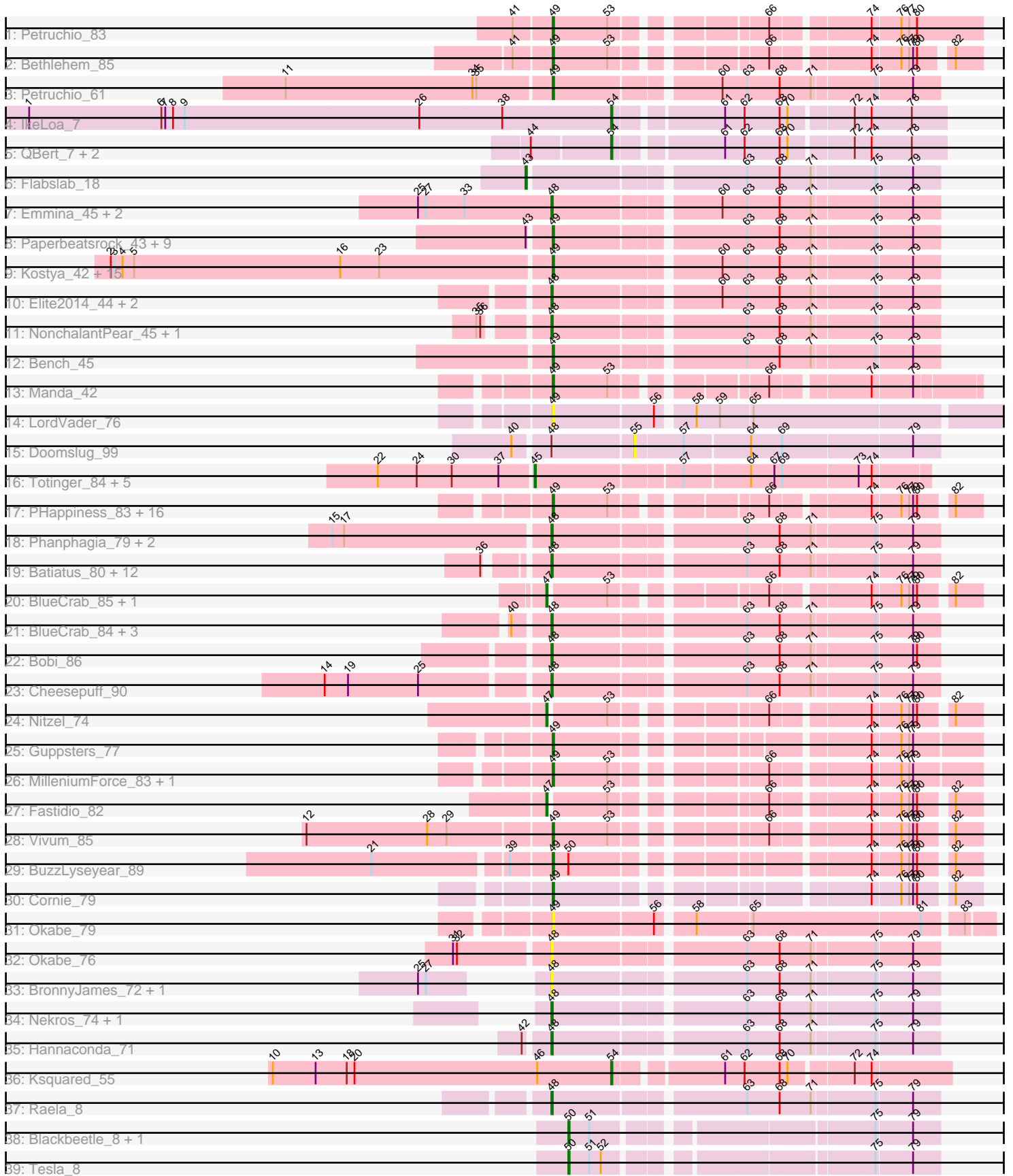


# Pham 301213



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 301213 Report

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

Pham number 301213 has 113 members, 14 are drafts.

Phages represented in each track:

- Track 1 : Petruccio\_83
- Track 2 : Bethlehem\_85
- Track 3 : Petruccio\_61
- Track 4 : IkeLoa\_7
- Track 5 : QBert\_7, RoMag\_6, JulietS\_7
- Track 6 : Flabslab\_18
- Track 7 : Emmina\_45, Teaspoon\_46, Porky\_43
- Track 8 : Paperbeatsrock\_43, SophKB\_41, BadStone\_42, Dumbo\_44, Tarkin\_43, Easy2Say\_45, Dusk\_42, NelitzaMV\_41, Pharsalus\_42, Henry\_43
- Track 9 : Kostya\_42, PhatBacter\_44, Nimrod\_44, Phaux\_43, Murica\_43, xkcd\_45, Palpatine\_44, FireRed\_44, HufflyPuff\_43, Greep\_45, Misfit\_43, Terminus\_43, Livelaughbron\_45, Petra64142\_46, Policronamos\_44, BugsBunny\_42
- Track 10 : Elite2014\_44, Lilpickle\_44, ChosenOne\_45
- Track 11 : NonchalantPear\_45, Ukulele\_41
- Track 12 : Bench\_45
- Track 13 : Manda\_42
- Track 14 : LordVader\_76
- Track 15 : Doomslug\_99
- Track 16 : Totinger\_84, Peridot\_86, LittleShirley\_88, GigiOuiOui\_76, Starcevich\_82, Vivum\_82
- Track 17 : PHappiness\_83, Zerg\_83, Nimbo\_75, RitaG\_83, Minnie\_78, DotProduct\_77, Geralt\_76, Hamulus\_81, Fruitloop\_79, Filuzino\_83, OldBen\_80, Leperchaun\_81, Sandalphon\_76, Deb65\_76, JoeyJr\_83, Daenerys\_82, StAnnes\_84
- Track 18 : Phanphagia\_79, Kingsley\_84, Shauna1\_80
- Track 19 : Batiatus\_80, Eureka\_42, Ms6\_80, XFactor\_76, Ardmore\_66, ScottMcG\_17, Chuckly\_78, Shifa\_12, HyRo\_13, DLane\_82, Stubby\_16, Goku\_42, Manda\_44
- Track 20 : BlueCrab\_85, Pacc40\_79
- Track 21 : BlueCrab\_84, Pacc40\_78, Akhila\_77, MilanaBonita\_76
- Track 22 : Bobi\_86
- Track 23 : Cheesepuff\_90
- Track 24 : Nitzel\_74
- Track 25 : Guppsters\_77
- Track 26 : MilleniumForce\_83, Pollywog\_81
- Track 27 : Fastidio\_82
- Track 28 : Vivum\_85
- Track 29 : BuzzLyseyear\_89

- Track 30 : Cornie\_79
- Track 31 : Okabe\_79
- Track 32 : Okabe\_76
- Track 33 : BronnyJames\_72, Shaboozey\_71
- Track 34 : Nekros\_74, Phalconet\_77
- Track 35 : Hannaconda\_71
- Track 36 : Ksquared\_55
- Track 37 : Raela\_8
- Track 38 : Blackbeetle\_8, Poise\_8
- Track 39 : Tesla\_8

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

The start number called the most often in the published annotations is 49, it was called in 50 of the 99 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- BadStone\_42, Bench\_45, Bethlehem\_85, BugsBunny\_42, BuzzLyseyear\_89, Cornie\_79, Daenerys\_82, Deb65\_76, DotProduct\_77, Dumbo\_44, Dusk\_42, Easy2Say\_45, Filuzino\_83, FireRed\_44, Fruitloop\_79, Geralt\_76, Greep\_45, Guppsters\_77, Hamulus\_81, Henry\_43, HufflyPuff\_43, JoeyJr\_83, Kostya\_42, Leperchaun\_81, Liveloughbron\_45, LordVader\_76, Manda\_42, MilleniumForce\_83, Minnie\_78, Misfit\_43, Murica\_43, NelitzaMV\_41, Nimbo\_75, Nimrod\_44, Okabe\_79, OldBen\_80, PHappiness\_83, Palpatine\_44, Paperbeatsrock\_43, Petra64142\_46, Petruccio\_61, Petruccio\_83, Pharsalus\_42, PhatBacter\_44, Phaux\_43, Policronamos\_44, Pollywog\_81, RitaG\_83, Sandalphon\_76, SophKB\_41, StAnnes\_84, Tarkin\_43, Terminus\_43, Vivum\_85, Zerg\_83, xkcd\_45,

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

- 

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

- Akhila\_77, Ardmore\_66, Batiatus\_80, Blackbeetle\_8, BlueCrab\_84, BlueCrab\_85, Bobi\_86, BronnyJames\_72, CheesePuff\_90, ChosenOne\_45, Chuckly\_78, DLane\_82, Doomslug\_99, Elite2014\_44, Emmina\_45, Eureka\_42, Fastidio\_82, Flabslab\_18, GigiOuiOui\_76, Goku\_42, Hannaconda\_71, HyRo\_13, IkeLoa\_7, JulietS\_7, Kingsley\_84, Ksquared\_55, LilPickle\_44, LittleShirley\_88, Manda\_44, MilanaBonita\_76, Ms6\_80, Nekros\_74, Nitzel\_74, NonchalantPear\_45, Okabe\_76, Pacc40\_78, Pacc40\_79, Peridot\_86, Phalconet\_77, Phanphagia\_79, Poise\_8, Porky\_43, QBert\_7, Raela\_8, RoMag\_6, ScottMcG\_17, Shaboozey\_71, Shauna1\_80, Shifa\_12, Starcevic\_82, Stubby\_16, Teaspoon\_46, Tesla\_8, Totinger\_84, Ukulele\_41, Vivum\_82, XFactor\_76,

### **Summary by start number:**

Start 43:

- Found in 11 of 113 ( 9.7% ) of genes in pham
- Manual Annotations of this start: 1 of 99
- Called 9.1% of time when present
- Phage (with cluster) where this start called: Flabslab\_18 (C1),

Start 45:

- Found in 6 of 113 ( 5.3% ) of genes in pham
- Manual Annotations of this start: 5 of 99
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GigiOuiOui\_76 (F1), LittleShirley\_88 (F1), Peridot\_86 (F1), Starcevich\_82 (F1), Totinger\_84 (F1), Vivum\_82 (F1),

Start 47:

- Found in 4 of 113 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 4 of 99
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BlueCrab\_85 (F1), Fastidio\_82 (F1), Nitzel\_74 (F1), Pacc40\_79 (F1),

Start 48:

- Found in 38 of 113 ( 33.6% ) of genes in pham
- Manual Annotations of this start: 31 of 99
- Called 97.4% of time when present
- Phage (with cluster) where this start called: Akhila\_77 (F1), Ardmore\_66 (F1), Batiatus\_80 (F1), BlueCrab\_84 (F1), Bobi\_86 (F1), BronnyJames\_72 (J), CheesePuff\_90 (F1), ChosenOne\_45 (E), Chuckly\_78 (F1), DLane\_82 (F1), Elite2014\_44 (E), Emmina\_45 (E), Eureka\_42 (E), Goku\_42 (E), Hannaconda\_71 (J), HyRo\_13 (C1), Kingsley\_84 (F1), LilPickle\_44 (E), Manda\_44 (E), MilanaBonita\_76 (F1), Ms6\_80 (F1), Nekros\_74 (J), NonchalantPear\_45 (E), Okabe\_76 (F8), Pacc40\_78 (F1), Phalconet\_77 (F1), Phanphagia\_79 (F1), Porky\_43 (E), Raela\_8 (S), ScottMcG\_17 (C1), Shaboozey\_71 (J), Shauna1\_80 (F1), Shifa\_12 (C1), Stubby\_16 (C1), Teaspoon\_46 (E), Ukulele\_41 (E), XFactor\_76 (F1),

Start 49:

- Found in 56 of 113 ( 49.6% ) of genes in pham
- Manual Annotations of this start: 50 of 99
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BadStone\_42 (E), Bench\_45 (E), Bethlehem\_85 (A1), BugsBunny\_42 (E), BuzzLyseyear\_89 (F1), Cornie\_79 (F5), Daenerys\_82 (F1), Deb65\_76 (F1), DotProduct\_77 (F1), Dumbo\_44 (E), Dusk\_42 (E), Easy2Say\_45 (E), Filuzino\_83 (F1), FireRed\_44 (E), Fruitloop\_79 (F1), Geralt\_76 (F1), Greep\_45 (E), Guppsters\_77 (F1), Hamulus\_81 (F1), Henry\_43 (E), HufflyPuff\_43 (E), JoeyJr\_83 (F1), Kostya\_42 (E), Leperchaun\_81 (F1), Liveloughbron\_45 (E), LordVader\_76 (F), Manda\_42 (E), MilleniumForce\_83 (F1), Minnie\_78 (F1), Misfit\_43 (E), Murica\_43 (E), NelitzaMV\_41 (E), Nimbo\_75 (F1), Nimrod\_44 (E), Okabe\_79 (F8), OldBen\_80 (F1), PHappiness\_83 (F1), Palpatine\_44 (E), Paperbeatsrock\_43 (E), Petra64142\_46 (E), Petruchio\_61 (A1), Petruchio\_83 (A1), Pharsalus\_42 (E), PhatBacter\_44 (E), Phaux\_43 (E), Policronamos\_44 (E), Pollywog\_81 (F1), RitaG\_83 (F1), Sandalphon\_76 (F1), SophKB\_41 (E), StAnnes\_84 (F1), Tarkin\_43 (E), Terminus\_43 (E), Vivum\_85 (F1), Zerg\_83 (F1), xkcd\_45 (E),

Start 50:

- Found in 4 of 113 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 3 of 99
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Blackbeetle\_8 (S), Poise\_8 (S), Tesla\_8 (S),

Start 54:

- Found in 5 of 113 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 5 of 99
- Called 100.0% of time when present
- Phage (with cluster) where this start called: IkeLoa\_7 (C1), JulietS\_7 (C1), Ksquared\_55 (P1), QBert\_7 (C1), RoMag\_6 (C1),

Start 55:

- Found in 1 of 113 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Doomslug\_99 (F),

**Summary by clusters:**

There are 10 clusters represented in this pham: F1, P1, E, F5, F, F8, J, A1, S, C1,

Info for manual annotations of cluster A1:

- Start number 49 was manually annotated 3 times for cluster A1.

Info for manual annotations of cluster C1:

- Start number 43 was manually annotated 1 time for cluster C1.
- Start number 48 was manually annotated 4 times for cluster C1.
- Start number 54 was manually annotated 4 times for cluster C1.

Info for manual annotations of cluster E:

- Start number 48 was manually annotated 11 times for cluster E.
- Start number 49 was manually annotated 24 times for cluster E.

Info for manual annotations of cluster F1:

- Start number 45 was manually annotated 5 times for cluster F1.
- Start number 47 was manually annotated 4 times for cluster F1.
- Start number 48 was manually annotated 14 times for cluster F1.
- Start number 49 was manually annotated 22 times for cluster F1.

Info for manual annotations of cluster F5:

- Start number 49 was manually annotated 1 time for cluster F5.

Info for manual annotations of cluster J:

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

Info for manual annotations of cluster P1:

- Start number 54 was manually annotated 1 time for cluster P1.

Info for manual annotations of cluster S:

- Start number 48 was manually annotated 1 time for cluster S.
- Start number 50 was manually annotated 3 times for cluster S.

**Gene Information:**

Gene: Akhila\_77 Start: 47736, Stop: 48011, Start Num: 48

Candidate Starts for Akhila\_77:

(40, 47712), (Start: 48 @47736 has 31 MA's), (63, 47871), (68, 47895), (71, 47919), (75, 47964), (79, 47991),

Gene: Ardmore\_66 Start: 43412, Stop: 43687, Start Num: 48

Candidate Starts for Ardmore\_66:

(36, 43376), (Start: 48 @43412 has 31 MA's), (63, 43547), (68, 43571), (71, 43595), (75, 43640), (79, 43667),

Gene: BadStone\_42 Start: 35749, Stop: 35474, Start Num: 49

Candidate Starts for BadStone\_42:

(Start: 43 @35764 has 1 MA's), (Start: 49 @35749 has 50 MA's), (63, 35614), (68, 35590), (71, 35566), (75, 35521), (79, 35494),

Gene: Batiatus\_80 Start: 48821, Stop: 49096, Start Num: 48

Candidate Starts for Batiatus\_80:

(36, 48785), (Start: 48 @48821 has 31 MA's), (63, 48956), (68, 48980), (71, 49004), (75, 49049), (79, 49076),

Gene: Bench\_45 Start: 35386, Stop: 35111, Start Num: 49

Candidate Starts for Bench\_45:

(Start: 49 @35386 has 50 MA's), (63, 35251), (68, 35227), (71, 35203), (75, 35158), (79, 35131),

Gene: Bethlehem\_85 Start: 50979, Stop: 50701, Start Num: 49

Candidate Starts for Bethlehem\_85:

(41, 51003), (Start: 49 @50979 has 50 MA's), (53, 50937), (66, 50841), (74, 50775), (76, 50754), (77, 50748), (79, 50745), (80, 50742), (82, 50721),

Gene: Blackbeetle\_8 Start: 2539, Stop: 2790, Start Num: 50

Candidate Starts for Blackbeetle\_8:

(Start: 50 @2539 has 3 MA's), (51, 2554), (75, 2743), (79, 2770),

Gene: BlueCrab\_85 Start: 50477, Stop: 50755, Start Num: 47

Candidate Starts for BlueCrab\_85:

(Start: 47 @50477 has 4 MA's), (53, 50519), (66, 50615), (74, 50681), (76, 50702), (77, 50708), (79, 50711), (80, 50714), (82, 50735),

Gene: BlueCrab\_84 Start: 50205, Stop: 50480, Start Num: 48

Candidate Starts for BlueCrab\_84:

(40, 50181), (Start: 48 @50205 has 31 MA's), (63, 50340), (68, 50364), (71, 50388), (75, 50433), (79, 50460),

Gene: Bobi\_86 Start: 50927, Stop: 51202, Start Num: 48

Candidate Starts for Bobi\_86:

(Start: 48 @50927 has 31 MA's), (63, 51062), (68, 51086), (71, 51110), (75, 51155), (79, 51182), (80, 51185),

Gene: BronnyJames\_72 Start: 46237, Stop: 45962, Start Num: 48

Candidate Starts for BronnyJames\_72:

(25, 46285), (27, 46279), (Start: 48 @46237 has 31 MA's), (63, 46102), (68, 46078), (71, 46054), (75, 46009), (79, 45982),

Gene: BugsBunny\_42 Start: 35155, Stop: 34877, Start Num: 49

Candidate Starts for BugsBunny\_42:

(2, 35491), (3, 35488), (4, 35482), (5, 35473), (16, 35314), (23, 35284), (Start: 49 @35155 has 50 MA's), (60, 35035), (63, 35017), (68, 34993), (71, 34969), (75, 34924), (79, 34897),

Gene: BuzzLyseyear\_89 Start: 52060, Stop: 52338, Start Num: 49

Candidate Starts for BuzzLyseyear\_89:

(21, 51934), (39, 52030), (Start: 49 @52060 has 50 MA's), (Start: 50 @52072 has 3 MA's), (74, 52264), (76, 52285), (77, 52291), (79, 52294), (80, 52297), (82, 52318),

Gene: CheesePuff\_90 Start: 49461, Stop: 49736, Start Num: 48

Candidate Starts for CheesePuff\_90:

(14, 49299), (19, 49317), (25, 49371), (Start: 48 @49461 has 31 MA's), (63, 49596), (68, 49620), (71, 49644), (75, 49689), (79, 49716),

Gene: ChosenOne\_45 Start: 34885, Stop: 34610, Start Num: 48

Candidate Starts for ChosenOne\_45:

(Start: 48 @34885 has 31 MA's), (60, 34768), (63, 34750), (68, 34726), (71, 34702), (75, 34657), (79, 34630),

Gene: Chuckly\_78 Start: 46153, Stop: 46428, Start Num: 48

Candidate Starts for Chuckly\_78:

(36, 46117), (Start: 48 @46153 has 31 MA's), (63, 46288), (68, 46312), (71, 46336), (75, 46381), (79, 46408),

Gene: Cornie\_79 Start: 47817, Stop: 48095, Start Num: 49

Candidate Starts for Cornie\_79:

(Start: 49 @47817 has 50 MA's), (74, 48021), (76, 48042), (77, 48048), (79, 48051), (80, 48054), (82, 48075),

Gene: DLane\_82 Start: 50043, Stop: 50318, Start Num: 48

Candidate Starts for DLane\_82:

(36, 50007), (Start: 48 @50043 has 31 MA's), (63, 50178), (68, 50202), (71, 50226), (75, 50271), (79, 50298),

Gene: Daenerys\_82 Start: 50903, Stop: 51181, Start Num: 49

Candidate Starts for Daenerys\_82:

(Start: 49 @50903 has 50 MA's), (53, 50945), (66, 51041), (74, 51107), (76, 51128), (77, 51134), (79, 51137), (80, 51140), (82, 51161),

Gene: Deb65\_76 Start: 48625, Stop: 48903, Start Num: 49

Candidate Starts for Deb65\_76:

(Start: 49 @48625 has 50 MA's), (53, 48667), (66, 48763), (74, 48829), (76, 48850), (77, 48856), (79, 48859), (80, 48862), (82, 48883),

Gene: Doomslug\_99 Start: 51985, Stop: 52209, Start Num: 55

Candidate Starts for Doomslug\_99:

(40, 51901), (Start: 48 @51925 has 31 MA's), (55, 51985), (57, 52021), (64, 52069), (69, 52093), (79, 52189),

Gene: DotProduct\_77 Start: 47382, Stop: 47660, Start Num: 49

Candidate Starts for DotProduct\_77:

(Start: 49 @47382 has 50 MA's), (53, 47424), (66, 47520), (74, 47586), (76, 47607), (77, 47613), (79, 47616), (80, 47619), (82, 47640),

Gene: Dumbo\_44 Start: 35105, Stop: 34830, Start Num: 49

Candidate Starts for Dumbo\_44:

(Start: 43 @35120 has 1 MA's), (Start: 49 @35105 has 50 MA's), (63, 34970), (68, 34946), (71, 34922), (75, 34877), (79, 34850),

Gene: Dusk\_42 Start: 35409, Stop: 35134, Start Num: 49

Candidate Starts for Dusk\_42:

(Start: 43 @35424 has 1 MA's), (Start: 49 @35409 has 50 MA's), (63, 35274), (68, 35250), (71, 35226), (75, 35181), (79, 35154),

Gene: Easy2Say\_45 Start: 36649, Stop: 36374, Start Num: 49

Candidate Starts for Easy2Say\_45:

(Start: 43 @36664 has 1 MA's), (Start: 49 @36649 has 50 MA's), (63, 36514), (68, 36490), (71, 36466), (75, 36421), (79, 36394),

Gene: Elite2014\_44 Start: 34884, Stop: 34609, Start Num: 48

Candidate Starts for Elite2014\_44:

(Start: 48 @34884 has 31 MA's), (60, 34767), (63, 34749), (68, 34725), (71, 34701), (75, 34656), (79, 34629),

Gene: Emmina\_45 Start: 35184, Stop: 34909, Start Num: 48

Candidate Starts for Emmina\_45:

(25, 35286), (27, 35280), (33, 35250), (Start: 48 @35184 has 31 MA's), (60, 35067), (63, 35049), (68, 35025), (71, 35001), (75, 34956), (79, 34929),

Gene: Eureka\_42 Start: 35560, Stop: 35285, Start Num: 48

Candidate Starts for Eureka\_42:

(36, 35596), (Start: 48 @35560 has 31 MA's), (63, 35425), (68, 35401), (71, 35377), (75, 35332), (79, 35305),

Gene: Fastidio\_82 Start: 46279, Stop: 46557, Start Num: 47

Candidate Starts for Fastidio\_82:

(Start: 47 @46279 has 4 MA's), (53, 46321), (66, 46417), (74, 46483), (76, 46504), (77, 46510), (79, 46513), (80, 46516), (82, 46537),

Gene: Filuzino\_83 Start: 51185, Stop: 51463, Start Num: 49

Candidate Starts for Filuzino\_83:

(Start: 49 @51185 has 50 MA's), (53, 51227), (66, 51323), (74, 51389), (76, 51410), (77, 51416), (79, 51419), (80, 51422), (82, 51443),

Gene: FireRed\_44 Start: 35594, Stop: 35316, Start Num: 49

Candidate Starts for FireRed\_44:

(2, 35930), (3, 35927), (4, 35921), (5, 35912), (16, 35753), (23, 35723), (Start: 49 @35594 has 50 MA's), (60, 35474), (63, 35456), (68, 35432), (71, 35408), (75, 35363), (79, 35336),

Gene: Flabslab\_18 Start: 6033, Stop: 6323, Start Num: 43

Candidate Starts for Flabslab\_18:

(Start: 43 @6033 has 1 MA's), (63, 6183), (68, 6207), (71, 6231), (75, 6276), (79, 6303),

Gene: Fruitloop\_79 Start: 49022, Stop: 49300, Start Num: 49

Candidate Starts for Fruitloop\_79:

(Start: 49 @49022 has 50 MA's), (53, 49064), (66, 49160), (74, 49226), (76, 49247), (77, 49253), (79, 49256), (80, 49259), (82, 49280),

Gene: Geralt\_76 Start: 48623, Stop: 48901, Start Num: 49

Candidate Starts for Geralt\_76:

(Start: 49 @48623 has 50 MA's), (53, 48665), (66, 48761), (74, 48827), (76, 48848), (77, 48854), (79, 48857), (80, 48860), (82, 48881),

Gene: GigiOuiOui\_76 Start: 47877, Stop: 48161, Start Num: 45

Candidate Starts for GigiOuiOui\_76:

(22, 47760), (24, 47790), (30, 47817), (37, 47853), (Start: 45 @47877 has 5 MA's), (57, 47982), (64, 48030), (67, 48048), (69, 48054), (73, 48111), (74, 48120),

Gene: Goku\_42 Start: 35289, Stop: 35014, Start Num: 48

Candidate Starts for Goku\_42:

(36, 35325), (Start: 48 @35289 has 31 MA's), (63, 35154), (68, 35130), (71, 35106), (75, 35061), (79, 35034),

Gene: Greep\_45 Start: 35886, Stop: 35608, Start Num: 49

Candidate Starts for Greep\_45:

(2, 36222), (3, 36219), (4, 36213), (5, 36204), (16, 36045), (23, 36015), (Start: 49 @35886 has 50 MA's), (60, 35766), (63, 35748), (68, 35724), (71, 35700), (75, 35655), (79, 35628),

Gene: Guppsters\_77 Start: 47008, Stop: 47292, Start Num: 49

Candidate Starts for Guppsters\_77:

(Start: 49 @47008 has 50 MA's), (74, 47212), (76, 47233), (77, 47239), (79, 47242),

Gene: Hamulus\_81 Start: 48864, Stop: 49142, Start Num: 49

Candidate Starts for Hamulus\_81:

(Start: 49 @48864 has 50 MA's), (53, 48906), (66, 49002), (74, 49068), (76, 49089), (77, 49095), (79, 49098), (80, 49101), (82, 49122),

Gene: Hannaconda\_71 Start: 46308, Stop: 46033, Start Num: 48

Candidate Starts for Hannaconda\_71:

(42, 46323), (Start: 48 @46308 has 31 MA's), (63, 46173), (68, 46149), (71, 46125), (75, 46080), (79, 46053),

Gene: Henry\_43 Start: 35628, Stop: 35353, Start Num: 49

Candidate Starts for Henry\_43:

(Start: 43 @35643 has 1 MA's), (Start: 49 @35628 has 50 MA's), (63, 35493), (68, 35469), (71, 35445), (75, 35400), (79, 35373),

Gene: HufflyPuff\_43 Start: 35550, Stop: 35272, Start Num: 49

Candidate Starts for HufflyPuff\_43:

(2, 35886), (3, 35883), (4, 35877), (5, 35868), (16, 35709), (23, 35679), (Start: 49 @35550 has 50 MA's), (60, 35430), (63, 35412), (68, 35388), (71, 35364), (75, 35319), (79, 35292),

Gene: HyRo\_13 Start: 5432, Stop: 5707, Start Num: 48

Candidate Starts for HyRo\_13:

(36, 5396), (Start: 48 @5432 has 31 MA's), (63, 5567), (68, 5591), (71, 5615), (75, 5660), (79, 5687),

Gene: IkeLoa\_7 Start: 3049, Stop: 3285, Start Num: 54

Candidate Starts for IkeLoa\_7:

(1, 2605), (6, 2707), (7, 2710), (8, 2716), (9, 2725), (26, 2905), (38, 2968), (Start: 54 @3049 has 5 MA's), (61, 3124), (62, 3139), (68, 3166), (70, 3172), (72, 3217), (74, 3229), (78, 3259),

Gene: JoeyJr\_83 Start: 50528, Stop: 50806, Start Num: 49

Candidate Starts for JoeyJr\_83:

(Start: 49 @50528 has 50 MA's), (53, 50570), (66, 50666), (74, 50732), (76, 50753), (77, 50759), (79, 50762), (80, 50765), (82, 50786),

Gene: JulietS\_7 Start: 2148, Stop: 2384, Start Num: 54

Candidate Starts for JulietS\_7:

(44, 2091), (Start: 54 @2148 has 5 MA's), (61, 2223), (62, 2238), (68, 2265), (70, 2271), (72, 2316), (74, 2328), (78, 2358),

Gene: Kingsley\_84 Start: 51337, Stop: 51612, Start Num: 48

Candidate Starts for Kingsley\_84:

(15, 51175), (17, 51184), (Start: 48 @51337 has 31 MA's), (63, 51472), (68, 51496), (71, 51520), (75, 51565), (79, 51592),

Gene: Kostya\_42 Start: 35041, Stop: 34763, Start Num: 49

Candidate Starts for Kostya\_42:

(2, 35377), (3, 35374), (4, 35368), (5, 35359), (16, 35200), (23, 35170), (Start: 49 @35041 has 50 MA's), (60, 34921), (63, 34903), (68, 34879), (71, 34855), (75, 34810), (79, 34783),

Gene: Ksquared\_55 Start: 38040, Stop: 38279, Start Num: 54

Candidate Starts for Ksquared\_55:

(10, 37779), (13, 37812), (18, 37836), (20, 37842), (46, 37983), (Start: 54 @38040 has 5 MA's), (61, 38115), (62, 38130), (68, 38157), (70, 38163), (72, 38208), (74, 38220),

Gene: Leperchaun\_81 Start: 49762, Stop: 50040, Start Num: 49

Candidate Starts for Leperchaun\_81:

(Start: 49 @49762 has 50 MA's), (53, 49804), (66, 49900), (74, 49966), (76, 49987), (77, 49993), (79, 49996), (80, 49999), (82, 50020),

Gene: Lilpickle\_44 Start: 34884, Stop: 34609, Start Num: 48

Candidate Starts for Lilpickle\_44:

(Start: 48 @34884 has 31 MA's), (60, 34767), (63, 34749), (68, 34725), (71, 34701), (75, 34656), (79, 34629),

Gene: LittleShirley\_88 Start: 49954, Stop: 50238, Start Num: 45

Candidate Starts for LittleShirley\_88:

(22, 49837), (24, 49867), (30, 49894), (37, 49930), (Start: 45 @49954 has 5 MA's), (57, 50059), (64, 50107), (67, 50125), (69, 50131), (73, 50188), (74, 50197),

Gene: Liveloughbron\_45 Start: 35680, Stop: 35402, Start Num: 49

Candidate Starts for Liveloughbron\_45:

(2, 36016), (3, 36013), (4, 36007), (5, 35998), (16, 35839), (23, 35809), (Start: 49 @35680 has 50 MA's), (60, 35560), (63, 35542), (68, 35518), (71, 35494), (75, 35449), (79, 35422),

Gene: LordVader\_76 Start: 44555, Stop: 44884, Start Num: 49

Candidate Starts for LordVader\_76:

(Start: 49 @44555 has 50 MA's), (56, 44630), (58, 44654), (59, 44672), (65, 44696),

Gene: Manda\_44 Start: 36070, Stop: 35795, Start Num: 48

Candidate Starts for Manda\_44:

(36, 36106), (Start: 48 @36070 has 31 MA's), (63, 35935), (68, 35911), (71, 35887), (75, 35842), (79, 35815),

Gene: Manda\_42 Start: 35521, Stop: 35240, Start Num: 49

Candidate Starts for Manda\_42:

(Start: 49 @35521 has 50 MA's), (53, 35479), (66, 35383), (74, 35317), (79, 35287),

Gene: MilanaBonita\_76 Start: 47736, Stop: 48011, Start Num: 48

Candidate Starts for MilanaBonita\_76:

(40, 47712), (Start: 48 @47736 has 31 MA's), (63, 47871), (68, 47895), (71, 47919), (75, 47964), (79, 47991),

Gene: MilleniumForce\_83 Start: 50034, Stop: 50318, Start Num: 49

Candidate Starts for MilleniumForce\_83:

(Start: 49 @50034 has 50 MA's), (53, 50076), (66, 50172), (74, 50238), (76, 50259), (77, 50265), (79, 50268),

Gene: Minnie\_78 Start: 50814, Stop: 51092, Start Num: 49

Candidate Starts for Minnie\_78:

(Start: 49 @50814 has 50 MA's), (53, 50856), (66, 50952), (74, 51018), (76, 51039), (77, 51045), (79, 51048), (80, 51051), (82, 51072),

Gene: Misfit\_43 Start: 35615, Stop: 35337, Start Num: 49

Candidate Starts for Misfit\_43:

(2, 35951), (3, 35948), (4, 35942), (5, 35933), (16, 35774), (23, 35744), (Start: 49 @35615 has 50 MA's), (60, 35495), (63, 35477), (68, 35453), (71, 35429), (75, 35384), (79, 35357),

Gene: Ms6\_80 Start: 45220, Stop: 45495, Start Num: 48

Candidate Starts for Ms6\_80:

(36, 45184), (Start: 48 @45220 has 31 MA's), (63, 45355), (68, 45379), (71, 45403), (75, 45448), (79, 45475),

Gene: Murica\_43 Start: 35550, Stop: 35272, Start Num: 49

Candidate Starts for Murica\_43:

(2, 35886), (3, 35883), (4, 35877), (5, 35868), (16, 35709), (23, 35679), (Start: 49 @35550 has 50 MA's), (60, 35430), (63, 35412), (68, 35388), (71, 35364), (75, 35319), (79, 35292),

Gene: Nekros\_74 Start: 49519, Stop: 49244, Start Num: 48

Candidate Starts for Nekros\_74:

(Start: 48 @49519 has 31 MA's), (63, 49384), (68, 49360), (71, 49336), (75, 49291), (79, 49264),

Gene: NelitzaMV\_41 Start: 34995, Stop: 34720, Start Num: 49

Candidate Starts for NelitzaMV\_41:

(Start: 43 @35010 has 1 MA's), (Start: 49 @34995 has 50 MA's), (63, 34860), (68, 34836), (71, 34812), (75, 34767), (79, 34740),

Gene: Nimbo\_75 Start: 48626, Stop: 48904, Start Num: 49

Candidate Starts for Nimbo\_75:

(Start: 49 @48626 has 50 MA's), (53, 48668), (66, 48764), (74, 48830), (76, 48851), (77, 48857), (79, 48860), (80, 48863), (82, 48884),

Gene: Nimrod\_44 Start: 35808, Stop: 35530, Start Num: 49

Candidate Starts for Nimrod\_44:

(2, 36144), (3, 36141), (4, 36135), (5, 36126), (16, 35967), (23, 35937), (Start: 49 @35808 has 50 MA's), (60, 35688), (63, 35670), (68, 35646), (71, 35622), (75, 35577), (79, 35550),

Gene: Nitzel\_74 Start: 45944, Stop: 46222, Start Num: 47

Candidate Starts for Nitzel\_74:

(Start: 47 @45944 has 4 MA's), (53, 45986), (66, 46082), (74, 46148), (76, 46169), (77, 46175), (79, 46178), (80, 46181), (82, 46202),

Gene: NonchalantPear\_45 Start: 35187, Stop: 34912, Start Num: 48

Candidate Starts for NonchalantPear\_45:

(35, 35229), (36, 35226), (Start: 48 @35187 has 31 MA's), (63, 35052), (68, 35028), (71, 35004), (75, 34959), (79, 34932),

Gene: Okabe\_79 Start: 46162, Stop: 46476, Start Num: 49

Candidate Starts for Okabe\_79:

(Start: 49 @46162 has 50 MA's), (56, 46237), (58, 46261), (65, 46303), (81, 46429), (83, 46456),

Gene: Okabe\_76 Start: 45613, Stop: 45888, Start Num: 48

Candidate Starts for Okabe\_76:

(31, 45544), (32, 45547), (Start: 48 @45613 has 31 MA's), (63, 45748), (68, 45772), (71, 45796), (75, 45841), (79, 45868),

Gene: OldBen\_80 Start: 50018, Stop: 50296, Start Num: 49

Candidate Starts for OldBen\_80:

(Start: 49 @50018 has 50 MA's), (53, 50060), (66, 50156), (74, 50222), (76, 50243), (77, 50249), (79, 50252), (80, 50255), (82, 50276),

Gene: PHappiness\_83 Start: 50847, Stop: 51125, Start Num: 49

Candidate Starts for PHappiness\_83:

(Start: 49 @50847 has 50 MA's), (53, 50889), (66, 50985), (74, 51051), (76, 51072), (77, 51078), (79, 51081), (80, 51084), (82, 51105),

Gene: Pacc40\_78 Start: 49990, Stop: 50265, Start Num: 48

Candidate Starts for Pacc40\_78:

(40, 49966), (Start: 48 @49990 has 31 MA's), (63, 50125), (68, 50149), (71, 50173), (75, 50218), (79, 50245),

Gene: Pacc40\_79 Start: 50262, Stop: 50540, Start Num: 47

Candidate Starts for Pacc40\_79:

(Start: 47 @50262 has 4 MA's), (53, 50304), (66, 50400), (74, 50466), (76, 50487), (77, 50493), (79, 50496), (80, 50499), (82, 50520),

Gene: Palpatine\_44 Start: 35580, Stop: 35302, Start Num: 49

Candidate Starts for Palpatine\_44:

(2, 35916), (3, 35913), (4, 35907), (5, 35898), (16, 35739), (23, 35709), (Start: 49 @35580 has 50 MA's), (60, 35460), (63, 35442), (68, 35418), (71, 35394), (75, 35349), (79, 35322),

Gene: Paperbeatsrock\_43 Start: 35924, Stop: 35649, Start Num: 49

Candidate Starts for Paperbeatsrock\_43:

(Start: 43 @35939 has 1 MA's), (Start: 49 @35924 has 50 MA's), (63, 35789), (68, 35765), (71, 35741), (75, 35696), (79, 35669),

Gene: Peridot\_86 Start: 49669, Stop: 49953, Start Num: 45

Candidate Starts for Peridot\_86:

(22, 49552), (24, 49582), (30, 49609), (37, 49645), (Start: 45 @49669 has 5 MA's), (57, 49774), (64, 49822), (67, 49840), (69, 49846), (73, 49903), (74, 49912),

Gene: Petra64142\_46 Start: 36044, Stop: 35766, Start Num: 49

Candidate Starts for Petra64142\_46:

(2, 36380), (3, 36377), (4, 36371), (5, 36362), (16, 36203), (23, 36173), (Start: 49 @36044 has 50 MA's), (60, 35924), (63, 35906), (68, 35882), (71, 35858), (75, 35813), (79, 35786),

Gene: Petruchio\_83 Start: 47510, Stop: 47223, Start Num: 49

Candidate Starts for Petruchio\_83:

(41, 47534), (Start: 49 @47510 has 50 MA's), (53, 47468), (66, 47372), (74, 47306), (76, 47285), (77, 47279), (80, 47273),

Gene: Petruchio\_61 Start: 40438, Stop: 40163, Start Num: 49

Candidate Starts for Petruchio\_61:

(11, 40639), (34, 40495), (35, 40492), (Start: 49 @40438 has 50 MA's), (60, 40321), (63, 40303), (68, 40279), (71, 40255), (75, 40210), (79, 40183),

Gene: Phalconet\_77 Start: 47759, Stop: 48034, Start Num: 48

Candidate Starts for Phalconet\_77:

(Start: 48 @47759 has 31 MA's), (63, 47894), (68, 47918), (71, 47942), (75, 47987), (79, 48014),

Gene: Phanphagia\_79 Start: 49133, Stop: 49408, Start Num: 48

Candidate Starts for Phanphagia\_79:

(15, 48971), (17, 48980), (Start: 48 @49133 has 31 MA's), (63, 49268), (68, 49292), (71, 49316), (75, 49361), (79, 49388),

Gene: Pharsalus\_42 Start: 35724, Stop: 35449, Start Num: 49

Candidate Starts for Pharsalus\_42:

(Start: 43 @35739 has 1 MA's), (Start: 49 @35724 has 50 MA's), (63, 35589), (68, 35565), (71, 35541), (75, 35496), (79, 35469),

Gene: PhatBacter\_44 Start: 35594, Stop: 35316, Start Num: 49

Candidate Starts for PhatBacter\_44:

(2, 35930), (3, 35927), (4, 35921), (5, 35912), (16, 35753), (23, 35723), (Start: 49 @35594 has 50 MA's), (60, 35474), (63, 35456), (68, 35432), (71, 35408), (75, 35363), (79, 35336),

Gene: Phaux\_43 Start: 35592, Stop: 35314, Start Num: 49

Candidate Starts for Phaux\_43:

(2, 35928), (3, 35925), (4, 35919), (5, 35910), (16, 35751), (23, 35721), (Start: 49 @35592 has 50 MA's), (60, 35472), (63, 35454), (68, 35430), (71, 35406), (75, 35361), (79, 35334),

Gene: Poise\_8 Start: 2539, Stop: 2790, Start Num: 50

Candidate Starts for Poise\_8:

(Start: 50 @2539 has 3 MA's), (51, 2554), (75, 2743), (79, 2770),

Gene: Policronamos\_44 Start: 35592, Stop: 35314, Start Num: 49

Candidate Starts for Policronamos\_44:

(2, 35928), (3, 35925), (4, 35919), (5, 35910), (16, 35751), (23, 35721), (Start: 49 @35592 has 50 MA's), (60, 35472), (63, 35454), (68, 35430), (71, 35406), (75, 35361), (79, 35334),

Gene: Pollywog\_81 Start: 49950, Stop: 50234, Start Num: 49

Candidate Starts for Pollywog\_81:

(Start: 49 @49950 has 50 MA's), (53, 49992), (66, 50088), (74, 50154), (76, 50175), (77, 50181), (79, 50184),

Gene: Porky\_43 Start: 35192, Stop: 34917, Start Num: 48

Candidate Starts for Porky\_43:

(25, 35294), (27, 35288), (33, 35258), (Start: 48 @35192 has 31 MA's), (60, 35075), (63, 35057), (68, 35033), (71, 35009), (75, 34964), (79, 34937),

Gene: QBert\_7 Start: 3151, Stop: 3387, Start Num: 54

Candidate Starts for QBert\_7:

(44, 3094), (Start: 54 @3151 has 5 MA's), (61, 3226), (62, 3241), (68, 3268), (70, 3274), (72, 3319), (74, 3331), (78, 3361),

Gene: Raela\_8 Start: 2919, Stop: 3194, Start Num: 48

Candidate Starts for Raela\_8:

(Start: 48 @2919 has 31 MA's), (63, 3054), (68, 3078), (71, 3102), (75, 3147), (79, 3174),

Gene: RitaG\_83 Start: 50649, Stop: 50927, Start Num: 49

Candidate Starts for RitaG\_83:

(Start: 49 @50649 has 50 MA's), (53, 50691), (66, 50787), (74, 50853), (76, 50874), (77, 50880), (79, 50883), (80, 50886), (82, 50907),

Gene: RoMag\_6 Start: 3000, Stop: 3236, Start Num: 54

Candidate Starts for RoMag\_6:

(44, 2943), (Start: 54 @3000 has 5 MA's), (61, 3075), (62, 3090), (68, 3117), (70, 3123), (72, 3168), (74, 3180), (78, 3210),

Gene: Sandalphon\_76 Start: 48799, Stop: 49077, Start Num: 49

Candidate Starts for Sandalphon\_76:

(Start: 49 @48799 has 50 MA's), (53, 48841), (66, 48937), (74, 49003), (76, 49024), (77, 49030), (79, 49033), (80, 49036), (82, 49057),

Gene: ScottMcG\_17 Start: 5737, Stop: 6012, Start Num: 48

Candidate Starts for ScottMcG\_17:

(36, 5701), (Start: 48 @5737 has 31 MA's), (63, 5872), (68, 5896), (71, 5920), (75, 5965), (79, 5992),

Gene: Shaboozey\_71 Start: 46258, Stop: 45983, Start Num: 48

Candidate Starts for Shaboozey\_71:

(25, 46306), (27, 46300), (Start: 48 @46258 has 31 MA's), (63, 46123), (68, 46099), (71, 46075), (75, 46030), (79, 46003),

Gene: Shauna1\_80 Start: 49383, Stop: 49658, Start Num: 48

Candidate Starts for Shauna1\_80:

(15, 49221), (17, 49230), (Start: 48 @49383 has 31 MA's), (63, 49518), (68, 49542), (71, 49566), (75, 49611), (79, 49638),

Gene: Shifa\_12 Start: 4863, Stop: 5138, Start Num: 48

Candidate Starts for Shifa\_12:

(36, 4827), (Start: 48 @4863 has 31 MA's), (63, 4998), (68, 5022), (71, 5046), (75, 5091), (79, 5118),

Gene: SophKB\_41 Start: 34943, Stop: 34668, Start Num: 49

Candidate Starts for SophKB\_41:

(Start: 43 @34958 has 1 MA's), (Start: 49 @34943 has 50 MA's), (63, 34808), (68, 34784), (71, 34760), (75, 34715), (79, 34688),

Gene: StAnnes\_84 Start: 50390, Stop: 50668, Start Num: 49

Candidate Starts for StAnnes\_84:

(Start: 49 @50390 has 50 MA's), (53, 50432), (66, 50528), (74, 50594), (76, 50615), (77, 50621), (79, 50624), (80, 50627), (82, 50648),

Gene: Starcevich\_82 Start: 50235, Stop: 50519, Start Num: 45

Candidate Starts for Starcevich\_82:

(22, 50118), (24, 50148), (30, 50175), (37, 50211), (Start: 45 @50235 has 5 MA's), (57, 50340), (64, 50388), (67, 50406), (69, 50412), (73, 50469), (74, 50478),

Gene: Stubby\_16 Start: 5996, Stop: 6271, Start Num: 48

Candidate Starts for Stubby\_16:

(36, 5960), (Start: 48 @5996 has 31 MA's), (63, 6131), (68, 6155), (71, 6179), (75, 6224), (79, 6251),

Gene: Tarkin\_43 Start: 35933, Stop: 35658, Start Num: 49

Candidate Starts for Tarkin\_43:

(Start: 43 @35948 has 1 MA's), (Start: 49 @35933 has 50 MA's), (63, 35798), (68, 35774), (71, 35750), (75, 35705), (79, 35678),

Gene: Teaspoon\_46 Start: 35899, Stop: 35624, Start Num: 48

Candidate Starts for Teaspoon\_46:

(25, 36001), (27, 35995), (33, 35965), (Start: 48 @35899 has 31 MA's), (60, 35782), (63, 35764), (68, 35740), (71, 35716), (75, 35671), (79, 35644),

Gene: Terminus\_43 Start: 35615, Stop: 35337, Start Num: 49

Candidate Starts for Terminus\_43:

(2, 35951), (3, 35948), (4, 35942), (5, 35933), (16, 35774), (23, 35744), (Start: 49 @35615 has 50 MA's), (60, 35495), (63, 35477), (68, 35453), (71, 35429), (75, 35384), (79, 35357),

Gene: Tesla\_8 Start: 2530, Stop: 2781, Start Num: 50

Candidate Starts for Tesla\_8:

(Start: 50 @2530 has 3 MA's), (51, 2545), (52, 2554), (75, 2734), (79, 2761),

Gene: Totinger\_84 Start: 49031, Stop: 49315, Start Num: 45

Candidate Starts for Totinger\_84:

(22, 48914), (24, 48944), (30, 48971), (37, 49007), (Start: 45 @49031 has 5 MA's), (57, 49136), (64, 49184), (67, 49202), (69, 49208), (73, 49265), (74, 49274),

Gene: Ukulele\_41 Start: 34868, Stop: 34593, Start Num: 48

Candidate Starts for Ukulele\_41:

(35, 34910), (36, 34907), (Start: 48 @34868 has 31 MA's), (63, 34733), (68, 34709), (71, 34685), (75, 34640), (79, 34613),

Gene: Vivum\_85 Start: 52067, Stop: 52345, Start Num: 49

Candidate Starts for Vivum\_85:

(12, 51884), (28, 51977), (29, 51992), (Start: 49 @52067 has 50 MA's), (53, 52109), (66, 52205), (74, 52271), (76, 52292), (77, 52298), (79, 52301), (80, 52304), (82, 52325),

Gene: Vivum\_82 Start: 50921, Stop: 51205, Start Num: 45

Candidate Starts for Vivum\_82:

(22, 50804), (24, 50834), (30, 50861), (37, 50897), (Start: 45 @50921 has 5 MA's), (57, 51026), (64, 51074), (67, 51092), (69, 51098), (73, 51155), (74, 51164),

Gene: XFactor\_76 Start: 47957, Stop: 48232, Start Num: 48

Candidate Starts for XFactor\_76:

(36, 47921), (Start: 48 @47957 has 31 MA's), (63, 48092), (68, 48116), (71, 48140), (75, 48185), (79, 48212),

Gene: Zerg\_83 Start: 49449, Stop: 49727, Start Num: 49

Candidate Starts for Zerg\_83:

(Start: 49 @49449 has 50 MA's), (53, 49491), (66, 49587), (74, 49653), (76, 49674), (77, 49680), (79, 49683), (80, 49686), (82, 49707),

Gene: xkcd\_45 Start: 35735, Stop: 35457, Start Num: 49

Candidate Starts for xkcd\_45:

(2, 36071), (3, 36068), (4, 36062), (5, 36053), (16, 35894), (23, 35864), (Start: 49 @35735 has 50 MA's), (60, 35615), (63, 35597), (68, 35573), (71, 35549), (75, 35504), (79, 35477),