Num: 48  
Candidate Starts for BreSam8\_41:  
(Start: 39 @28596 has 11 MA's), (Start: 48 @28569 has 84 MA's), (Start: 59 @28524 has 6 MA's), (87, 28353), (88, 28341),

Gene: Bugatti\_36 Start: 27799, Stop: 27413, Start Num: 47  
Candidate Starts for Bugatti\_36:  
(Start: 47 @27799 has 42 MA's), (85, 27601),

Gene: Burley\_64 Start: 46068, Stop: 46514, Start Num: 37  
Candidate Starts for Burley\_64:  
(21, 46002), (30, 46038), (34, 46059), (Start: 37 @46068 has 4 MA's), (Start: 66 @46197 has 1 MA's), (79, 46290), (97, 46398), (104, 46449),

Gene: BuzzBuzz\_39 Start: 28574, Stop: 28191, Start Num: 48

Candidate Starts for BuzzBuzz\_39:

(Start: 39 @28601 has 11 MA's), (Start: 48 @28574 has 84 MA's), (56, 28547), (Start: 59 @28529 has 6 MA's), (87, 28358), (88, 28346),

Gene: Bxz2\_38 Start: 28581, Stop: 28198, Start Num: 48

Candidate Starts for Bxz2\_38:

(Start: 39 @28608 has 11 MA's), (Start: 48 @28581 has 84 MA's), (56, 28554), (Start: 59 @28536 has 6 MA's), (87, 28365), (88, 28353),

Gene: C3\_35 Start: 28082, Stop: 27666, Start Num: 47

Candidate Starts for C3\_35:

(7, 28370), (Start: 47 @28082 has 42 MA's), (88, 27851), (108, 27719), (114, 27698), (118, 27680),

Gene: Caliburn\_34 Start: 25785, Stop: 26156, Start Num: 64

Candidate Starts for Caliburn\_34:

(26, 25620), (Start: 39 @25668 has 11 MA's), (58, 25740), (Start: 64 @25785 has 1 MA's), (79, 25887), (102, 26004), (122, 26124), (125, 26151),

Gene: Captrips\_66 Start: 46053, Stop: 46484, Start Num: 56

Candidate Starts for Captrips\_66:

(27, 45969), (56, 46053), (Start: 57 @46059 has 2 MA's), (Start: 66 @46119 has 1 MA's), (68, 46140), (77, 46176), (79, 46212), (91, 46296), (109, 46404), (120, 46452), (121, 46455), (123, 46476),

Gene: Caviar\_35 Start: 27809, Stop: 27381, Start Num: 49

Candidate Starts for Caviar\_35:

(Start: 47 @27812 has 42 MA's), (Start: 49 @27809 has 5 MA's), (Start: 59 @27764 has 6 MA's), (82, 27626), (109, 27449),

Gene: Celery\_38 Start: 27479, Stop: 27883, Start Num: 46

Candidate Starts for Celery\_38:

(Start: 46 @27479 has 28 MA's), (Start: 59 @27524 has 6 MA's), (61, 27533), (63, 27557), (Start: 64 @27566 has 1 MA's), (70, 27599), (102, 27800), (108, 27860), (110, 27866),

Gene: Cerulean\_37 Start: 28101, Stop: 27661, Start Num: 50

Candidate Starts for Cerulean\_37:

(Start: 50 @28101 has 9 MA's), (108, 27741), (109, 27738),

Gene: ChampagnePapi\_37 Start: 28100, Stop: 27660, Start Num: 50

Candidate Starts for ChampagnePapi\_37:

(Start: 50 @28100 has 9 MA's), (108, 27740), (109, 27737),

Gene: CloudWang3\_40 Start: 26388, Stop: 25999, Start Num: 48

Candidate Starts for CloudWang3\_40:

(Start: 48 @26388 has 84 MA's), (Start: 75 @26244 has 2 MA's), (83, 26199), (88, 26157), (91, 26130),

Gene: Conan\_38 Start: 27448, Stop: 27852, Start Num: 46

Candidate Starts for Conan\_38:

(12, 27253), (13, 27289), (28, 27388), (Start: 46 @27448 has 28 MA's), (61, 27502), (Start: 64 @27535 has 1 MA's), (70, 27568), (108, 27829), (110, 27835),

Gene: Cookiedough\_40 Start: 26610, Stop: 26218, Start Num: 46  
Candidate Starts for Cookiedough\_40:  
(Start: 46 @26610 has 28 MA's), (Start: 75 @26463 has 2 MA's), (83, 26418), (88, 26376), (91, 26349),

Gene: Cucurbita\_145 Start: 80440, Stop: 80829, Start Num: 45  
Candidate Starts for Cucurbita\_145:  
(Start: 45 @80440 has 6 MA's), (74, 80578), (109, 80800), (113, 80818),

Gene: Cullens\_41 Start: 28575, Stop: 28192, Start Num: 48  
Candidate Starts for Cullens\_41:  
(Start: 39 @28602 has 11 MA's), (Start: 48 @28575 has 84 MA's), (Start: 59 @28530 has 6 MA's), (87, 28359), (88, 28347),

Gene: Culver\_146 Start: 78704, Stop: 79093, Start Num: 45  
Candidate Starts for Culver\_146:  
(Start: 45 @78704 has 6 MA's), (74, 78842), (109, 79064), (113, 79082),

Gene: D29\_36.1 Start: 27983, Stop: 27597, Start Num: 47  
Candidate Starts for D29\_36.1:  
(Start: 47 @27983 has 42 MA's), (88, 27752),

Gene: D32\_40 Start: 27983, Stop: 27597, Start Num: 47  
Candidate Starts for D32\_40:  
(Start: 47 @27983 has 42 MA's), (88, 27752),

Gene: DBQu4n\_40 Start: 27983, Stop: 27597, Start Num: 47  
Candidate Starts for DBQu4n\_40:  
(Start: 47 @27983 has 42 MA's), (88, 27752),

Gene: DaHudson\_41 Start: 28568, Stop: 28185, Start Num: 48  
Candidate Starts for DaHudson\_41:  
(Start: 39 @28595 has 11 MA's), (Start: 48 @28568 has 84 MA's), (Start: 59 @28523 has 6 MA's), (87, 28352), (88, 28340),

Gene: DaVinci\_40 Start: 26470, Stop: 26225, Start Num: 75  
Candidate Starts for DaVinci\_40:  
(Start: 46 @26617 has 28 MA's), (Start: 75 @26470 has 2 MA's), (83, 26425), (88, 26383), (91, 26356),

Gene: Daishi\_39 Start: 27415, Stop: 27032, Start Num: 48  
Candidate Starts for Daishi\_39:  
(Start: 39 @27442 has 11 MA's), (Start: 48 @27415 has 84 MA's), (56, 27388), (Start: 59 @27370 has 6 MA's), (87, 27199), (88, 27187),

Gene: Dennebes\_58 Start: 29550, Stop: 29158, Start Num: 57  
Candidate Starts for Dennebes\_58:  
(Start: 52 @29577 has 13 MA's), (Start: 57 @29550 has 2 MA's), (63, 29505), (98, 29295),

Gene: Dexers\_34 Start: 27476, Stop: 27880, Start Num: 46  
Candidate Starts for Dexers\_34:  
(Start: 46 @27476 has 28 MA's), (61, 27530), (Start: 64 @27563 has 1 MA's), (70, 27596), (108, 27857), (110, 27863),

Gene: Dieselweasel\_41 Start: 28578, Stop: 28195, Start Num: 48  
Candidate Starts for Dieselweasel\_41:  
(Start: 39 @28605 has 11 MA's), (Start: 48 @28578 has 84 MA's), (Start: 59 @28533 has 6 MA's),  
(87, 28362), (88, 28350),

Gene: Dryad\_75 Start: 51427, Stop: 51068, Start Num: 59  
Candidate Starts for Dryad\_75:  
(Start: 42 @51487 has 2 MA's), (Start: 59 @51427 has 6 MA's), (63, 51394), (96, 51175),

Gene: Duplo\_40 Start: 28021, Stop: 27635, Start Num: 47  
Candidate Starts for Duplo\_40:  
(Start: 47 @28021 has 42 MA's), (88, 27790),

Gene: ElGato\_37 Start: 27112, Stop: 27516, Start Num: 46  
Candidate Starts for ElGato\_37:  
(12, 26917), (28, 27052), (Start: 46 @27112 has 28 MA's), (61, 27166), (Start: 64 @27199 has 1  
MA's), (70, 27232), (108, 27493), (110, 27499),

Gene: EpicPhail\_41 Start: 28576, Stop: 28193, Start Num: 48  
Candidate Starts for EpicPhail\_41:  
(Start: 39 @28603 has 11 MA's), (Start: 48 @28576 has 84 MA's), (Start: 59 @28531 has 6 MA's),  
(87, 28360), (88, 28348),

Gene: Fabian\_51 Start: 29095, Stop: 28676, Start Num: 52  
Candidate Starts for Fabian\_51:  
(Start: 52 @29095 has 13 MA's), (Start: 57 @29068 has 2 MA's), (63, 29023), (98, 28813),

Gene: Farber\_41 Start: 28569, Stop: 28186, Start Num: 48  
Candidate Starts for Farber\_41:  
(Start: 39 @28596 has 11 MA's), (Start: 48 @28569 has 84 MA's), (Start: 59 @28524 has 6 MA's),  
(87, 28353), (88, 28341),

Gene: Fernando\_41 Start: 28575, Stop: 28192, Start Num: 48  
Candidate Starts for Fernando\_41:  
(Start: 39 @28602 has 11 MA's), (Start: 48 @28575 has 84 MA's), (Start: 59 @28530 has 6 MA's),  
(87, 28359), (88, 28347),

Gene: FortCran\_69 Start: 46578, Stop: 47009, Start Num: 56  
Candidate Starts for FortCran\_69:  
(27, 46494), (56, 46578), (Start: 57 @46584 has 2 MA's), (Start: 66 @46644 has 1 MA's), (68, 46665),  
(77, 46701), (79, 46737), (91, 46821), (109, 46929), (112, 46944), (120, 46977), (121, 46980), (123,  
47001),

Gene: Fred313\_36 Start: 27551, Stop: 27165, Start Num: 47  
Candidate Starts for Fred313\_36:  
(Start: 47 @27551 has 42 MA's), (85, 27353),

Gene: Gemma\_40 Start: 28397, Stop: 28014, Start Num: 48  
Candidate Starts for Gemma\_40:  
(9, 28625), (Start: 39 @28424 has 11 MA's), (Start: 48 @28397 has 84 MA's), (Start: 59 @28352 has  
6 MA's), (87, 28181), (88, 28169),



Gene: Gibson\_71 Start: 50674, Stop: 50318, Start Num: 59

Candidate Starts for Gibson\_71:

(Start: 42 @50734 has 2 MA's), (Start: 55 @50698 has 2 MA's), (Start: 57 @50686 has 2 MA's), (Start: 59 @50674 has 6 MA's), (60, 50668), (62, 50653), (Start: 64 @50632 has 1 MA's), (89, 50476), (92, 50452), (99, 50413), (100, 50410), (106, 50356), (107, 50347),

Gene: GingkoMaracino\_41 Start: 28489, Stop: 28079, Start Num: 39

Candidate Starts for GingkoMaracino\_41:

(Start: 39 @28489 has 11 MA's), (Start: 48 @28462 has 84 MA's), (Start: 59 @28417 has 6 MA's), (87, 28246), (88, 28234),

Gene: Gladiator\_40 Start: 26599, Stop: 26207, Start Num: 46

Candidate Starts for Gladiator\_40:

(Start: 46 @26599 has 28 MA's), (Start: 75 @26452 has 2 MA's), (83, 26407), (88, 26365), (91, 26338),

Gene: GreedyLawyer\_40 Start: 26469, Stop: 26224, Start Num: 75

Candidate Starts for GreedyLawyer\_40:

(Start: 46 @26616 has 28 MA's), (Start: 75 @26469 has 2 MA's), (83, 26424), (88, 26382), (91, 26355),

Gene: Grif\_41 Start: 28650, Stop: 28267, Start Num: 48

Candidate Starts for Grif\_41:

(Start: 39 @28677 has 11 MA's), (Start: 48 @28650 has 84 MA's), (Start: 59 @28605 has 6 MA's), (87, 28434), (88, 28422),

Gene: Groupthink\_41 Start: 28401, Stop: 28018, Start Num: 48

Candidate Starts for Groupthink\_41:

(9, 28629), (Start: 39 @28428 has 11 MA's), (Start: 48 @28401 has 84 MA's), (Start: 59 @28356 has 6 MA's), (87, 28185), (88, 28173),

Gene: Grub\_41 Start: 28595, Stop: 28185, Start Num: 39

Candidate Starts for Grub\_41:

(Start: 39 @28595 has 11 MA's), (Start: 48 @28568 has 84 MA's), (Start: 59 @28523 has 6 MA's), (87, 28352), (88, 28340),

Gene: Grum1\_41 Start: 28602, Stop: 28192, Start Num: 39

Candidate Starts for Grum1\_41:

(Start: 39 @28602 has 11 MA's), (Start: 48 @28575 has 84 MA's), (Start: 59 @28530 has 6 MA's), (87, 28359), (88, 28347),

Gene: Gruunaga\_40 Start: 26598, Stop: 26206, Start Num: 46

Candidate Starts for Gruunaga\_40:

(Start: 46 @26598 has 28 MA's), (Start: 75 @26451 has 2 MA's), (83, 26406), (88, 26364), (91, 26337),

Gene: GtownJaz\_41 Start: 28577, Stop: 28194, Start Num: 48

Candidate Starts for GtownJaz\_41:

(Start: 39 @28604 has 11 MA's), (Start: 48 @28577 has 84 MA's), (Start: 59 @28532 has 6 MA's), (87, 28361), (88, 28349),

Gene: HINdeR\_35 Start: 29947, Stop: 29549, Start Num: 50

Candidate Starts for HINdeR\_35:

(Start: 50 @29947 has 9 MA's), (88, 29719), (101, 29653), (108, 29587), (116, 29557),

Gene: Hammer\_40 Start: 26429, Stop: 26040, Start Num: 46

Candidate Starts for Hammer\_40:

(Start: 46 @26429 has 28 MA's), (88, 26198), (91, 26171), (108, 26066),

Gene: HashRod\_41 Start: 28574, Stop: 28191, Start Num: 48

Candidate Starts for HashRod\_41:

(Start: 39 @28601 has 11 MA's), (Start: 48 @28574 has 84 MA's), (56, 28547), (Start: 59 @28529 has 6 MA's), (87, 28358), (88, 28346),

Gene: HaugeAnator\_54 Start: 29438, Stop: 29022, Start Num: 52

Candidate Starts for HaugeAnator\_54:

(38, 29480), (Start: 52 @29438 has 13 MA's), (Start: 66 @29351 has 1 MA's), (80, 29255), (81, 29252), (83, 29246), (95, 29168),

Gene: HaveUMetTed\_41 Start: 28394, Stop: 28011, Start Num: 48

Candidate Starts for HaveUMetTed\_41:

(Start: 39 @28421 has 11 MA's), (Start: 48 @28394 has 84 MA's), (Start: 59 @28349 has 6 MA's), (87, 28178), (88, 28166),

Gene: Heathen\_36 Start: 27607, Stop: 27221, Start Num: 47

Candidate Starts for Heathen\_36:

(Start: 47 @27607 has 42 MA's), (85, 27409),

Gene: HelDan\_36 Start: 27859, Stop: 27473, Start Num: 47

Candidate Starts for HelDan\_36:

(Start: 47 @27859 has 42 MA's), (85, 27661),

Gene: Heliosoles\_40 Start: 28401, Stop: 28018, Start Num: 48

Candidate Starts for Heliosoles\_40:

(9, 28632), (Start: 39 @28428 has 11 MA's), (Start: 48 @28401 has 84 MA's), (Start: 59 @28356 has 6 MA's), (87, 28185), (88, 28173),

Gene: Hercules11\_41 Start: 28611, Stop: 28201, Start Num: 39

Candidate Starts for Hercules11\_41:

(Start: 39 @28611 has 11 MA's), (Start: 48 @28584 has 84 MA's), (Start: 59 @28539 has 6 MA's), (87, 28368), (88, 28356),

Gene: Hexamo\_40 Start: 26376, Stop: 25987, Start Num: 48

Candidate Starts for Hexamo\_40:

(Start: 48 @26376 has 84 MA's), (Start: 75 @26232 has 2 MA's), (83, 26187), (88, 26145), (91, 26118),

Gene: Hookmount\_35 Start: 27810, Stop: 27382, Start Num: 49

Candidate Starts for Hookmount\_35:

(Start: 47 @27813 has 42 MA's), (Start: 49 @27810 has 5 MA's), (Start: 59 @27765 has 6 MA's), (82, 27627), (109, 27450),

Gene: Hoot\_40 Start: 26594, Stop: 26202, Start Num: 46

Candidate Starts for Hoot\_40:

(Start: 46 @26594 has 28 MA's), (Start: 75 @26447 has 2 MA's), (83, 26402), (88, 26360), (91, 26333),

Gene: lbantik\_13 Start: 5594, Stop: 5154, Start Num: 43

Candidate Starts for lbantik\_13:

(Start: 43 @5594 has 1 MA's), (102, 5291), (119, 5186),

Gene: Idleandcovert\_36 Start: 27799, Stop: 27413, Start Num: 47

Candidate Starts for Idleandcovert\_36:

(Start: 47 @27799 has 42 MA's), (85, 27601),

Gene: Immanuel3\_53 Start: 29441, Stop: 29025, Start Num: 52

Candidate Starts for Immanuel3\_53:

(38, 29483), (Start: 52 @29441 has 13 MA's), (Start: 66 @29354 has 1 MA's), (72, 29315), (79, 29264), (83, 29249), (84, 29243),

Gene: Indra\_42 Start: 26618, Stop: 26226, Start Num: 46

Candidate Starts for Indra\_42:

(Start: 46 @26618 has 28 MA's), (Start: 75 @26471 has 2 MA's), (83, 26426), (88, 26384), (91, 26357),

Gene: Isca\_36 Start: 27568, Stop: 27182, Start Num: 47

Candidate Starts for Isca\_36:

(Start: 47 @27568 has 42 MA's),

Gene: Isiphiwo\_40 Start: 26688, Stop: 26296, Start Num: 46

Candidate Starts for Isiphiwo\_40:

(Start: 46 @26688 has 28 MA's), (Start: 75 @26541 has 2 MA's), (83, 26496), (88, 26454), (91, 26427), (92, 26424),

Gene: JF2\_36 Start: 27319, Stop: 26933, Start Num: 47

Candidate Starts for JF2\_36:

(Start: 47 @27319 has 42 MA's),

Gene: JF4\_36 Start: 27319, Stop: 26933, Start Num: 47

Candidate Starts for JF4\_36:

(Start: 47 @27319 has 42 MA's),

Gene: JHC117\_41 Start: 28574, Stop: 28191, Start Num: 48

Candidate Starts for JHC117\_41:

(Start: 39 @28601 has 11 MA's), (Start: 48 @28574 has 84 MA's), (Start: 59 @28529 has 6 MA's), (87, 28358), (88, 28346),

Gene: Jeffabunny\_40 Start: 26412, Stop: 26023, Start Num: 48

Candidate Starts for Jeffabunny\_40:

(Start: 48 @26412 has 84 MA's), (Start: 75 @26268 has 2 MA's), (83, 26223), (88, 26181), (91, 26154),

Gene: JenCasNa\_41 Start: 28575, Stop: 28192, Start Num: 48

Candidate Starts for JenCasNa\_41:

(Start: 39 @28602 has 11 MA's), (Start: 48 @28575 has 84 MA's), (Start: 59 @28530 has 6 MA's), (87, 28359), (88, 28347),

Gene: JeppNRM\_41 Start: 28399, Stop: 28016, Start Num: 48

Candidate Starts for JeppNRM\_41:

(9, 28630), (Start: 39 @28426 has 11 MA's), (Start: 48 @28399 has 84 MA's), (Start: 59 @28354 has 6 MA's), (87, 28183), (88, 28171),

Gene: JewelBug\_41 Start: 26622, Stop: 26230, Start Num: 46

Candidate Starts for JewelBug\_41:

(Start: 46 @26622 has 28 MA's), (Start: 75 @26475 has 2 MA's), (83, 26430), (88, 26388), (91, 26361),

Gene: Jobu08\_40 Start: 28405, Stop: 28022, Start Num: 48

Candidate Starts for Jobu08\_40:

(Start: 39 @28432 has 11 MA's), (Start: 48 @28405 has 84 MA's), (Start: 59 @28360 has 6 MA's), (87, 28189), (88, 28177),

Gene: Jordennis\_40 Start: 26606, Stop: 26214, Start Num: 46

Candidate Starts for Jordennis\_40:

(Start: 46 @26606 has 28 MA's), (Start: 75 @26459 has 2 MA's), (83, 26414), (88, 26372), (91, 26345),

Gene: KADY\_41 Start: 28574, Stop: 28191, Start Num: 48

Candidate Starts for KADY\_41:

(Start: 39 @28601 has 11 MA's), (Start: 48 @28574 has 84 MA's), (56, 28547), (Start: 59 @28529 has 6 MA's), (87, 28358), (88, 28346),

Gene: Kalb97\_41 Start: 28400, Stop: 28017, Start Num: 48

Candidate Starts for Kalb97\_41:

(9, 28628), (Start: 39 @28427 has 11 MA's), (Start: 48 @28400 has 84 MA's), (Start: 59 @28355 has 6 MA's), (87, 28184), (88, 28172),

Gene: Kalnoky\_41 Start: 28401, Stop: 28018, Start Num: 48

Candidate Starts for Kalnoky\_41:

(9, 28626), (Start: 39 @28428 has 11 MA's), (Start: 48 @28401 has 84 MA's), (Start: 59 @28356 has 6 MA's), (87, 28185), (88, 28173),

Gene: Kazan\_41 Start: 26622, Stop: 26230, Start Num: 46

Candidate Starts for Kazan\_41:

(Start: 46 @26622 has 28 MA's), (Start: 75 @26475 has 2 MA's), (83, 26430), (88, 26388), (91, 26361),

Gene: Kerberos\_40 Start: 27983, Stop: 27597, Start Num: 47

Candidate Starts for Kerberos\_40:

(Start: 47 @27983 has 42 MA's), (88, 27752),

Gene: Kimona\_33 Start: 25900, Stop: 25490, Start Num: 47

Candidate Starts for Kimona\_33:

(Start: 47 @25900 has 42 MA's), (76, 25753), (88, 25672), (105, 25567),

Gene: Kipper29\_40 Start: 26610, Stop: 26224, Start Num: 48

Candidate Starts for Kipper29\_40:

(Start: 48 @26610 has 84 MA's), (88, 26382), (91, 26355),

Gene: Koko\_40 Start: 26968, Stop: 26579, Start Num: 46

Candidate Starts for Koko\_40:

(Start: 46 @26968 has 28 MA's), (88, 26737), (91, 26710), (108, 26605),

Gene: Kumquat\_54 Start: 29457, Stop: 29041, Start Num: 52  
Candidate Starts for Kumquat\_54:  
(19, 29580), (44, 29472), (Start: 52 @29457 has 13 MA's), (88, 29229),

Gene: LBerry\_41 Start: 28576, Stop: 28193, Start Num: 48  
Candidate Starts for LBerry\_41:  
(Start: 39 @28603 has 11 MA's), (Start: 48 @28576 has 84 MA's), (Start: 59 @28531 has 6 MA's),  
(87, 28360), (88, 28348),

Gene: LHTSCC\_37 Start: 28100, Stop: 27660, Start Num: 50  
Candidate Starts for LHTSCC\_37:  
(Start: 50 @28100 has 9 MA's), (108, 27740), (109, 27737),

Gene: Lambert1\_35 Start: 27809, Stop: 27381, Start Num: 49  
Candidate Starts for Lambert1\_35:  
(Start: 47 @27812 has 42 MA's), (Start: 49 @27809 has 5 MA's), (Start: 59 @27764 has 6 MA's), (82,  
27626), (109, 27449),

Gene: LarryKay\_40 Start: 28576, Stop: 28193, Start Num: 48  
Candidate Starts for LarryKay\_40:  
(Start: 39 @28603 has 11 MA's), (Start: 48 @28576 has 84 MA's), (56, 28549), (Start: 59 @28531 has  
6 MA's), (87, 28360), (88, 28348),

Gene: Lilbooboo\_46 Start: 33605, Stop: 34009, Start Num: 50  
Candidate Starts for Lilbooboo\_46:  
(15, 33455), (Start: 41 @33593 has 3 MA's), (Start: 50 @33605 has 9 MA's), (Start: 66 @33698 has 1  
MA's), (76, 33752), (109, 33974),

Gene: Lilbunny\_38 Start: 26386, Stop: 25997, Start Num: 48  
Candidate Starts for Lilbunny\_38:  
(Start: 48 @26386 has 84 MA's), (Start: 75 @26242 has 2 MA's), (83, 26197), (88, 26155), (91,  
26128),

Gene: Lilit\_41 Start: 28569, Stop: 28186, Start Num: 48  
Candidate Starts for Lilit\_41:  
(Start: 39 @28596 has 11 MA's), (Start: 48 @28569 has 84 MA's), (Start: 59 @28524 has 6 MA's),  
(87, 28353), (88, 28341),

Gene: Lizz\_71 Start: 50574, Stop: 50158, Start Num: 42  
Candidate Starts for Lizz\_71:  
(Start: 42 @50574 has 2 MA's), (Start: 57 @50526 has 2 MA's), (Start: 59 @50514 has 6 MA's), (60,  
50508), (62, 50493), (63, 50481), (91, 50295), (92, 50292), (100, 50250), (107, 50187), (110, 50175),

Gene: Louie6\_40 Start: 28575, Stop: 28192, Start Num: 48  
Candidate Starts for Louie6\_40:  
(Start: 39 @28602 has 11 MA's), (Start: 48 @28575 has 84 MA's), (56, 28548), (Start: 59 @28530 has  
6 MA's), (87, 28359), (88, 28347),

Gene: Lozinak\_146 Start: 79968, Stop: 80357, Start Num: 48  
Candidate Starts for Lozinak\_146:  
(Start: 48 @79968 has 84 MA's), (74, 80106), (109, 80328), (113, 80346),

Gene: LugYA\_43 Start: 28576, Stop: 28193, Start Num: 48  
Candidate Starts for LugYA\_43:  
(Start: 39 @28603 has 11 MA's), (Start: 48 @28576 has 84 MA's), (Start: 59 @28531 has 6 MA's),  
(87, 28360), (88, 28348),

Gene: MA5\_36 Start: 27451, Stop: 27065, Start Num: 47  
Candidate Starts for MA5\_36:  
(Start: 47 @27451 has 42 MA's), (85, 27253),

Gene: MK4\_36 Start: 27553, Stop: 27167, Start Num: 47  
Candidate Starts for MK4\_36:  
(Start: 47 @27553 has 42 MA's),

Gene: MadMarie\_41 Start: 28578, Stop: 28195, Start Num: 48  
Candidate Starts for MadMarie\_41:  
(Start: 39 @28605 has 11 MA's), (Start: 48 @28578 has 84 MA's), (Start: 59 @28533 has 6 MA's),  
(87, 28362), (88, 28350),

Gene: Mainiac\_41 Start: 28569, Stop: 28186, Start Num: 48  
Candidate Starts for Mainiac\_41:  
(Start: 39 @28596 has 11 MA's), (Start: 48 @28569 has 84 MA's), (Start: 59 @28524 has 6 MA's),  
(87, 28353), (88, 28341),

Gene: Malinsilva\_43 Start: 28568, Stop: 28185, Start Num: 48  
Candidate Starts for Malinsilva\_43:  
(Start: 39 @28595 has 11 MA's), (Start: 48 @28568 has 84 MA's), (Start: 59 @28523 has 6 MA's),  
(87, 28352), (88, 28340),

Gene: Manu\_41 Start: 28401, Stop: 28018, Start Num: 48  
Candidate Starts for Manu\_41:  
(9, 28629), (Start: 39 @28428 has 11 MA's), (Start: 48 @28401 has 84 MA's), (Start: 59 @28356 has  
6 MA's), (87, 28185), (88, 28173),

Gene: Manuel\_51 Start: 29161, Stop: 28748, Start Num: 53  
Candidate Starts for Manuel\_51:  
(Start: 53 @29161 has 1 MA's), (56, 29143), (Start: 66 @29077 has 1 MA's), (86, 28960), (98, 28885),

Gene: MarQuardt\_41 Start: 28577, Stop: 28194, Start Num: 48  
Candidate Starts for MarQuardt\_41:  
(Start: 39 @28604 has 11 MA's), (Start: 48 @28577 has 84 MA's), (Start: 59 @28532 has 6 MA's),  
(87, 28361), (88, 28349),

Gene: Margo\_35 Start: 27838, Stop: 27407, Start Num: 47  
Candidate Starts for Margo\_35:  
(Start: 47 @27838 has 42 MA's), (Start: 49 @27835 has 5 MA's), (Start: 59 @27790 has 6 MA's), (82,  
27652), (109, 27475),

Gene: Marie\_41 Start: 28575, Stop: 28192, Start Num: 48  
Candidate Starts for Marie\_41:  
(Start: 39 @28602 has 11 MA's), (Start: 48 @28575 has 84 MA's), (Start: 59 @28530 has 6 MA's),  
(87, 28359), (88, 28347),

Gene: Marius\_41 Start: 28401, Stop: 28018, Start Num: 48

Candidate Starts for Marius\_41:

(9, 28626), (Start: 39 @28428 has 11 MA's), (Start: 48 @28401 has 84 MA's), (Start: 59 @28356 has 6 MA's), (87, 28185), (88, 28173),

Gene: McFly\_40 Start: 26616, Stop: 26224, Start Num: 46

Candidate Starts for McFly\_40:

(Start: 46 @26616 has 28 MA's), (Start: 75 @26469 has 2 MA's), (83, 26424), (88, 26382), (91, 26355),

Gene: Methuselah\_39 Start: 28570, Stop: 28187, Start Num: 48

Candidate Starts for Methuselah\_39:

(Start: 39 @28597 has 11 MA's), (Start: 48 @28570 has 84 MA's), (56, 28543), (Start: 59 @28525 has 6 MA's), (87, 28354), (88, 28342),

Gene: Microwolf\_41 Start: 28577, Stop: 28194, Start Num: 48

Candidate Starts for Microwolf\_41:

(Start: 39 @28604 has 11 MA's), (Start: 48 @28577 has 84 MA's), (Start: 59 @28532 has 6 MA's), (87, 28361), (88, 28349),

Gene: Misomonster\_42 Start: 28573, Stop: 28190, Start Num: 48

Candidate Starts for Misomonster\_42:

(Start: 39 @28600 has 11 MA's), (Start: 48 @28573 has 84 MA's), (56, 28546), (Start: 59 @28528 has 6 MA's), (87, 28357), (88, 28345),

Gene: MoneyMay\_41 Start: 28602, Stop: 28192, Start Num: 39

Candidate Starts for MoneyMay\_41:

(Start: 39 @28602 has 11 MA's), (Start: 48 @28575 has 84 MA's), (Start: 59 @28530 has 6 MA's), (87, 28359), (88, 28347),

Gene: MuchMore\_43 Start: 28568, Stop: 28185, Start Num: 48

Candidate Starts for MuchMore\_43:

(Start: 39 @28595 has 11 MA's), (Start: 48 @28568 has 84 MA's), (Start: 59 @28523 has 6 MA's), (87, 28352), (88, 28340),

Gene: Naji\_40 Start: 27983, Stop: 27597, Start Num: 47

Candidate Starts for Naji\_40:

(Start: 47 @27983 has 42 MA's), (88, 27752),

Gene: Newrala\_40 Start: 26609, Stop: 26217, Start Num: 46

Candidate Starts for Newrala\_40:

(Start: 46 @26609 has 28 MA's), (Start: 75 @26462 has 2 MA's), (83, 26417), (88, 26375), (91, 26348),

Gene: Noella\_35 Start: 27813, Stop: 27382, Start Num: 47

Candidate Starts for Noella\_35:

(Start: 47 @27813 has 42 MA's), (Start: 49 @27810 has 5 MA's), (Start: 59 @27765 has 6 MA's), (82, 27627), (109, 27450),

Gene: Norbert\_34 Start: 27812, Stop: 27381, Start Num: 47

Candidate Starts for Norbert\_34:

(Start: 47 @27812 has 42 MA's), (Start: 49 @27809 has 5 MA's), (Start: 59 @27764 has 6 MA's), (82, 27626), (109, 27449),

Gene: Obama12\_37 Start: 28102, Stop: 27662, Start Num: 50

Candidate Starts for Obama12\_37:

(Start: 50 @28102 has 9 MA's), (108, 27742), (109, 27739),

Gene: OhMyWard\_63 Start: 47880, Stop: 48323, Start Num: 37

Candidate Starts for OhMyWard\_63:

(21, 47814), (34, 47871), (Start: 37 @47880 has 4 MA's), (Start: 66 @48009 has 1 MA's), (78, 48075), (79, 48102), (97, 48210), (105, 48264),

Gene: OlanP\_40 Start: 28582, Stop: 28199, Start Num: 48

Candidate Starts for OlanP\_40:

(Start: 39 @28609 has 11 MA's), (Start: 48 @28582 has 84 MA's), (Start: 59 @28537 has 6 MA's), (87, 28366), (88, 28354),

Gene: Olicious\_54 Start: 29438, Stop: 29022, Start Num: 52

Candidate Starts for Olicious\_54:

(38, 29480), (Start: 52 @29438 has 13 MA's), (Start: 66 @29351 has 1 MA's), (72, 29312), (79, 29261), (83, 29246), (84, 29240),

Gene: Ollie\_41 Start: 28447, Stop: 28064, Start Num: 48

Candidate Starts for Ollie\_41:

(Start: 39 @28474 has 11 MA's), (Start: 48 @28447 has 84 MA's), (Start: 59 @28402 has 6 MA's), (87, 28231), (88, 28219),

Gene: OneUp\_130 Start: 77814, Stop: 78209, Start Num: 45

Candidate Starts for OneUp\_130:

(29, 77748), (Start: 45 @77814 has 6 MA's), (74, 77958), (113, 78198),

Gene: P28Green\_41 Start: 28578, Stop: 28195, Start Num: 48

Candidate Starts for P28Green\_41:

(Start: 39 @28605 has 11 MA's), (Start: 48 @28578 has 84 MA's), (Start: 59 @28533 has 6 MA's), (87, 28362), (88, 28350),

Gene: PGHhamlin\_43 Start: 28568, Stop: 28185, Start Num: 48

Candidate Starts for PGHhamlin\_43:

(Start: 39 @28595 has 11 MA's), (Start: 48 @28568 has 84 MA's), (Start: 59 @28523 has 6 MA's), (87, 28352), (88, 28340),

Gene: PHTowN\_71 Start: 50512, Stop: 50156, Start Num: 59

Candidate Starts for PHTowN\_71:

(Start: 42 @50572 has 2 MA's), (Start: 57 @50524 has 2 MA's), (Start: 59 @50512 has 6 MA's), (60, 50506), (62, 50491), (63, 50479), (91, 50293), (92, 50290), (100, 50248), (107, 50185), (110, 50173),

Gene: Panamaxus\_34 Start: 27812, Stop: 27381, Start Num: 47

Candidate Starts for Panamaxus\_34:

(Start: 47 @27812 has 42 MA's), (Start: 49 @27809 has 5 MA's), (Start: 59 @27764 has 6 MA's), (82, 27626), (109, 27449),

Gene: Paolo\_39 Start: 27402, Stop: 27788, Start Num: 64

Candidate Starts for Paolo\_39:

(Start: 46 @27315 has 28 MA's), (Start: 59 @27360 has 6 MA's), (61, 27369), (63, 27393), (Start: 64 @27402 has 1 MA's), (Start: 66 @27408 has 1 MA's), (79, 27504), (102, 27636), (122, 27756), (123, 27771),



Gene: Pembroke\_41 Start: 28577, Stop: 28194, Start Num: 48  
Candidate Starts for Pembroke\_41:  
(Start: 39 @28604 has 11 MA's), (Start: 48 @28577 has 84 MA's), (Start: 59 @28532 has 6 MA's),  
(87, 28361), (88, 28349),

Gene: Penny1\_41 Start: 28576, Stop: 28193, Start Num: 48  
Candidate Starts for Penny1\_41:  
(Start: 39 @28603 has 11 MA's), (Start: 48 @28576 has 84 MA's), (Start: 59 @28531 has 6 MA's),  
(87, 28360), (88, 28348),

Gene: Percastrophe\_54 Start: 29372, Stop: 28956, Start Num: 52  
Candidate Starts for Percastrophe\_54:  
(38, 29414), (Start: 52 @29372 has 13 MA's), (Start: 66 @29285 has 1 MA's), (80, 29189), (81,  
29186), (83, 29180), (95, 29102),

Gene: Phantastic\_36 Start: 27584, Stop: 27198, Start Num: 47  
Candidate Starts for Phantastic\_36:  
(Start: 47 @27584 has 42 MA's),

Gene: Phillis\_32 Start: 26263, Stop: 25784, Start Num: 48  
Candidate Starts for Phillis\_32:  
(Start: 48 @26263 has 84 MA's), (88, 26032), (112, 25882), (124, 25816), (126, 25804),

Gene: PhinkBoden\_144 Start: 79554, Stop: 79946, Start Num: 45  
Candidate Starts for PhinkBoden\_144:  
(Start: 45 @79554 has 6 MA's), (74, 79695), (109, 79917), (113, 79935),

Gene: PhishRPhriends\_39 Start: 27579, Stop: 27196, Start Num: 48  
Candidate Starts for PhishRPhriends\_39:  
(9, 27807), (Start: 39 @27606 has 11 MA's), (Start: 48 @27579 has 84 MA's), (Start: 59 @27534 has  
6 MA's), (87, 27363), (88, 27351),

Gene: Phoebe\_41 Start: 28568, Stop: 28185, Start Num: 48  
Candidate Starts for Phoebe\_41:  
(Start: 39 @28595 has 11 MA's), (Start: 48 @28568 has 84 MA's), (Start: 59 @28523 has 6 MA's),  
(87, 28352), (88, 28340),

Gene: Phoxy\_40 Start: 28571, Stop: 28188, Start Num: 48  
Candidate Starts for Phoxy\_40:  
(Start: 39 @28598 has 11 MA's), (Start: 48 @28571 has 84 MA's), (56, 28544), (Start: 59 @28526 has  
6 MA's), (87, 28355), (88, 28343),

Gene: Phranny\_41 Start: 28387, Stop: 28004, Start Num: 48  
Candidate Starts for Phranny\_41:  
(9, 28615), (Start: 39 @28414 has 11 MA's), (Start: 48 @28387 has 84 MA's), (Start: 59 @28342 has  
6 MA's), (87, 28171), (88, 28159),

Gene: Pistachio\_37 Start: 27346, Stop: 26960, Start Num: 47  
Candidate Starts for Pistachio\_37:  
(Start: 47 @27346 has 42 MA's), (85, 27148),

Gene: Pocahontas\_35 Start: 27806, Stop: 27378, Start Num: 49

Candidate Starts for Pocahontas\_35:

(Start: 47 @27809 has 42 MA's), (Start: 49 @27806 has 5 MA's), (Start: 59 @27761 has 6 MA's), (82, 27623), (109, 27446),

Gene: Pomar16\_40 Start: 28024, Stop: 27638, Start Num: 47

Candidate Starts for Pomar16\_40:

(Start: 47 @28024 has 42 MA's), (88, 27793),

Gene: Popcicle\_35 Start: 27806, Stop: 27378, Start Num: 49

Candidate Starts for Popcicle\_35:

(Start: 47 @27809 has 42 MA's), (Start: 49 @27806 has 5 MA's), (Start: 59 @27761 has 6 MA's), (82, 27623), (109, 27446),

Gene: PotatoSplit\_42 Start: 28576, Stop: 28193, Start Num: 48

Candidate Starts for PotatoSplit\_42:

(Start: 39 @28603 has 11 MA's), (Start: 48 @28576 has 84 MA's), (Start: 59 @28531 has 6 MA's), (87, 28360), (88, 28348),

Gene: Priamo\_41 Start: 26652, Stop: 26263, Start Num: 48

Candidate Starts for Priamo\_41:

(Start: 48 @26652 has 84 MA's), (Start: 75 @26508 has 2 MA's), (83, 26463), (88, 26421), (91, 26394),

Gene: Provolone\_36 Start: 27103, Stop: 27507, Start Num: 46

Candidate Starts for Provolone\_36:

(12, 26908), (28, 27043), (Start: 46 @27103 has 28 MA's), (61, 27157), (Start: 64 @27190 has 1 MA's), (70, 27223), (108, 27484), (110, 27490),

Gene: Puppy\_37 Start: 27416, Stop: 27030, Start Num: 47

Candidate Starts for Puppy\_37:

(Start: 47 @27416 has 42 MA's), (85, 27218),

Gene: PurpleHaze\_40 Start: 28400, Stop: 28017, Start Num: 48

Candidate Starts for PurpleHaze\_40:

(9, 28628), (Start: 39 @28427 has 11 MA's), (Start: 48 @28400 has 84 MA's), (Start: 59 @28355 has 6 MA's), (87, 28184), (88, 28172),

Gene: QuinnKiro\_34 Start: 27812, Stop: 27381, Start Num: 47

Candidate Starts for QuinnKiro\_34:

(Start: 47 @27812 has 42 MA's), (Start: 49 @27809 has 5 MA's), (Start: 59 @27764 has 6 MA's), (82, 27626), (109, 27449),

Gene: Reba\_41 Start: 28060, Stop: 27677, Start Num: 48

Candidate Starts for Reba\_41:

(9, 28288), (Start: 39 @28087 has 11 MA's), (Start: 48 @28060 has 84 MA's), (Start: 59 @28015 has 6 MA's), (87, 27844), (88, 27832),

Gene: RemusLoopin\_46 Start: 34126, Stop: 34542, Start Num: 41

Candidate Starts for RemusLoopin\_46:

(Start: 41 @34126 has 3 MA's), (63, 34216), (Start: 66 @34231 has 1 MA's), (67, 34249),

Gene: ResDef\_36 Start: 27809, Stop: 27381, Start Num: 49

Candidate Starts for ResDef\_36:

(Start: 47 @27812 has 42 MA's), (Start: 49 @27809 has 5 MA's), (Start: 59 @27764 has 6 MA's), (82, 27626), (109, 27449),

Gene: Rifter\_40 Start: 26392, Stop: 26003, Start Num: 46  
Candidate Starts for Rifter\_40:  
(Start: 46 @26392 has 28 MA's), (88, 26161), (91, 26134), (108, 26029),

Gene: Rockstar\_36 Start: 27560, Stop: 27174, Start Num: 47  
Candidate Starts for Rockstar\_36:  
(Start: 47 @27560 has 42 MA's),

Gene: Roksolana\_41 Start: 26646, Stop: 26254, Start Num: 46  
Candidate Starts for Roksolana\_41:  
(Start: 46 @26646 has 28 MA's), (Start: 75 @26499 has 2 MA's), (83, 26454), (88, 26412), (91, 26385),

Gene: Romero\_54 Start: 29431, Stop: 29015, Start Num: 52  
Candidate Starts for Romero\_54:  
(38, 29473), (Start: 52 @29431 has 13 MA's), (Start: 66 @29344 has 1 MA's), (72, 29305), (79, 29254), (83, 29239), (84, 29233),

Gene: Rooney\_71 Start: 50674, Stop: 50294, Start Num: 55  
Candidate Starts for Rooney\_71:  
(Start: 42 @50710 has 2 MA's), (Start: 55 @50674 has 2 MA's), (Start: 57 @50662 has 2 MA's), (Start: 59 @50650 has 6 MA's), (60, 50644), (62, 50629), (Start: 64 @50608 has 1 MA's), (89, 50452), (92, 50428), (99, 50389), (100, 50386), (106, 50332), (107, 50323),

Gene: RosePharie\_55 Start: 29769, Stop: 29353, Start Num: 51  
Candidate Starts for RosePharie\_55:  
(44, 29781), (Start: 51 @29769 has 1 MA's), (56, 29748), (Start: 66 @29682 has 1 MA's), (98, 29490),

Gene: Rowa\_49 Start: 35076, Stop: 35489, Start Num: 41  
Candidate Starts for Rowa\_49:  
(Start: 41 @35076 has 3 MA's), (Start: 64 @35175 has 1 MA's), (67, 35199), (97, 35373), (108, 35454),

Gene: Rummer\_40 Start: 28571, Stop: 28188, Start Num: 48  
Candidate Starts for Rummer\_40:  
(Start: 39 @28598 has 11 MA's), (Start: 48 @28571 has 84 MA's), (56, 28544), (Start: 59 @28526 has 6 MA's), (87, 28355), (88, 28343),

Gene: Sabia\_41 Start: 28596, Stop: 28186, Start Num: 39  
Candidate Starts for Sabia\_41:  
(Start: 39 @28596 has 11 MA's), (Start: 48 @28569 has 84 MA's), (Start: 59 @28524 has 6 MA's), (87, 28353), (88, 28341),

Gene: Sabinator\_40 Start: 28574, Stop: 28191, Start Num: 48  
Candidate Starts for Sabinator\_40:  
(Start: 39 @28601 has 11 MA's), (Start: 48 @28574 has 84 MA's), (Start: 59 @28529 has 6 MA's), (87, 28358), (88, 28346),

Gene: Saftant\_35 Start: 27670, Stop: 28074, Start Num: 46  
Candidate Starts for Saftant\_35:

(Start: 46 @27670 has 28 MA's), (61, 27724), (Start: 64 @27757 has 1 MA's), (70, 27790), (102, 27991), (108, 28051), (110, 28057),

Gene: SaturnRing\_36 Start: 27799, Stop: 27413, Start Num: 47  
Candidate Starts for SaturnRing\_36:  
(Start: 47 @27799 has 42 MA's), (85, 27601),

Gene: Scout\_36 Start: 27106, Stop: 26720, Start Num: 47  
Candidate Starts for Scout\_36:  
(Start: 47 @27106 has 42 MA's), (85, 26908),

Gene: Sebastisaurus\_45 Start: 34670, Stop: 34981, Start Num: 66  
Candidate Starts for Sebastisaurus\_45:  
(Start: 41 @34565 has 3 MA's), (63, 34655), (Start: 66 @34670 has 1 MA's),

Gene: Secretariat\_64 Start: 45608, Stop: 46093, Start Num: 35  
Candidate Starts for Secretariat\_64:  
(11, 45440), (13, 45479), (16, 45497), (25, 45575), (31, 45584), (Start: 35 @45608 has 1 MA's), (Start: 57 @45683 has 2 MA's), (Start: 66 @45743 has 1 MA's), (77, 45800), (87, 45881), (90, 45917), (91, 45920),

Gene: ShakeNBake\_71 Start: 50539, Stop: 50183, Start Num: 59  
Candidate Starts for ShakeNBake\_71:  
(Start: 42 @50599 has 2 MA's), (Start: 57 @50551 has 2 MA's), (Start: 59 @50539 has 6 MA's), (60, 50533), (62, 50518), (63, 50506), (91, 50320), (92, 50317), (100, 50275), (107, 50212), (110, 50200),

Gene: Shawty\_45 Start: 33157, Stop: 33510, Start Num: 59  
Candidate Starts for Shawty\_45:  
(33, 33064), (36, 33076), (40, 33097), (Start: 59 @33157 has 6 MA's), (Start: 66 @33205 has 1 MA's), (109, 33481), (115, 33502),

Gene: SheldonCooper\_37 Start: 28101, Stop: 27661, Start Num: 50  
Candidate Starts for SheldonCooper\_37:  
(Start: 50 @28101 has 9 MA's), (108, 27741), (109, 27738),

Gene: SmellyB\_40 Start: 26616, Stop: 26224, Start Num: 46  
Candidate Starts for SmellyB\_40:  
(Start: 46 @26616 has 28 MA's), (Start: 75 @26469 has 2 MA's), (83, 26424), (88, 26382), (91, 26355),

Gene: Smoothie\_147 Start: 79538, Stop: 79933, Start Num: 45  
Candidate Starts for Smoothie\_147:  
(1, 78968), (2, 79082), (3, 79109), (4, 79139), (5, 79232), (10, 79331), (14, 79382), (17, 79394), (22, 79445), (23, 79466), (31, 79481), (Start: 45 @79538 has 6 MA's), (74, 79682), (109, 79904), (113, 79922),

Gene: SoYo\_41 Start: 28514, Stop: 28104, Start Num: 39  
Candidate Starts for SoYo\_41:  
(Start: 39 @28514 has 11 MA's), (Start: 48 @28487 has 84 MA's), (Start: 59 @28442 has 6 MA's), (87, 28271), (88, 28259),

Gene: SoilDragon\_40 Start: 28021, Stop: 27638, Start Num: 48  
Candidate Starts for SoilDragon\_40:

(Start: 39 @28048 has 11 MA's), (Start: 48 @28021 has 84 MA's), (Start: 59 @27976 has 6 MA's),  
(87, 27805), (88, 27793),

Gene: Soshari\_42 Start: 28570, Stop: 28187, Start Num: 48

Candidate Starts for Soshari\_42:

(Start: 39 @28597 has 11 MA's), (Start: 48 @28570 has 84 MA's), (56, 28543), (Start: 59 @28525 has  
6 MA's), (87, 28354), (88, 28342),

Gene: Spike509\_40 Start: 28571, Stop: 28188, Start Num: 48

Candidate Starts for Spike509\_40:

(Start: 39 @28598 has 11 MA's), (Start: 48 @28571 has 84 MA's), (56, 28544), (Start: 59 @28526 has  
6 MA's), (87, 28355), (88, 28343),

Gene: Stagni\_41 Start: 28578, Stop: 28195, Start Num: 48

Candidate Starts for Stagni\_41:

(Start: 39 @28605 has 11 MA's), (Start: 48 @28578 has 84 MA's), (Start: 59 @28533 has 6 MA's),  
(87, 28362), (88, 28350),

Gene: StarStuff\_40 Start: 27986, Stop: 27600, Start Num: 47

Candidate Starts for StarStuff\_40:

(Start: 47 @27986 has 42 MA's), (88, 27755),

Gene: StepMih\_41 Start: 28569, Stop: 28186, Start Num: 48

Candidate Starts for StepMih\_41:

(Start: 39 @28596 has 11 MA's), (Start: 48 @28569 has 84 MA's), (Start: 59 @28524 has 6 MA's),  
(87, 28353), (88, 28341),

Gene: Stink\_36 Start: 28296, Stop: 27874, Start Num: 50

Candidate Starts for Stink\_36:

(Start: 50 @28296 has 9 MA's), (Start: 59 @28251 has 6 MA's),

Gene: Success\_13 Start: 8706, Stop: 8326, Start Num: 59

Candidate Starts for Success\_13:

(31, 8814), (32, 8802), (Start: 59 @8706 has 6 MA's), (69, 8634), (71, 8625), (90, 8496), (103, 8421),  
(108, 8388), (109, 8385), (121, 8337),

Gene: SuperAwesome\_40 Start: 26609, Stop: 26217, Start Num: 46

Candidate Starts for SuperAwesome\_40:

(Start: 46 @26609 has 28 MA's), (Start: 75 @26462 has 2 MA's), (83, 26417), (88, 26375), (91,  
26348),

Gene: TNguyen7\_36 Start: 27763, Stop: 27377, Start Num: 47

Candidate Starts for TNguyen7\_36:

(Start: 47 @27763 has 42 MA's), (85, 27565),

Gene: Taurus\_41 Start: 28575, Stop: 28192, Start Num: 48

Candidate Starts for Taurus\_41:

(Start: 39 @28602 has 11 MA's), (Start: 48 @28575 has 84 MA's), (Start: 59 @28530 has 6 MA's),  
(87, 28359), (88, 28347),

Gene: TenaciousP\_69 Start: 47769, Stop: 48215, Start Num: 37

Candidate Starts for TenaciousP\_69:

(20, 47697), (24, 47730), (34, 47760), (Start: 37 @47769 has 4 MA's), (Start: 66 @47901 has 1 MA's), (79, 47994), (97, 48102), (104, 48153),

Gene: Texage\_34 Start: 27813, Stop: 27382, Start Num: 47

Candidate Starts for Texage\_34:

(Start: 47 @27813 has 42 MA's), (Start: 49 @27810 has 5 MA's), (Start: 59 @27765 has 6 MA's), (82, 27627), (109, 27450),

Gene: Tiffany\_41 Start: 28461, Stop: 28078, Start Num: 48

Candidate Starts for Tiffany\_41:

(Start: 39 @28488 has 11 MA's), (Start: 48 @28461 has 84 MA's), (Start: 59 @28416 has 6 MA's), (87, 28245), (88, 28233),

Gene: Todacoro\_35 Start: 27812, Stop: 27381, Start Num: 47

Candidate Starts for Todacoro\_35:

(Start: 47 @27812 has 42 MA's), (Start: 49 @27809 has 5 MA's), (Start: 59 @27764 has 6 MA's), (82, 27626), (109, 27449),

Gene: Tomathan\_40 Start: 27983, Stop: 27597, Start Num: 47

Candidate Starts for Tomathan\_40:

(Start: 47 @27983 has 42 MA's), (88, 27752),

Gene: ToneTone\_37 Start: 26318, Stop: 25929, Start Num: 48

Candidate Starts for ToneTone\_37:

(Start: 48 @26318 has 84 MA's), (Start: 75 @26174 has 2 MA's), (83, 26129), (88, 26087), (91, 26060),

Gene: Toniann\_146 Start: 79300, Stop: 79689, Start Num: 48

Candidate Starts for Toniann\_146:

(Start: 48 @79300 has 84 MA's), (74, 79438), (109, 79660), (113, 79678),

Gene: ToriToki\_54 Start: 29434, Stop: 29018, Start Num: 52

Candidate Starts for ToriToki\_54:

(38, 29476), (Start: 52 @29434 has 13 MA's), (Start: 66 @29347 has 1 MA's), (80, 29251), (81, 29248), (83, 29242), (95, 29164),

Gene: Treat\_54 Start: 29375, Stop: 28959, Start Num: 52

Candidate Starts for Treat\_54:

(38, 29417), (Start: 52 @29375 has 13 MA's), (Start: 66 @29288 has 1 MA's), (72, 29249), (79, 29198), (83, 29183), (84, 29177),

Gene: Tucker\_40 Start: 26404, Stop: 26015, Start Num: 48

Candidate Starts for Tucker\_40:

(Start: 48 @26404 has 84 MA's), (56, 26377), (Start: 75 @26260 has 2 MA's), (83, 26215), (88, 26173), (91, 26146),

Gene: VA6\_37 Start: 28094, Stop: 27678, Start Num: 47

Candidate Starts for VA6\_37:

(7, 28382), (Start: 47 @28094 has 42 MA's), (88, 27863), (108, 27731), (114, 27710), (118, 27692),

Gene: VC3\_40 Start: 28082, Stop: 27666, Start Num: 47

Candidate Starts for VC3\_40:

(7, 28370), (Start: 47 @28082 has 42 MA's), (88, 27851), (108, 27719), (114, 27698), (118, 27680),

Gene: Vanseggelen\_40 Start: 27232, Stop: 27636, Start Num: 46

Candidate Starts for Vanseggelen\_40:

(12, 27037), (28, 27172), (Start: 46 @27232 has 28 MA's), (Start: 59 @27277 has 6 MA's), (61, 27286), (63, 27310), (Start: 64 @27319 has 1 MA's), (70, 27352), (108, 27613), (110, 27619),

Gene: Vardy\_63 Start: 46057, Stop: 46503, Start Num: 37

Candidate Starts for Vardy\_63:

(21, 45991), (30, 46027), (34, 46048), (Start: 37 @46057 has 4 MA's), (Start: 66 @46189 has 1 MA's), (78, 46255), (79, 46282), (83, 46297), (97, 46390), (104, 46441),

Gene: Vash\_45 Start: 33403, Stop: 33828, Start Num: 41

Candidate Starts for Vash\_45:

(Start: 41 @33403 has 3 MA's), (Start: 50 @33415 has 9 MA's), (63, 33493), (Start: 66 @33508 has 1 MA's), (67, 33526), (101, 33715), (109, 33784), (111, 33796), (115, 33808), (117, 33820),

Gene: Verabelle\_38 Start: 27616, Stop: 28023, Start Num: 46

Candidate Starts for Verabelle\_38:

(12, 27421), (18, 27496), (28, 27556), (Start: 46 @27616 has 28 MA's), (61, 27673), (Start: 64 @27706 has 1 MA's), (73, 27757), (79, 27808), (83, 27823), (102, 27940), (108, 28000), (110, 28006),

Gene: Veracruz\_34 Start: 27812, Stop: 27381, Start Num: 47

Candidate Starts for Veracruz\_34:

(Start: 47 @27812 has 42 MA's), (Start: 49 @27809 has 5 MA's), (Start: 59 @27764 has 6 MA's), (82, 27626), (109, 27449),

Gene: Verse\_35 Start: 28380, Stop: 28784, Start Num: 46

Candidate Starts for Verse\_35:

(28, 28317), (Start: 46 @28380 has 28 MA's), (Start: 59 @28425 has 6 MA's), (61, 28434), (63, 28458), (73, 28518), (102, 28701), (108, 28761), (110, 28767),

Gene: Vix\_41 Start: 28658, Stop: 28275, Start Num: 48

Candidate Starts for Vix\_41:

(Start: 39 @28685 has 11 MA's), (Start: 48 @28658 has 84 MA's), (Start: 59 @28613 has 6 MA's), (87, 28442), (88, 28430),

Gene: VohminGhazi\_40 Start: 26617, Stop: 26225, Start Num: 46

Candidate Starts for VohminGhazi\_40:

(Start: 46 @26617 has 28 MA's), (Start: 75 @26470 has 2 MA's), (83, 26425), (88, 26383), (91, 26356),

Gene: Vorvolakos\_54 Start: 29094, Stop: 28675, Start Num: 52

Candidate Starts for Vorvolakos\_54:

(Start: 52 @29094 has 13 MA's), (Start: 57 @29067 has 2 MA's), (63, 29022), (98, 28812),

Gene: WRightOn\_58 Start: 29613, Stop: 29197, Start Num: 52

Candidate Starts for WRightOn\_58:

(19, 29736), (44, 29628), (Start: 52 @29613 has 13 MA's), (88, 29385),

Gene: Watson\_41 Start: 28595, Stop: 28185, Start Num: 39

Candidate Starts for Watson\_41:

(Start: 39 @28595 has 11 MA's), (Start: 48 @28568 has 84 MA's), (Start: 59 @28523 has 6 MA's), (87, 28352), (88, 28340),

Gene: Wentworth\_71 Start: 50670, Stop: 50269, Start Num: 55

Candidate Starts for Wentworth\_71:

(Start: 42 @50700 has 2 MA's), (Start: 55 @50670 has 2 MA's), (Start: 57 @50658 has 2 MA's), (Start: 59 @50646 has 6 MA's), (Start: 64 @50604 has 1 MA's), (Start: 66 @50598 has 1 MA's), (89, 50448), (91, 50427), (94, 50397), (99, 50376),

Gene: Wiks\_39 Start: 26386, Stop: 25997, Start Num: 48

Candidate Starts for Wiks\_39:

(Start: 48 @26386 has 84 MA's), (Start: 75 @26242 has 2 MA's), (83, 26197), (88, 26155), (91, 26128),

Gene: Wilkos\_73 Start: 50809, Stop: 50432, Start Num: 59

Candidate Starts for Wilkos\_73:

(Start: 42 @50863 has 2 MA's), (Start: 59 @50809 has 6 MA's), (Start: 66 @50761 has 1 MA's), (91, 50590), (94, 50560), (99, 50539), (100, 50536),

Gene: Wooldri\_43 Start: 28514, Stop: 28104, Start Num: 39

Candidate Starts for Wooldri\_43:

(Start: 39 @28514 has 11 MA's), (Start: 48 @28487 has 84 MA's), (Start: 59 @28442 has 6 MA's), (87, 28271), (88, 28259),

Gene: WunderPhul\_40 Start: 26384, Stop: 25995, Start Num: 48

Candidate Starts for WunderPhul\_40:

(Start: 48 @26384 has 84 MA's), (Start: 75 @26240 has 2 MA's), (83, 26195), (88, 26153), (91, 26126),

Gene: Yara\_67 Start: 49527, Stop: 49126, Start Num: 42

Candidate Starts for Yara\_67:

(Start: 42 @49527 has 2 MA's), (63, 49440), (93, 49254), (99, 49221), (110, 49143),

Gene: Yokurt\_40 Start: 26386, Stop: 25997, Start Num: 48

Candidate Starts for Yokurt\_40:

(Start: 48 @26386 has 84 MA's), (Start: 75 @26242 has 2 MA's), (83, 26197), (88, 26155), (91, 26128),

Gene: Yosif\_37 Start: 28173, Stop: 28583, Start Num: 46

Candidate Starts for Yosif\_37:

(Start: 46 @28173 has 28 MA's), (61, 28227), (63, 28251), (102, 28494), (108, 28554), (110, 28560),

Gene: Zaka\_40 Start: 26386, Stop: 25997, Start Num: 48

Candidate Starts for Zaka\_40:

(Start: 48 @26386 has 84 MA's), (Start: 75 @26242 has 2 MA's), (83, 26197), (88, 26155), (91, 26128),

Gene: Zeigle\_54 Start: 29457, Stop: 29041, Start Num: 52

Candidate Starts for Zeigle\_54:

(19, 29580), (44, 29472), (Start: 52 @29457 has 13 MA's), (88, 29229),

Gene: Zetzy\_40 Start: 28139, Stop: 27756, Start Num: 48

Candidate Starts for Zetzy\_40:

(Start: 39 @28166 has 11 MA's), (Start: 48 @28139 has 84 MA's), (Start: 59 @28094 has 6 MA's), (87, 27923), (88, 27911),



Gene: ZooBear\_54 Start: 29438, Stop: 29022, Start Num: 52

Candidate Starts for ZooBear\_54:

(38, 29480), (Start: 52 @29438 has 13 MA's), (Start: 66 @29351 has 1 MA's), (80, 29255), (81, 29252), (83, 29246), (95, 29168),

Gene: Zulu\_40 Start: 26385, Stop: 25996, Start Num: 48

Candidate Starts for Zulu\_40:

(Start: 48 @26385 has 84 MA's), (56, 26358), (Start: 75 @26241 has 2 MA's), (83, 26196), (88, 26154), (91, 26127),

Gene: phiBT1\_20 Start: 34511, Stop: 34861, Start Num: 59

Candidate Starts for phiBT1\_20:

(Start: 59 @34511 has 6 MA's), (Start: 64 @34553 has 1 MA's), (Start: 66 @34559 has 1 MA's), (67, 34577), (76, 34613), (109, 34835),

Gene: phiCAM\_34 Start: 29556, Stop: 29906, Start Num: 61

Candidate Starts for phiCAM\_34:

(Start: 46 @29499 has 28 MA's), (61, 29556), (63, 29580), (Start: 64 @29589 has 1 MA's), (70, 29622), (73, 29640), (93, 29772), (97, 29802), (101, 29817), (106, 29868), (108, 29883), (110, 29889),