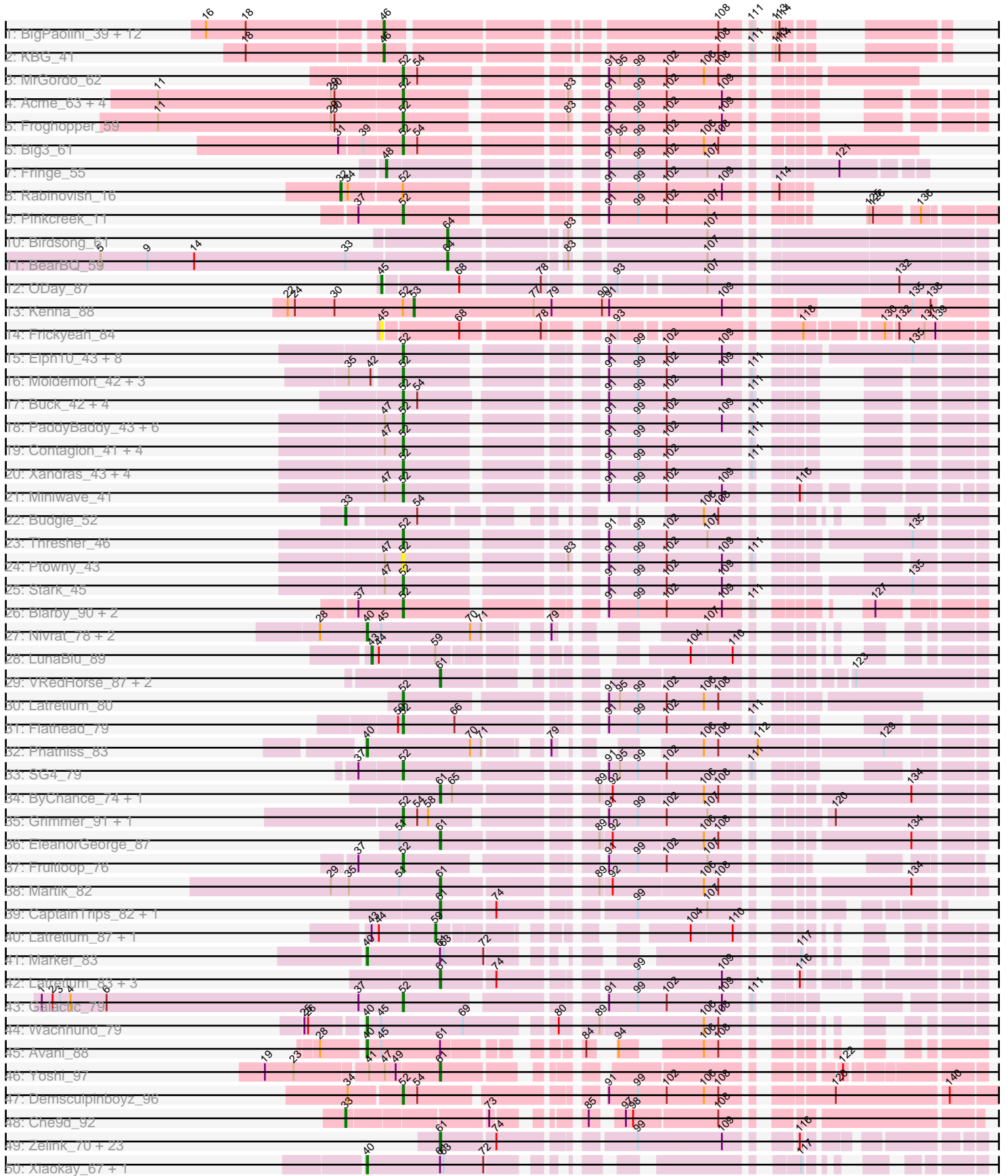
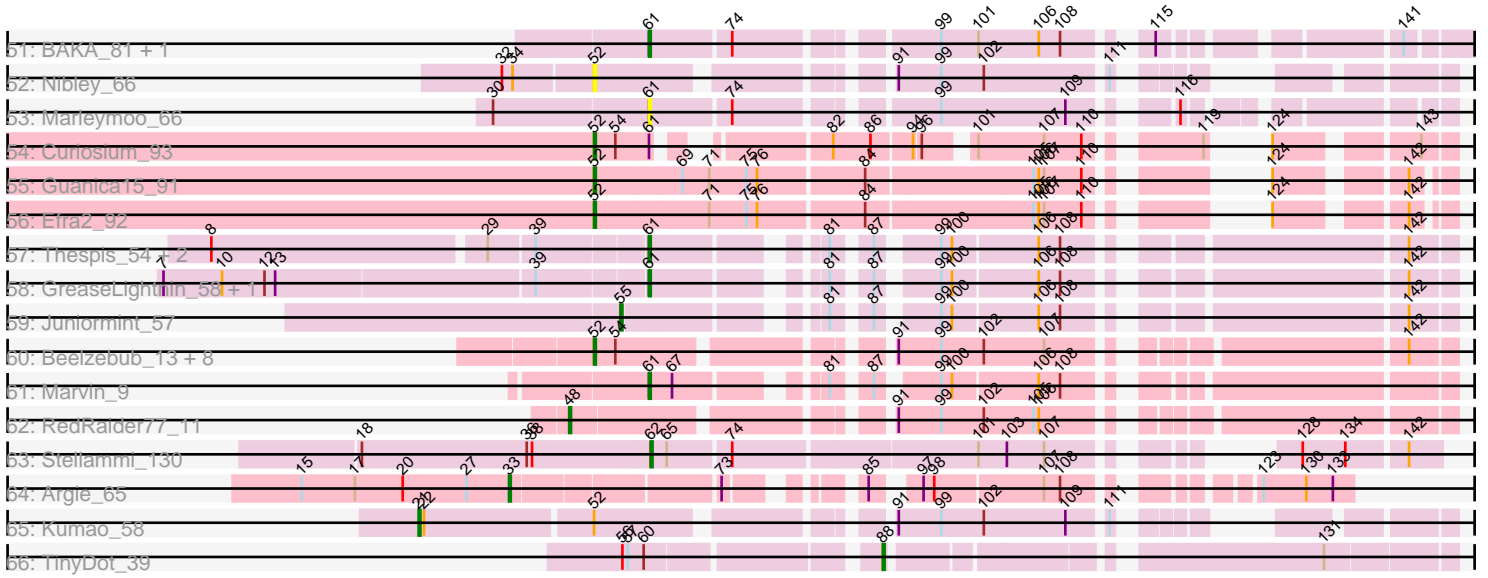


Pham 304760



Pham 304760



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 304760 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304760 has 160 members, 14 are drafts.

Phages represented in each track:

- Track 1 : BigPaolini\_39, ILeeKay\_42, Puppet\_40, Cueylyss\_40, LunarLander\_41, Eyeball\_40, Graduation\_42, Doom\_40, Wilkins\_39, Phlippers\_38, Topgun\_39, Licorice\_42, Smairt\_41
- Track 2 : KBG\_41
- Track 3 : MrGordo\_62
- Track 4 : Acme\_63, Lesedi\_57, Fajezeel\_62, Bxb1\_55, Greg\_62
- Track 5 : FrogHopper\_59
- Track 6 : Big3\_61
- Track 7 : Fringe\_55
- Track 8 : Rabinovish\_16
- Track 9 : Pinkcreek\_11
- Track 10 : Birdsong\_61
- Track 11 : BearBQ\_59
- Track 12 : ODay\_87
- Track 13 : Kenna\_88
- Track 14 : Frickyeah\_84
- Track 15 : Elph10\_43, NoSleep\_45, Murphy\_45, Maxxinista\_45, Lilac\_46, Cjw1\_44, Lilizi\_43, Czyszczo1\_44, RiverMonster\_44
- Track 16 : Moldemort\_42, MadamMonkfish\_42, Bogg\_42, AmericanBeauty\_43
- Track 17 : Buck\_42, TeamEdward\_43, StormChicken\_43, Rimmer\_42, Youngblood\_43
- Track 18 : PaddyBaddy\_43, DrDrey\_44, Phrux\_42, HanKaySha\_43, 244\_45, Hopey\_44, ShereKhan\_42
- Track 19 : Contagion\_41, Cookies\_41, Mosby\_40, TeardropMSU\_40, Tomaszewski\_40
- Track 20 : Xandras\_43, JeTaime\_44, OrionPax\_43, Filch\_44, Pumpkin\_45
- Track 21 : Miniwave\_41
- Track 22 : Budgie\_52
- Track 23 : Thresher\_46
- Track 24 : Ptowny\_43
- Track 25 : Stark\_45
- Track 26 : Blarby\_90, Zapner\_89, Jabbawokkie\_90
- Track 27 : Nivrat\_78, Che8\_85, LilMoolah\_80
- Track 28 : LunaBlu\_89
- Track 29 : VRedHorse\_87, Estave1\_94, Avani\_91
- Track 30 : Latretium\_80
- Track 31 : Flathead\_79

- Track 32 : Phatniss\_83
- Track 33 : SG4\_79
- Track 34 : ByChance\_74, ShowerHandel\_83
- Track 35 : Grimmer\_91, Mahavrat\_77
- Track 36 : EleanorGeorge\_87
- Track 37 : Fruitloop\_76
- Track 38 : Martik\_82
- Track 39 : CaptainTrips\_82, MinionDave\_78
- Track 40 : Latretium\_87, Dante\_84
- Track 41 : Marker\_83
- Track 42 : Latretium\_83, Wanda\_76, Minerva\_78, Klein\_72
- Track 43 : Galactic\_79
- Track 44 : Wachhund\_79
- Track 45 : Avani\_88
- Track 46 : Yoshi\_97
- Track 47 : Demsculpinboyz\_96
- Track 48 : Che9d\_92
- Track 49 : Zelink\_70, Superphikiman\_70, Schatzie\_67, Kalah2\_67, Ejimix\_72, Beem\_72, JuicyJay\_71, Phoebus\_75, DmpstrDiver\_72, Dallas\_71, Odette\_71, HokkenD\_65, FairyPath\_41, Porcelain\_72, ThreeRngTarjay\_70, NihilNomen\_73, Redno2\_69, Qualification\_42, MiaZeal\_73, Halley\_74, Lucky2013\_70, Squint\_73, Hughesyang\_71, Ariel\_72
- Track 50 : Xiaokay\_67, Constella\_63
- Track 51 : BAKA\_81, Duke13\_79
- Track 52 : Nibley\_66
- Track 53 : Marleymoo\_66
- Track 54 : Curiosium\_93
- Track 55 : Guanica15\_91
- Track 56 : Efra2\_92
- Track 57 : Thespis\_54, Brusacoram\_54, Atcoo\_54
- Track 58 : GreaseLightnin\_58, StevieRay\_57
- Track 59 : Juniormint\_57
- Track 60 : Beelzebub\_13, FeliMaine\_11, Lilbit\_11, LittleLaf\_10, Pringar\_10, Clarkson\_11, JoieB\_11, Huphlepuuff\_11, Corazon\_10
- Track 61 : Marvin\_9
- Track 62 : RedRaider77\_11
- Track 63 : Stellammi\_130
- Track 64 : Argie\_65
- Track 65 : Kumao\_58
- Track 66 : TinyDot\_39

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

The start number called the most often in the published annotations is 52, it was called in 64 of the 146 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 244\_45, Acme\_63, AmericanBeauty\_43, Beelzebub\_13, Big3\_61, Blarby\_90, Bogg\_42, Buck\_42, Bxb1\_55, Cjw1\_44, Clarkson\_11, Contagion\_41, Cookies\_41, Corazon\_10, Curiosium\_93, Czyszczonek\_44, Demsculpinboyz\_96, DrDrey\_44,

Efra2\_92, Elph10\_43, Fajezeel\_62, FeliMaine\_11, Filch\_44, Flathead\_79, Froghopper\_59, Fruitloop\_76, Galactic\_79, Greg\_62, Grimmer\_91, Guanica15\_91, HanKaySha\_43, Hopey\_44, Huphlepuuff\_11, Jabbawokkie\_90, JeTaime\_44, JoieB\_11, Latretium\_80, Lesedi\_57, Lilac\_46, Lilbit\_11, Lilizi\_43, LittleLaf\_10, MadamMonkfish\_42, Mahavrat\_77, Maxxinista\_45, Miniwave\_41, Moldemort\_42, Mosby\_40, MrGordo\_62, Murphy\_45, Nibley\_66, NoSleep\_45, OrionPax\_43, PaddyBaddy\_43, Phrux\_42, Pinkcreek\_11, Pringar\_10, Ptowny\_43, Pumpkin\_45, Rimmer\_42, RiverMonster\_44, SG4\_79, ShereKhan\_42, Stark\_45, StormChicken\_43, TeamEdward\_43, TeardropMSU\_40, Thresher\_46, Tomaszewski\_40, Xandras\_43, Youngblood\_43, Zapner\_89,

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

- Kenna\_88, Kumao\_58, Rabinovish\_16,

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

- Argie\_65, Ariel\_72, Atcoo\_54, Avani\_88, Avani\_91, BAKA\_81, BearBQ\_59, Beem\_72, BigPaolini\_39, Birdsong\_61, Brusacoram\_54, Budgie\_52, ByChance\_74, CaptainTrips\_82, Che8\_85, Che9d\_92, Constella\_63, Cueyllyss\_40, Dallas\_71, Dante\_84, DmpstrDiver\_72, Doom\_40, Duke13\_79, Ejimix\_72, EleanorGeorge\_87, Estave1\_94, Eyeball\_40, FairyPath\_41, Frickyeah\_84, Fringe\_55, Graduation\_42, GreaseLightnin\_58, Halley\_74, HokkenD\_65, Hughesyang\_71, ILeeKay\_42, JuicyJay\_71, Juniormint\_57, KBG\_41, Kalah2\_67, Klein\_72, Latretium\_83, Latretium\_87, Licorice\_42, LilMoolah\_80, Lucky2013\_70, LunaBlu\_89, LunarLander\_41, Marker\_83, Marleymoo\_66, Martik\_82, Marvin\_9, MiaZeal\_73, Minerva\_78, MinionDave\_78, NihilNomen\_73, Nivrat\_78, ODay\_87, Odette\_71, Phatniss\_83, Phlippers\_38, Phoebus\_75, Porcelain\_72, Puppet\_40, Quallification\_42, RedRaider77\_11, Redno2\_69, Schatzie\_67, ShowerHandel\_83, Smairt\_41, Squint\_73, Stellammi\_130, StevieRay\_57, Superphikiman\_70, Thespis\_54, ThreeRngTarjay\_70, TinyDot\_39, Topgun\_39, VRedHorse\_87, Wachhund\_79, Wanda\_76, Wilkins\_39, Xiaokay\_67, Yoshi\_97, Zelink\_70,

### Summary by start number:

Start 21:

- Found in 1 of 160 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kumao\_58 (singleton),

Start 32:

- Found in 2 of 160 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 146
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Rabinovish\_16 (C1),

Start 33:

- Found in 4 of 160 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 3 of 146
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Argie\_65 (W), Budgie\_52 (E), Che9d\_92 (F2),

Start 40:

- Found in 9 of 160 ( 5.6% ) of genes in pham
- Manual Annotations of this start: 8 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Avani\_88 (F2), Che8\_85 (F1), Constella\_63 (J), LilMoolah\_80 (F1), Marker\_83 (F1), Nivrat\_78 (F1), Phatniss\_83 (F1), Wachhund\_79 (F1), Xiaokay\_67 (J),

#### Start 43:

- Found in 3 of 160 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 146
- Called 33.3% of time when present
- Phage (with cluster) where this start called: LunaBlu\_89 (F1),

#### Start 45:

- Found in 7 of 160 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 1 of 146
- Called 28.6% of time when present
- Phage (with cluster) where this start called: Frickyeah\_84 (DN1), ODay\_87 (DN),

#### Start 46:

- Found in 14 of 160 ( 8.8% ) of genes in pham
- Manual Annotations of this start: 12 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BigPaolini\_39 (A1), Cueylyss\_40 (A1), Doom\_40 (A1), Eyeball\_40 (A1), Graduation\_42 (A1), ILeeKay\_42 (A1), KBG\_41 (A1), Licorice\_42 (A1), LunarLander\_41 (A1), Phlippers\_38 (A1), Puppet\_40 (A1), Smairt\_41 (A1), Topgun\_39 (A1), Wilkins\_39 (A1),

#### Start 48:

- Found in 2 of 160 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 2 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fringe\_55 (B1), RedRaider77\_11 (S),

#### Start 52:

- Found in 75 of 160 ( 46.9% ) of genes in pham
- Manual Annotations of this start: 64 of 146
- Called 96.0% of time when present
- Phage (with cluster) where this start called: 244\_45 (E), Acme\_63 (A1), AmericanBeauty\_43 (E), Beelzebub\_13 (S), Big3\_61 (A1), Blarby\_90 (F), Bogg\_42 (E), Buck\_42 (E), Bxb1\_55 (A1), Cjw1\_44 (E), Clarkson\_11 (S), Contagion\_41 (E), Cookies\_41 (E), Corazon\_10 (S), Curiosium\_93 (K1), Czyszczonek\_44 (E), Demsculpinboyz\_96 (F2), DrDrey\_44 (E), Efra2\_92 (K1), Elph10\_43 (E), Fajezeel\_62 (A1), FeliMaine\_11 (S), Filch\_44 (E), Flathead\_79 (F1), Froghopper\_59 (A1), Fruitloop\_76 (F1), Galactic\_79 (F1), Greg\_62 (A1), Grimmer\_91 (F1), Guanica15\_91 (K1), HanKaySha\_43 (E), Hopey\_44 (E), Huphlepuuff\_11 (S), Jabbawokkie\_90 (F2), JeTaimie\_44 (E), JoieB\_11 (S), Latretium\_80 (F1), Lesedi\_57 (A1), Lilac\_46 (E), Lilbit\_11 (S), Lilizi\_43 (E), LittleLaf\_10 (S), MadamMonkfish\_42 (E), Mahavrat\_77 (F1), Maxxinista\_45 (E), Miniwave\_41 (E), Moldemort\_42 (E), Mosby\_40 (E), MrGordo\_62 (A1), Murphy\_45 (E), Nibley\_66 (J), NoSleep\_45 (E), OrionPax\_43 (E), PaddyBaddy\_43 (E), Phrux\_42 (E), Pinkcreek\_11 (C1), Pringar\_10 (S), Ptowny\_43 (E), Pumpkin\_45 (E), Rimmer\_42 (E), RiverMonster\_44 (E), SG4\_79 (F1), ShereKhan\_42 (E), Stark\_45 (E), StormChicken\_43 (E), TeamEdward\_43 (E),

TeardropMSU\_40 (E), Thresher\_46 (E), Tomaszewski\_40 (E), Xandras\_43 (E), Youngblood\_43 (E), Zapner\_89 (F2),

Start 53:

- Found in 1 of 160 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kenna\_88 (DN1),

Start 55:

- Found in 1 of 160 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Juniormint\_57 (P1),

Start 59:

- Found in 3 of 160 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 2 of 146
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Dante\_84 (F1), Latretium\_87 (F1),

Start 61:

- Found in 52 of 160 ( 32.5% ) of genes in pham
- Manual Annotations of this start: 45 of 146
- Called 90.4% of time when present
- Phage (with cluster) where this start called: Ariel\_72 (J), Atcoo\_54 (P1), Avani\_91 (F2), BAKA\_81 (J), Beem\_72 (J), Brusacoram\_54 (P1), ByChance\_74 (F1), CaptainTrips\_82 (F1), Dallas\_71 (J), DmpstrDiver\_72 (J), Duke13\_79 (J), Ejimix\_72 (J), EleanorGeorge\_87 (F1), Estave1\_94 (F1), FairyPath\_41 (E), GreaseLightnin\_58 (P1), Halley\_74 (J), HokkenD\_65 (J), Hughesyang\_71 (J), JuicyJay\_71 (J), Kalah2\_67 (J), Klein\_72 (J), Latretium\_83 (F1), Lucky2013\_70 (J), Marleymoo\_66 (J), Martik\_82 (F1), Marvin\_9 (S), MiaZeal\_73 (J), Minerva\_78 (J), MinionDave\_78 (F1), NihilNomen\_73 (J), Odette\_71 (J), Phoebus\_75 (J), Porcelain\_72 (J), Quallification\_42 (E), Redno2\_69 (J), Schatzie\_67 (J), ShowerHandel\_83 (F1), Squint\_73 (J), StevieRay\_57 (P1), Superphikiman\_70 (J), Thespis\_54 (P1), ThreeRngTarjay\_70 (J), VRedHorse\_87 (F1), Wanda\_76 (J), Yoshi\_97 (F2), Zelink\_70 (J),

Start 62:

- Found in 1 of 160 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Stellammi\_130 (UNK),

Start 64:

- Found in 2 of 160 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 2 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BearBQ\_59 (DN), Birdsong\_61 (DN),

Start 88:

- Found in 1 of 160 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 146

- Called 100.0% of time when present
- Phage (with cluster) where this start called: TinyDot\_39 (singleton),

### **Summary by clusters:**

There are 16 clusters represented in this pham: DN, F1, F2, P1, E, F, J, singleton, A1, S, DN1, B1, W, K1, UNK, C1,

Info for manual annotations of cluster A1:

- Start number 46 was manually annotated 12 times for cluster A1.
- Start number 52 was manually annotated 8 times for cluster A1.

Info for manual annotations of cluster B1:

- Start number 48 was manually annotated 1 time for cluster B1.

Info for manual annotations of cluster C1:

- Start number 32 was manually annotated 1 time for cluster C1.
- Start number 52 was manually annotated 1 time for cluster C1.

Info for manual annotations of cluster DN:

- Start number 45 was manually annotated 1 time for cluster DN.
- Start number 64 was manually annotated 2 times for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 53 was manually annotated 1 time for cluster DN1.

Info for manual annotations of cluster E:

- Start number 33 was manually annotated 1 time for cluster E.
- Start number 52 was manually annotated 34 times for cluster E.
- Start number 61 was manually annotated 2 times for cluster E.

Info for manual annotations of cluster F1:

- Start number 40 was manually annotated 6 times for cluster F1.
- Start number 43 was manually annotated 1 time for cluster F1.
- Start number 52 was manually annotated 6 times for cluster F1.
- Start number 59 was manually annotated 2 times for cluster F1.
- Start number 61 was manually annotated 9 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 33 was manually annotated 1 time for cluster F2.
- Start number 40 was manually annotated 1 time for cluster F2.
- Start number 52 was manually annotated 3 times for cluster F2.
- Start number 61 was manually annotated 2 times for cluster F2.

Info for manual annotations of cluster J:

- Start number 40 was manually annotated 1 time for cluster J.
- Start number 61 was manually annotated 26 times for cluster J.

Info for manual annotations of cluster K1:

- Start number 52 was manually annotated 3 times for cluster K1.

Info for manual annotations of cluster P1:

- Start number 55 was manually annotated 1 time for cluster P1.
- Start number 61 was manually annotated 5 times for cluster P1.

Info for manual annotations of cluster S:

- Start number 48 was manually annotated 1 time for cluster S.
- Start number 52 was manually annotated 9 times for cluster S.
- Start number 61 was manually annotated 1 time for cluster S.

Info for manual annotations of cluster UNK:

- Start number 62 was manually annotated 1 time for cluster UNK.

Info for manual annotations of cluster W:

- Start number 33 was manually annotated 1 time for cluster W.

### **Gene Information:**

Gene: 244\_45 Start: 35533, Stop: 35168, Start Num: 52

Candidate Starts for 244\_45:

(47, 35548), (Start: 52 @35533 has 64 MA's), (91, 35398), (99, 35374), (102, 35350), (109, 35305), (111, 35287),

Gene: Acme\_63 Start: 41329, Stop: 40964, Start Num: 52

Candidate Starts for Acme\_63:

(11, 41530), (29, 41386), (30, 41383), (Start: 52 @41329 has 64 MA's), (83, 41212), (91, 41194), (99, 41170), (102, 41146), (109, 41101),

Gene: AmericanBeauty\_43 Start: 35021, Stop: 34656, Start Num: 52

Candidate Starts for AmericanBeauty\_43:

(35, 35060), (42, 35042), (Start: 52 @35021 has 64 MA's), (91, 34886), (99, 34862), (102, 34838), (109, 34793), (111, 34775),

Gene: Argie\_65 Start: 48661, Stop: 49026, Start Num: 33

Candidate Starts for Argie\_65:

(15, 48544), (17, 48574), (20, 48601), (27, 48637), (Start: 33 @48661 has 3 MA's), (73, 48766), (85, 48814), (97, 48832), (98, 48838), (107, 48895), (108, 48904), (123, 48976), (130, 49000), (133, 49015),

Gene: Ariel\_72 Start: 46298, Stop: 45933, Start Num: 61

Candidate Starts for Ariel\_72:

(Start: 61 @46298 has 45 MA's), (74, 46256), (99, 46160), (109, 46091), (116, 46052),

Gene: Atcoo\_54 Start: 36879, Stop: 37241, Start Num: 61

Candidate Starts for Atcoo\_54:

(8, 36651), (29, 36798), (39, 36822), (Start: 61 @36879 has 45 MA's), (81, 36954), (87, 36969), (99, 36996), (100, 37002), (106, 37047), (108, 37059), (142, 37218),

Gene: Avani\_88 Start: 46792, Stop: 47127, Start Num: 40

Candidate Starts for Avani\_88:

(28, 46759), (Start: 40 @46792 has 8 MA's), (Start: 45 @46804 has 1 MA's), (Start: 61 @46852 has 45 MA's), (84, 46927), (94, 46936), (106, 46984), (108, 46996),

Gene: Avani\_91 Start: 47610, Stop: 47966, Start Num: 61

Candidate Starts for Avani\_91:

(Start: 61 @47610 has 45 MA's), (123, 47862),

Gene: BAKA\_81 Start: 52347, Stop: 51940, Start Num: 61

Candidate Starts for BAKA\_81:

(Start: 61 @52347 has 45 MA's), (74, 52305), (99, 52209), (101, 52188), (106, 52155), (108, 52143), (115, 52110), (141, 52002),

Gene: BearBQ\_59 Start: 40143, Stop: 40532, Start Num: 64

Candidate Starts for BearBQ\_59:

(5, 39858), (9, 39897), (14, 39936), (Start: 33 @40062 has 3 MA's), (Start: 64 @40143 has 2 MA's), (83, 40230), (107, 40329),

Gene: Beelzebub\_13 Start: 3753, Stop: 4160, Start Num: 52

Candidate Starts for Beelzebub\_13:

(Start: 52 @3753 has 64 MA's), (54, 3765), (91, 3891), (99, 3915), (102, 3939), (107, 3972), (142, 4137),

Gene: Beem\_72 Start: 50575, Stop: 50210, Start Num: 61

Candidate Starts for Beem\_72:

(Start: 61 @50575 has 45 MA's), (74, 50533), (99, 50437), (109, 50368), (116, 50329),

Gene: Big3\_61 Start: 41706, Stop: 41350, Start Num: 52

Candidate Starts for Big3\_61:

(31, 41754), (39, 41736), (Start: 52 @41706 has 64 MA's), (54, 41694), (91, 41568), (95, 41559), (99, 41544), (102, 41520), (106, 41490), (108, 41478),

Gene: BigPaolini\_39 Start: 30429, Stop: 30067, Start Num: 46

Candidate Starts for BigPaolini\_39:

(16, 30567), (18, 30534), (Start: 46 @30429 has 12 MA's), (108, 30186), (111, 30165), (113, 30159), (114, 30156),

Gene: Birdsong\_61 Start: 38810, Stop: 39199, Start Num: 64

Candidate Starts for Birdsong\_61:

(Start: 64 @38810 has 2 MA's), (83, 38897), (107, 38996),

Gene: Blarby\_90 Start: 47520, Stop: 47888, Start Num: 52

Candidate Starts for Blarby\_90:

(37, 47484), (Start: 52 @47520 has 64 MA's), (91, 47655), (99, 47679), (102, 47703), (109, 47748), (111, 47766), (127, 47814),

Gene: Bogg\_42 Start: 34449, Stop: 34084, Start Num: 52

Candidate Starts for Bogg\_42:

(35, 34488), (42, 34470), (Start: 52 @34449 has 64 MA's), (91, 34314), (99, 34290), (102, 34266), (109, 34221), (111, 34203),

Gene: Brusacoram\_54 Start: 36385, Stop: 36747, Start Num: 61

Candidate Starts for Brusacoram\_54:

(8, 36157), (29, 36304), (39, 36328), (Start: 61 @36385 has 45 MA's), (81, 36460), (87, 36475), (99, 36502), (100, 36508), (106, 36553), (108, 36565), (142, 36724),

Gene: Buck\_42 Start: 35321, Stop: 34953, Start Num: 52

Candidate Starts for Buck\_42:

(Start: 52 @35321 has 64 MA's), (54, 35309), (91, 35183), (99, 35159), (102, 35135), (111, 35072),

Gene: Budgie\_52 Start: 36596, Stop: 36261, Start Num: 33

Candidate Starts for Budgie\_52:

(Start: 33 @36596 has 3 MA's), (54, 36542), (106, 36404), (108, 36392),

Gene: Bxb1\_55 Start: 39572, Stop: 39207, Start Num: 52

Candidate Starts for Bxb1\_55:

(11, 39773), (29, 39629), (30, 39626), (Start: 52 @39572 has 64 MA's), (83, 39455), (91, 39437), (99, 39413), (102, 39389), (109, 39344),

Gene: ByChance\_74 Start: 45038, Stop: 45421, Start Num: 61

Candidate Starts for ByChance\_74:

(Start: 61 @45038 has 45 MA's), (65, 45047), (89, 45149), (92, 45158), (106, 45230), (108, 45242), (134, 45368),

Gene: CaptainTrips\_82 Start: 48768, Stop: 49100, Start Num: 61

Candidate Starts for CaptainTrips\_82:

(Start: 61 @48768 has 45 MA's), (74, 48810), (99, 48906), (107, 48963),

Gene: Che8\_85 Start: 49488, Stop: 49877, Start Num: 40

Candidate Starts for Che8\_85:

(28, 49449), (Start: 40 @49488 has 8 MA's), (Start: 45 @49500 has 1 MA's), (70, 49572), (71, 49581), (79, 49617), (107, 49689),

Gene: Che9d\_92 Start: 49021, Stop: 49440, Start Num: 33

Candidate Starts for Che9d\_92:

(Start: 33 @49021 has 3 MA's), (73, 49126), (85, 49174), (97, 49192), (98, 49198), (108, 49264),

Gene: Cjw1\_44 Start: 36482, Stop: 36078, Start Num: 52

Candidate Starts for Cjw1\_44:

(Start: 52 @36482 has 64 MA's), (91, 36347), (99, 36323), (102, 36299), (109, 36254), (135, 36131),

Gene: Clarkson\_11 Start: 3529, Stop: 3936, Start Num: 52

Candidate Starts for Clarkson\_11:

(Start: 52 @3529 has 64 MA's), (54, 3541), (91, 3667), (99, 3691), (102, 3715), (107, 3748), (142, 3913),

Gene: Constella\_63 Start: 45933, Stop: 45571, Start Num: 40

Candidate Starts for Constella\_63:

(Start: 40 @45933 has 8 MA's), (Start: 61 @45873 has 45 MA's), (63, 45870), (72, 45837), (117, 45663),

Gene: Contagion\_41 Start: 34707, Stop: 34342, Start Num: 52

Candidate Starts for Contagion\_41:

(47, 34722), (Start: 52 @34707 has 64 MA's), (91, 34572), (99, 34548), (102, 34524), (111, 34461),

Gene: Cookies\_41 Start: 35072, Stop: 34707, Start Num: 52

Candidate Starts for Cookies\_41:

(47, 35087), (Start: 52 @35072 has 64 MA's), (91, 34937), (99, 34913), (102, 34889), (111, 34826),

Gene: Corazon\_10 Start: 3482, Stop: 3889, Start Num: 52

Candidate Starts for Corazon\_10:

(Start: 52 @3482 has 64 MA's), (54, 3494), (91, 3620), (99, 3644), (102, 3668), (107, 3701), (142, 3866),

Gene: Cueyllyss\_40 Start: 32157, Stop: 31795, Start Num: 46

Candidate Starts for Cueyllyss\_40:

(16, 32295), (18, 32262), (Start: 46 @32157 has 12 MA's), (108, 31914), (111, 31893), (113, 31887), (114, 31884),

Gene: Curiosium\_93 Start: 56159, Stop: 56515, Start Num: 52

Candidate Starts for Curiosium\_93:

(Start: 52 @56159 has 64 MA's), (54, 56171), (Start: 61 @56189 has 45 MA's), (82, 56258), (86, 56279), (94, 56300), (96, 56303), (101, 56324), (107, 56360), (110, 56381), (119, 56429), (124, 56432), (143, 56498),

Gene: Czyszczonek1\_44 Start: 35291, Stop: 34887, Start Num: 52

Candidate Starts for Czyszczonek1\_44:

(Start: 52 @35291 has 64 MA's), (91, 35156), (99, 35132), (102, 35108), (109, 35063), (135, 34940),

Gene: Dallas\_71 Start: 49496, Stop: 49131, Start Num: 61

Candidate Starts for Dallas\_71:

(Start: 61 @49496 has 45 MA's), (74, 49454), (99, 49358), (109, 49289), (116, 49250),

Gene: Dante\_84 Start: 51687, Stop: 51980, Start Num: 59

Candidate Starts for Dante\_84:

(Start: 43 @51639 has 1 MA's), (44, 51645), (Start: 59 @51687 has 2 MA's), (104, 51831), (110, 51864),

Gene: Demsculpinboyz\_96 Start: 48718, Stop: 49200, Start Num: 52

Candidate Starts for Demsculpinboyz\_96:

(34, 48679), (Start: 52 @48718 has 64 MA's), (54, 48730), (91, 48856), (99, 48880), (102, 48904), (106, 48934), (108, 48946), (120, 49018), (140, 49108),

Gene: DmpstrDiver\_72 Start: 49923, Stop: 49558, Start Num: 61

Candidate Starts for DmpstrDiver\_72:

(Start: 61 @49923 has 45 MA's), (74, 49881), (99, 49785), (109, 49716), (116, 49677),

Gene: Doom\_40 Start: 32350, Stop: 31988, Start Num: 46

Candidate Starts for Doom\_40:

(16, 32488), (18, 32455), (Start: 46 @32350 has 12 MA's), (108, 32107), (111, 32086), (113, 32080), (114, 32077),

Gene: DrDrey\_44 Start: 36335, Stop: 35970, Start Num: 52

Candidate Starts for DrDrey\_44:

(47, 36350), (Start: 52 @36335 has 64 MA's), (91, 36200), (99, 36176), (102, 36152), (109, 36107), (111, 36089),

Gene: Duke13\_79 Start: 51559, Stop: 51152, Start Num: 61

Candidate Starts for Duke13\_79:

(Start: 61 @51559 has 45 MA's), (74, 51517), (99, 51421), (101, 51400), (106, 51367), (108, 51355), (115, 51322), (141, 51214),

Gene: Efra2\_92 Start: 56100, Stop: 56492, Start Num: 52

Candidate Starts for Efra2\_92:

(Start: 52 @56100 has 64 MA's), (71, 56163), (75, 56184), (76, 56190), (84, 56247), (105, 56337), (106, 56340), (107, 56343), (110, 56364), (124, 56415), (142, 56475),

Gene: Ejimix\_72 Start: 51361, Stop: 50996, Start Num: 61

Candidate Starts for Ejimix\_72:

(Start: 61 @51361 has 45 MA's), (74, 51319), (99, 51223), (109, 51154), (116, 51115),

Gene: EleanorGeorge\_87 Start: 51109, Stop: 51492, Start Num: 61

Candidate Starts for EleanorGeorge\_87:

(51, 51076), (Start: 61 @51109 has 45 MA's), (89, 51220), (92, 51229), (106, 51301), (108, 51313), (134, 51439),

Gene: Elph10\_43 Start: 34783, Stop: 34379, Start Num: 52

Candidate Starts for Elph10\_43:

(Start: 52 @34783 has 64 MA's), (91, 34648), (99, 34624), (102, 34600), (109, 34555), (135, 34432),

Gene: Estave1\_94 Start: 53968, Stop: 54324, Start Num: 61

Candidate Starts for Estave1\_94:

(Start: 61 @53968 has 45 MA's), (123, 54220),

Gene: Eyeball\_40 Start: 31827, Stop: 31465, Start Num: 46

Candidate Starts for Eyeball\_40:

(16, 31965), (18, 31932), (Start: 46 @31827 has 12 MA's), (108, 31584), (111, 31563), (113, 31557), (114, 31554),

Gene: FairyPath\_41 Start: 35211, Stop: 34846, Start Num: 61

Candidate Starts for FairyPath\_41:

(Start: 61 @35211 has 45 MA's), (74, 35169), (99, 35073), (109, 35004), (116, 34965),

Gene: Fajezeel\_62 Start: 40619, Stop: 40254, Start Num: 52

Candidate Starts for Fajezeel\_62:

(11, 40820), (29, 40676), (30, 40673), (Start: 52 @40619 has 64 MA's), (83, 40502), (91, 40484), (99, 40460), (102, 40436), (109, 40391),

Gene: FeliMaine\_11 Start: 3530, Stop: 3937, Start Num: 52

Candidate Starts for FeliMaine\_11:

(Start: 52 @3530 has 64 MA's), (54, 3542), (91, 3668), (99, 3692), (102, 3716), (107, 3749), (142, 3914),

Gene: Filch\_44 Start: 35012, Stop: 34647, Start Num: 52

Candidate Starts for Filch\_44:

(Start: 52 @35012 has 64 MA's), (91, 34877), (99, 34853), (102, 34829), (111, 34766),

Gene: Flathead\_79 Start: 48157, Stop: 48534, Start Num: 52

Candidate Starts for Flathead\_79:

(50, 48154), (Start: 52 @48157 has 64 MA's), (66, 48199), (91, 48304), (99, 48328), (102, 48352), (111, 48415),

Gene: Frickyeah\_84 Start: 46460, Stop: 46879, Start Num: 45

Candidate Starts for Frickyeah\_84:

(Start: 45 @46460 has 1 MA's), (68, 46517), (78, 46580), (93, 46625), (118, 46748), (130, 46802), (132, 46811), (137, 46832), (139, 46841),

Gene: Fringe\_55 Start: 47885, Stop: 47511, Start Num: 48

Candidate Starts for Fringe\_55:

(Start: 48 @47885 has 2 MA's), (91, 47735), (99, 47711), (102, 47687), (107, 47654), (121, 47573),

Gene: Froghopper\_59 Start: 39967, Stop: 39602, Start Num: 52

Candidate Starts for Froghopper\_59:

(11, 40168), (29, 40024), (30, 40021), (Start: 52 @39967 has 64 MA's), (83, 39850), (91, 39832), (99, 39808), (102, 39784), (109, 39739),

Gene: Fruitloop\_76 Start: 48252, Stop: 48602, Start Num: 52

Candidate Starts for Fruitloop\_76:

(37, 48216), (Start: 52 @48252 has 64 MA's), (91, 48387), (99, 48411), (102, 48435), (107, 48468),

Gene: Galactic\_79 Start: 48078, Stop: 48443, Start Num: 52

Candidate Starts for Galactic\_79:

(1, 47778), (2, 47787), (3, 47793), (4, 47802), (6, 47832), (37, 48042), (Start: 52 @48078 has 64 MA's), (91, 48213), (99, 48237), (102, 48261), (109, 48306), (111, 48324),

Gene: Graduation\_42 Start: 32744, Stop: 32382, Start Num: 46

Candidate Starts for Graduation\_42:

(16, 32882), (18, 32849), (Start: 46 @32744 has 12 MA's), (108, 32501), (111, 32480), (113, 32474), (114, 32471),

Gene: GreaseLightnin\_58 Start: 38269, Stop: 38631, Start Num: 61

Candidate Starts for GreaseLightnin\_58:

(7, 38008), (10, 38041), (12, 38065), (13, 38071), (39, 38212), (Start: 61 @38269 has 45 MA's), (81, 38344), (87, 38359), (99, 38386), (100, 38392), (106, 38437), (108, 38449), (142, 38608),

Gene: Greg\_62 Start: 40619, Stop: 40254, Start Num: 52

Candidate Starts for Greg\_62:

(11, 40820), (29, 40676), (30, 40673), (Start: 52 @40619 has 64 MA's), (83, 40502), (91, 40484), (99, 40460), (102, 40436), (109, 40391),

Gene: Grimmer\_91 Start: 49019, Stop: 49426, Start Num: 52

Candidate Starts for Grimmer\_91:

(Start: 52 @49019 has 64 MA's), (54, 49031), (58, 49040), (91, 49157), (99, 49181), (102, 49205), (107, 49238), (120, 49310),

Gene: Guanica15\_91 Start: 55792, Stop: 56184, Start Num: 52

Candidate Starts for Guanica15\_91:

(Start: 52 @55792 has 64 MA's), (69, 55840), (71, 55855), (75, 55876), (76, 55882), (84, 55939), (105, 56029), (106, 56032), (107, 56035), (110, 56056), (124, 56107), (142, 56167),

Gene: Halley\_74 Start: 50575, Stop: 50210, Start Num: 61

Candidate Starts for Halley\_74:

(Start: 61 @50575 has 45 MA's), (74, 50533), (99, 50437), (109, 50368), (116, 50329),

Gene: HanKaySha\_43 Start: 34995, Stop: 34630, Start Num: 52

Candidate Starts for HanKaySha\_43:

(47, 35010), (Start: 52 @34995 has 64 MA's), (91, 34860), (99, 34836), (102, 34812), (109, 34767), (111, 34749),

Gene: HokkenD\_65 Start: 48844, Stop: 48479, Start Num: 61

Candidate Starts for HokkenD\_65:

(Start: 61 @48844 has 45 MA's), (74, 48802), (99, 48706), (109, 48637), (116, 48598),

Gene: Hopey\_44 Start: 35530, Stop: 35165, Start Num: 52

Candidate Starts for Hopey\_44:

(47, 35545), (Start: 52 @35530 has 64 MA's), (91, 35395), (99, 35371), (102, 35347), (109, 35302), (111, 35284),

Gene: Hughesyang\_71 Start: 50504, Stop: 50139, Start Num: 61

Candidate Starts for Hughesyang\_71:

(Start: 61 @50504 has 45 MA's), (74, 50462), (99, 50366), (109, 50297), (116, 50258),

Gene: Huphlepuuff\_11 Start: 3259, Stop: 3666, Start Num: 52

Candidate Starts for Huphlepuuff\_11:

(Start: 52 @3259 has 64 MA's), (54, 3271), (91, 3397), (99, 3421), (102, 3445), (107, 3478), (142, 3643),

Gene: ILeeKay\_42 Start: 32194, Stop: 31832, Start Num: 46

Candidate Starts for ILeeKay\_42:

(16, 32332), (18, 32299), (Start: 46 @32194 has 12 MA's), (108, 31951), (111, 31930), (113, 31924), (114, 31921),

Gene: Jabbawokkie\_90 Start: 47440, Stop: 47808, Start Num: 52

Candidate Starts for Jabbawokkie\_90:

(37, 47404), (Start: 52 @47440 has 64 MA's), (91, 47575), (99, 47599), (102, 47623), (109, 47668), (111, 47686), (127, 47734),

Gene: JeTaime\_44 Start: 36054, Stop: 35689, Start Num: 52

Candidate Starts for JeTaime\_44:

(Start: 52 @36054 has 64 MA's), (91, 35919), (99, 35895), (102, 35871), (111, 35808),

Gene: JoieB\_11 Start: 3478, Stop: 3885, Start Num: 52

Candidate Starts for JoieB\_11:

(Start: 52 @3478 has 64 MA's), (54, 3490), (91, 3616), (99, 3640), (102, 3664), (107, 3697), (142, 3862),

Gene: JuicyJay\_71 Start: 51709, Stop: 51344, Start Num: 61

Candidate Starts for JuicyJay\_71:

(Start: 61 @51709 has 45 MA's), (74, 51667), (99, 51571), (109, 51502), (116, 51463),

Gene: Juniormint\_57 Start: 37791, Stop: 38165, Start Num: 55

Candidate Starts for Juniormint\_57:

(Start: 55 @37791 has 1 MA's), (81, 37878), (87, 37893), (99, 37920), (100, 37926), (106, 37971), (108, 37983), (142, 38142),

Gene: KBG\_41 Start: 33134, Stop: 32772, Start Num: 46

Candidate Starts for KBG\_41:

(18, 33239), (Start: 46 @33134 has 12 MA's), (108, 32891), (111, 32870), (113, 32864), (114, 32861),

Gene: Kalah2\_67 Start: 49868, Stop: 49503, Start Num: 61

Candidate Starts for Kalah2\_67:

(Start: 61 @49868 has 45 MA's), (74, 49826), (99, 49730), (109, 49661), (116, 49622),

Gene: Kenna\_88 Start: 49368, Stop: 49775, Start Num: 53

Candidate Starts for Kenna\_88:

(22, 49263), (24, 49269), (30, 49302), (Start: 52 @49359 has 64 MA's), (Start: 53 @49368 has 1 MA's), (77, 49467), (79, 49482), (90, 49524), (91, 49530), (109, 49623), (135, 49719), (138, 49734),

Gene: Klein\_72 Start: 49891, Stop: 49526, Start Num: 61

Candidate Starts for Klein\_72:

(Start: 61 @49891 has 45 MA's), (74, 49849), (99, 49753), (109, 49684), (116, 49645),

Gene: Kumao\_58 Start: 42552, Stop: 43010, Start Num: 21

Candidate Starts for Kumao\_58:

(Start: 21 @42552 has 1 MA's), (22, 42555), (Start: 52 @42645 has 64 MA's), (91, 42780), (99, 42804), (102, 42828), (109, 42873), (111, 42891),

Gene: Latretium\_80 Start: 47741, Stop: 48100, Start Num: 52

Candidate Starts for Latretium\_80:

(Start: 52 @47741 has 64 MA's), (91, 47879), (95, 47888), (99, 47903), (102, 47927), (106, 47957), (108, 47969),

Gene: Latretium\_87 Start: 49978, Stop: 50271, Start Num: 59

Candidate Starts for Latretium\_87:

(Start: 43 @49930 has 1 MA's), (44, 49936), (Start: 59 @49978 has 2 MA's), (104, 50122), (110, 50155),

Gene: Latretium\_83 Start: 48583, Stop: 48948, Start Num: 61

Candidate Starts for Latretium\_83:

(Start: 61 @48583 has 45 MA's), (74, 48625), (99, 48721), (109, 48790), (116, 48829),

Gene: Lesedi\_57 Start: 39252, Stop: 38887, Start Num: 52

Candidate Starts for Lesedi\_57:

(11, 39453), (29, 39309), (30, 39306), (Start: 52 @39252 has 64 MA's), (83, 39135), (91, 39117), (99, 39093), (102, 39069), (109, 39024),

Gene: Licorice\_42 Start: 33025, Stop: 32663, Start Num: 46

Candidate Starts for Licorice\_42:

(16, 33163), (18, 33130), (Start: 46 @33025 has 12 MA's), (108, 32782), (111, 32761), (113, 32755), (114, 32752),

Gene: LilMoolah\_80 Start: 49043, Stop: 49381, Start Num: 40

Candidate Starts for LilMoolah\_80:

(28, 49004), (Start: 40 @49043 has 8 MA's), (Start: 45 @49055 has 1 MA's), (70, 49127), (71, 49136), (79, 49172), (107, 49244),

Gene: Lilac\_46 Start: 35189, Stop: 34785, Start Num: 52

Candidate Starts for Lilac\_46:

(Start: 52 @35189 has 64 MA's), (91, 35054), (99, 35030), (102, 35006), (109, 34961), (135, 34838),

Gene: Lilbit\_11 Start: 3530, Stop: 3937, Start Num: 52

Candidate Starts for Lilbit\_11:

(Start: 52 @3530 has 64 MA's), (54, 3542), (91, 3668), (99, 3692), (102, 3716), (107, 3749), (142, 3914),

Gene: Lilizi\_43 Start: 34863, Stop: 34459, Start Num: 52  
Candidate Starts for Lilizi\_43:  
(Start: 52 @34863 has 64 MA's), (91, 34728), (99, 34704), (102, 34680), (109, 34635), (135, 34512),

Gene: LittleLaf\_10 Start: 3259, Stop: 3666, Start Num: 52  
Candidate Starts for LittleLaf\_10:  
(Start: 52 @3259 has 64 MA's), (54, 3271), (91, 3397), (99, 3421), (102, 3445), (107, 3478), (142, 3643),

Gene: Lucky2013\_70 Start: 46314, Stop: 45949, Start Num: 61  
Candidate Starts for Lucky2013\_70:  
(Start: 61 @46314 has 45 MA's), (74, 46272), (99, 46176), (109, 46107), (116, 46068),

Gene: LunaBlu\_89 Start: 51072, Stop: 51413, Start Num: 43  
Candidate Starts for LunaBlu\_89:  
(Start: 43 @51072 has 1 MA's), (44, 51078), (Start: 59 @51120 has 2 MA's), (104, 51264), (110, 51297),

Gene: LunarLander\_41 Start: 32151, Stop: 31789, Start Num: 46  
Candidate Starts for LunarLander\_41:  
(16, 32289), (18, 32256), (Start: 46 @32151 has 12 MA's), (108, 31908), (111, 31887), (113, 31881), (114, 31878),

Gene: MadamMonkfish\_42 Start: 34547, Stop: 34182, Start Num: 52  
Candidate Starts for MadamMonkfish\_42:  
(35, 34586), (42, 34568), (Start: 52 @34547 has 64 MA's), (91, 34412), (99, 34388), (102, 34364), (109, 34319), (111, 34301),

Gene: Mahavrat\_77 Start: 46587, Stop: 46994, Start Num: 52  
Candidate Starts for Mahavrat\_77:  
(Start: 52 @46587 has 64 MA's), (54, 46599), (58, 46608), (91, 46725), (99, 46749), (102, 46773), (107, 46806), (120, 46878),

Gene: Marker\_83 Start: 48420, Stop: 48782, Start Num: 40  
Candidate Starts for Marker\_83:  
(Start: 40 @48420 has 8 MA's), (Start: 61 @48480 has 45 MA's), (63, 48483), (72, 48516), (117, 48690),

Gene: Marleymoo\_66 Start: 48687, Stop: 48322, Start Num: 61  
Candidate Starts for Marleymoo\_66:  
(30, 48771), (Start: 61 @48687 has 45 MA's), (74, 48645), (99, 48549), (109, 48480), (116, 48441),

Gene: Martik\_82 Start: 51049, Stop: 51432, Start Num: 61  
Candidate Starts for Martik\_82:  
(29, 50959), (35, 50974), (51, 51016), (Start: 61 @51049 has 45 MA's), (89, 51160), (92, 51169), (106, 51241), (108, 51253), (134, 51379),

Gene: Marvin\_9 Start: 3241, Stop: 3600, Start Num: 61  
Candidate Starts for Marvin\_9:  
(Start: 61 @3241 has 45 MA's), (67, 3253), (81, 3316), (87, 3331), (99, 3358), (100, 3364), (106, 3409), (108, 3421),

Gene: Maxxinista\_45 Start: 35159, Stop: 34755, Start Num: 52

Candidate Starts for Maxxinista\_45:

(Start: 52 @35159 has 64 MA's), (91, 35024), (99, 35000), (102, 34976), (109, 34931), (135, 34808),

Gene: MiaZeal\_73 Start: 46970, Stop: 46605, Start Num: 61

Candidate Starts for MiaZeal\_73:

(Start: 61 @46970 has 45 MA's), (74, 46928), (99, 46832), (109, 46763), (116, 46724),

Gene: Minerva\_78 Start: 51991, Stop: 51626, Start Num: 61

Candidate Starts for Minerva\_78:

(Start: 61 @51991 has 45 MA's), (74, 51949), (99, 51853), (109, 51784), (116, 51745),

Gene: MinionDave\_78 Start: 48768, Stop: 49100, Start Num: 61

Candidate Starts for MinionDave\_78:

(Start: 61 @48768 has 45 MA's), (74, 48810), (99, 48906), (107, 48963),

Gene: Miniwave\_41 Start: 35246, Stop: 34860, Start Num: 52

Candidate Starts for Miniwave\_41:

(47, 35261), (Start: 52 @35246 has 64 MA's), (91, 35111), (99, 35087), (102, 35063), (109, 35018), (116, 34979),

Gene: Moldemort\_42 Start: 34776, Stop: 34411, Start Num: 52

Candidate Starts for Moldemort\_42:

(35, 34815), (42, 34797), (Start: 52 @34776 has 64 MA's), (91, 34641), (99, 34617), (102, 34593), (109, 34548), (111, 34530),

Gene: Mosby\_40 Start: 34707, Stop: 34342, Start Num: 52

Candidate Starts for Mosby\_40:

(47, 34722), (Start: 52 @34707 has 64 MA's), (91, 34572), (99, 34548), (102, 34524), (111, 34461),

Gene: MrGordo\_62 Start: 40946, Stop: 40590, Start Num: 52

Candidate Starts for MrGordo\_62:

(Start: 52 @40946 has 64 MA's), (54, 40934), (91, 40808), (95, 40799), (99, 40784), (102, 40760), (106, 40730), (108, 40718),

Gene: Murphy\_45 Start: 35671, Stop: 35267, Start Num: 52

Candidate Starts for Murphy\_45:

(Start: 52 @35671 has 64 MA's), (91, 35536), (99, 35512), (102, 35488), (109, 35443), (135, 35320),

Gene: Nibley\_66 Start: 45326, Stop: 44961, Start Num: 52

Candidate Starts for Nibley\_66:

(Start: 32 @45374 has 1 MA's), (34, 45368), (Start: 52 @45326 has 64 MA's), (91, 45191), (99, 45167), (102, 45143), (111, 45080),

Gene: NihilNomen\_73 Start: 50662, Stop: 50297, Start Num: 61

Candidate Starts for NihilNomen\_73:

(Start: 61 @50662 has 45 MA's), (74, 50620), (99, 50524), (109, 50455), (116, 50416),

Gene: Nivrat\_78 Start: 48916, Stop: 49254, Start Num: 40

Candidate Starts for Nivrat\_78:

(28, 48877), (Start: 40 @48916 has 8 MA's), (Start: 45 @48928 has 1 MA's), (70, 49000), (71, 49009), (79, 49045), (107, 49117),

Gene: NoSleep\_45 Start: 35431, Stop: 35027, Start Num: 52

Candidate Starts for NoSleep\_45:

(Start: 52 @35431 has 64 MA's), (91, 35296), (99, 35272), (102, 35248), (109, 35203), (135, 35080),

Gene: ODay\_87 Start: 48574, Stop: 49005, Start Num: 45

Candidate Starts for ODay\_87:

(Start: 45 @48574 has 1 MA's), (68, 48631), (78, 48694), (93, 48739), (107, 48802), (132, 48937),

Gene: Odette\_71 Start: 49705, Stop: 49340, Start Num: 61

Candidate Starts for Odette\_71:

(Start: 61 @49705 has 45 MA's), (74, 49663), (99, 49567), (109, 49498), (116, 49459),

Gene: OrionPax\_43 Start: 35001, Stop: 34636, Start Num: 52

Candidate Starts for OrionPax\_43:

(Start: 52 @35001 has 64 MA's), (91, 34866), (99, 34842), (102, 34818), (111, 34755),

Gene: PaddyBaddy\_43 Start: 35008, Stop: 34643, Start Num: 52

Candidate Starts for PaddyBaddy\_43:

(47, 35023), (Start: 52 @35008 has 64 MA's), (91, 34873), (99, 34849), (102, 34825), (109, 34780), (111, 34762),

Gene: Phatniss\_83 Start: 49365, Stop: 49781, Start Num: 40

Candidate Starts for Phatniss\_83:

(Start: 40 @49365 has 8 MA's), (70, 49449), (71, 49458), (79, 49494), (106, 49563), (108, 49575), (112, 49608), (129, 49707),

Gene: Phlippers\_38 Start: 32612, Stop: 32250, Start Num: 46

Candidate Starts for Phlippers\_38:

(16, 32750), (18, 32717), (Start: 46 @32612 has 12 MA's), (108, 32369), (111, 32348), (113, 32342), (114, 32339),

Gene: Phoebus\_75 Start: 51844, Stop: 51479, Start Num: 61

Candidate Starts for Phoebus\_75:

(Start: 61 @51844 has 45 MA's), (74, 51802), (99, 51706), (109, 51637), (116, 51598),

Gene: Phrux\_42 Start: 34994, Stop: 34629, Start Num: 52

Candidate Starts for Phrux\_42:

(47, 35009), (Start: 52 @34994 has 64 MA's), (91, 34859), (99, 34835), (102, 34811), (109, 34766), (111, 34748),

Gene: Pinkcreek\_11 Start: 4628, Stop: 5008, Start Num: 52

Candidate Starts for Pinkcreek\_11:

(37, 4592), (Start: 52 @4628 has 64 MA's), (91, 4763), (99, 4787), (102, 4811), (107, 4844), (125, 4904), (126, 4907), (136, 4937),

Gene: Porcelain\_72 Start: 46970, Stop: 46605, Start Num: 61

Candidate Starts for Porcelain\_72:

(Start: 61 @46970 has 45 MA's), (74, 46928), (99, 46832), (109, 46763), (116, 46724),

Gene: Pringar\_10 Start: 3084, Stop: 3491, Start Num: 52

Candidate Starts for Pringar\_10:

(Start: 52 @3084 has 64 MA's), (54, 3096), (91, 3222), (99, 3246), (102, 3270), (107, 3303), (142, 3468),

Gene: Ptowny\_43 Start: 34586, Stop: 34221, Start Num: 52

Candidate Starts for Ptowny\_43:

(47, 34601), (Start: 52 @34586 has 64 MA's), (83, 34469), (91, 34451), (99, 34427), (102, 34403), (109, 34358), (111, 34340),

Gene: Pumpkin\_45 Start: 35920, Stop: 35555, Start Num: 52

Candidate Starts for Pumpkin\_45:

(Start: 52 @35920 has 64 MA's), (91, 35785), (99, 35761), (102, 35737), (111, 35674),

Gene: Puppet\_40 Start: 32097, Stop: 31735, Start Num: 46

Candidate Starts for Puppet\_40:

(16, 32235), (18, 32202), (Start: 46 @32097 has 12 MA's), (108, 31854), (111, 31833), (113, 31827), (114, 31824),

Gene: Quallification\_42 Start: 35222, Stop: 34857, Start Num: 61

Candidate Starts for Quallification\_42:

(Start: 61 @35222 has 45 MA's), (74, 35180), (99, 35084), (109, 35015), (116, 34976),

Gene: Rabinovish\_16 Start: 6579, Stop: 6902, Start Num: 32

Candidate Starts for Rabinovish\_16:

(Start: 32 @6579 has 1 MA's), (34, 6585), (Start: 52 @6627 has 64 MA's), (91, 6762), (99, 6786), (102, 6810), (109, 6855), (114, 6882),

Gene: RedRaider77\_11 Start: 3531, Stop: 3950, Start Num: 48

Candidate Starts for RedRaider77\_11:

(Start: 48 @3531 has 2 MA's), (91, 3681), (99, 3705), (102, 3729), (105, 3756), (106, 3759),

Gene: Redno2\_69 Start: 47458, Stop: 47093, Start Num: 61

Candidate Starts for Redno2\_69:

(Start: 61 @47458 has 45 MA's), (74, 47416), (99, 47320), (109, 47251), (116, 47212),

Gene: Rimmer\_42 Start: 34931, Stop: 34563, Start Num: 52

Candidate Starts for Rimmer\_42:

(Start: 52 @34931 has 64 MA's), (54, 34919), (91, 34793), (99, 34769), (102, 34745), (111, 34682),

Gene: RiverMonster\_44 Start: 35447, Stop: 35043, Start Num: 52

Candidate Starts for RiverMonster\_44:

(Start: 52 @35447 has 64 MA's), (91, 35312), (99, 35288), (102, 35264), (109, 35219), (135, 35096),

Gene: SG4\_79 Start: 48739, Stop: 49107, Start Num: 52

Candidate Starts for SG4\_79:

(37, 48706), (Start: 52 @48739 has 64 MA's), (91, 48877), (95, 48886), (99, 48901), (102, 48925), (111, 48988),

Gene: Schatzie\_67 Start: 49452, Stop: 49087, Start Num: 61

Candidate Starts for Schatzie\_67:

(Start: 61 @49452 has 45 MA's), (74, 49410), (99, 49314), (109, 49245), (116, 49206),

Gene: ShereKhan\_42 Start: 35964, Stop: 35599, Start Num: 52

Candidate Starts for ShereKhan\_42:

(47, 35979), (Start: 52 @35964 has 64 MA's), (91, 35829), (99, 35805), (102, 35781), (109, 35736), (111, 35718),

Gene: ShowerHandel\_83 Start: 48976, Stop: 49359, Start Num: 61

Candidate Starts for ShowerHandel\_83:

(Start: 61 @48976 has 45 MA's), (65, 48985), (89, 49087), (92, 49096), (106, 49168), (108, 49180), (134, 49306),

Gene: Smairt\_41 Start: 32245, Stop: 31883, Start Num: 46

Candidate Starts for Smairt\_41:

(16, 32383), (18, 32350), (Start: 46 @32245 has 12 MA's), (108, 32002), (111, 31981), (113, 31975), (114, 31972),

Gene: Squint\_73 Start: 47089, Stop: 46724, Start Num: 61

Candidate Starts for Squint\_73:

(Start: 61 @47089 has 45 MA's), (74, 47047), (99, 46951), (109, 46882), (116, 46843),

Gene: Stark\_45 Start: 35450, Stop: 35046, Start Num: 52

Candidate Starts for Stark\_45:

(47, 35465), (Start: 52 @35450 has 64 MA's), (91, 35315), (99, 35291), (102, 35267), (109, 35222), (135, 35099),

Gene: Stellammi\_130 Start: 61513, Stop: 61869, Start Num: 62

Candidate Starts for Stellammi\_130:

(18, 61351), (36, 61444), (38, 61447), (Start: 62 @61513 has 1 MA's), (65, 61522), (74, 61555), (101, 61687), (103, 61702), (107, 61723), (128, 61798), (134, 61822), (142, 61852),

Gene: StevieRay\_57 Start: 37992, Stop: 38351, Start Num: 61

Candidate Starts for StevieRay\_57:

(7, 37731), (10, 37764), (12, 37788), (13, 37794), (39, 37935), (Start: 61 @37992 has 45 MA's), (81, 38067), (87, 38082), (99, 38109), (100, 38115), (106, 38160), (108, 38172), (142, 38328),

Gene: StormChicken\_43 Start: 35539, Stop: 35171, Start Num: 52

Candidate Starts for StormChicken\_43:

(Start: 52 @35539 has 64 MA's), (54, 35527), (91, 35401), (99, 35377), (102, 35353), (111, 35290),

Gene: Superphikiman\_70 Start: 46180, Stop: 45815, Start Num: 61

Candidate Starts for Superphikiman\_70:

(Start: 61 @46180 has 45 MA's), (74, 46138), (99, 46042), (109, 45973), (116, 45934),

Gene: TeamEdward\_43 Start: 35536, Stop: 35168, Start Num: 52

Candidate Starts for TeamEdward\_43:

(Start: 52 @35536 has 64 MA's), (54, 35524), (91, 35398), (99, 35374), (102, 35350), (111, 35287),

Gene: TeardropMSU\_40 Start: 34933, Stop: 34568, Start Num: 52

Candidate Starts for TeardropMSU\_40:

(47, 34948), (Start: 52 @34933 has 64 MA's), (91, 34798), (99, 34774), (102, 34750), (111, 34687),

Gene: Thespis\_54 Start: 36385, Stop: 36747, Start Num: 61

Candidate Starts for Thespis\_54:

(8, 36157), (29, 36304), (39, 36328), (Start: 61 @36385 has 45 MA's), (81, 36460), (87, 36475), (99, 36502), (100, 36508), (106, 36553), (108, 36565), (142, 36724),

Gene: ThreeRngTarjay\_70 Start: 50738, Stop: 50373, Start Num: 61

Candidate Starts for ThreeRngTarjay\_70:

(Start: 61 @50738 has 45 MA's), (74, 50696), (99, 50600), (109, 50531), (116, 50492),

Gene: Thresher\_46 Start: 36685, Stop: 36281, Start Num: 52

Candidate Starts for Thresher\_46:

(Start: 52 @36685 has 64 MA's), (91, 36550), (99, 36526), (102, 36502), (107, 36469), (135, 36334),

Gene: TinyDot\_39 Start: 28787, Stop: 29068, Start Num: 88

Candidate Starts for TinyDot\_39:

(56, 28661), (57, 28664), (60, 28673), (Start: 88 @28787 has 1 MA's), (131, 29000),

Gene: Tomaszewski\_40 Start: 34800, Stop: 34435, Start Num: 52

Candidate Starts for Tomaszewski\_40:

(47, 34815), (Start: 52 @34800 has 64 MA's), (91, 34665), (99, 34641), (102, 34617), (111, 34554),

Gene: Topgun\_39 Start: 31551, Stop: 31189, Start Num: 46

Candidate Starts for Topgun\_39:

(16, 31689), (18, 31656), (Start: 46 @31551 has 12 MA's), (108, 31308), (111, 31287), (113, 31281), (114, 31278),

Gene: VRedHorse\_87 Start: 48107, Stop: 48463, Start Num: 61

Candidate Starts for VRedHorse\_87:

(Start: 61 @48107 has 45 MA's), (123, 48359),

Gene: Wachhund\_79 Start: 46376, Stop: 46765, Start Num: 40

Candidate Starts for Wachhund\_79:

(25, 46334), (26, 46337), (Start: 40 @46376 has 8 MA's), (Start: 45 @46388 has 1 MA's), (69, 46454), (80, 46517), (89, 46541), (106, 46625), (108, 46637),

Gene: Wanda\_76 Start: 50200, Stop: 49835, Start Num: 61

Candidate Starts for Wanda\_76:

(Start: 61 @50200 has 45 MA's), (74, 50158), (99, 50062), (109, 49993), (116, 49954),

Gene: Wilkins\_39 Start: 31484, Stop: 31122, Start Num: 46

Candidate Starts for Wilkins\_39:

(16, 31622), (18, 31589), (Start: 46 @31484 has 12 MA's), (108, 31241), (111, 31220), (113, 31214), (114, 31211),

Gene: Xandras\_43 Start: 35049, Stop: 34684, Start Num: 52

Candidate Starts for Xandras\_43:

(Start: 52 @35049 has 64 MA's), (91, 34914), (99, 34890), (102, 34866), (111, 34803),

Gene: Xiaokay\_67 Start: 47794, Stop: 47432, Start Num: 40

Candidate Starts for Xiaokay\_67:

(Start: 40 @47794 has 8 MA's), (Start: 61 @47734 has 45 MA's), (63, 47731), (72, 47698), (117, 47524),

Gene: Yoshi\_97 Start: 50855, Stop: 51199, Start Num: 61

Candidate Starts for Yoshi\_97:

(19, 50720), (23, 50744), (41, 50801), (47, 50813), (49, 50822), (Start: 61 @50855 has 45 MA's), (122, 51101),

Gene: Youngblood\_43 Start: 35542, Stop: 35174, Start Num: 52

Candidate Starts for Youngblood\_43:

(Start: 52 @35542 has 64 MA's), (54, 35530), (91, 35404), (99, 35380), (102, 35356), (111, 35293),

Gene: Zapner\_89 Start: 47534, Stop: 47902, Start Num: 52

Candidate Starts for Zapner\_89:

(37, 47498), (Start: 52 @47534 has 64 MA's), (91, 47669), (99, 47693), (102, 47717), (109, 47762),  
(111, 47780), (127, 47828),

Gene: Zelink\_70 Start: 51051, Stop: 50686, Start Num: 61

Candidate Starts for Zelink\_70:

(Start: 61 @51051 has 45 MA's), (74, 51009), (99, 50913), (109, 50844), (116, 50805),