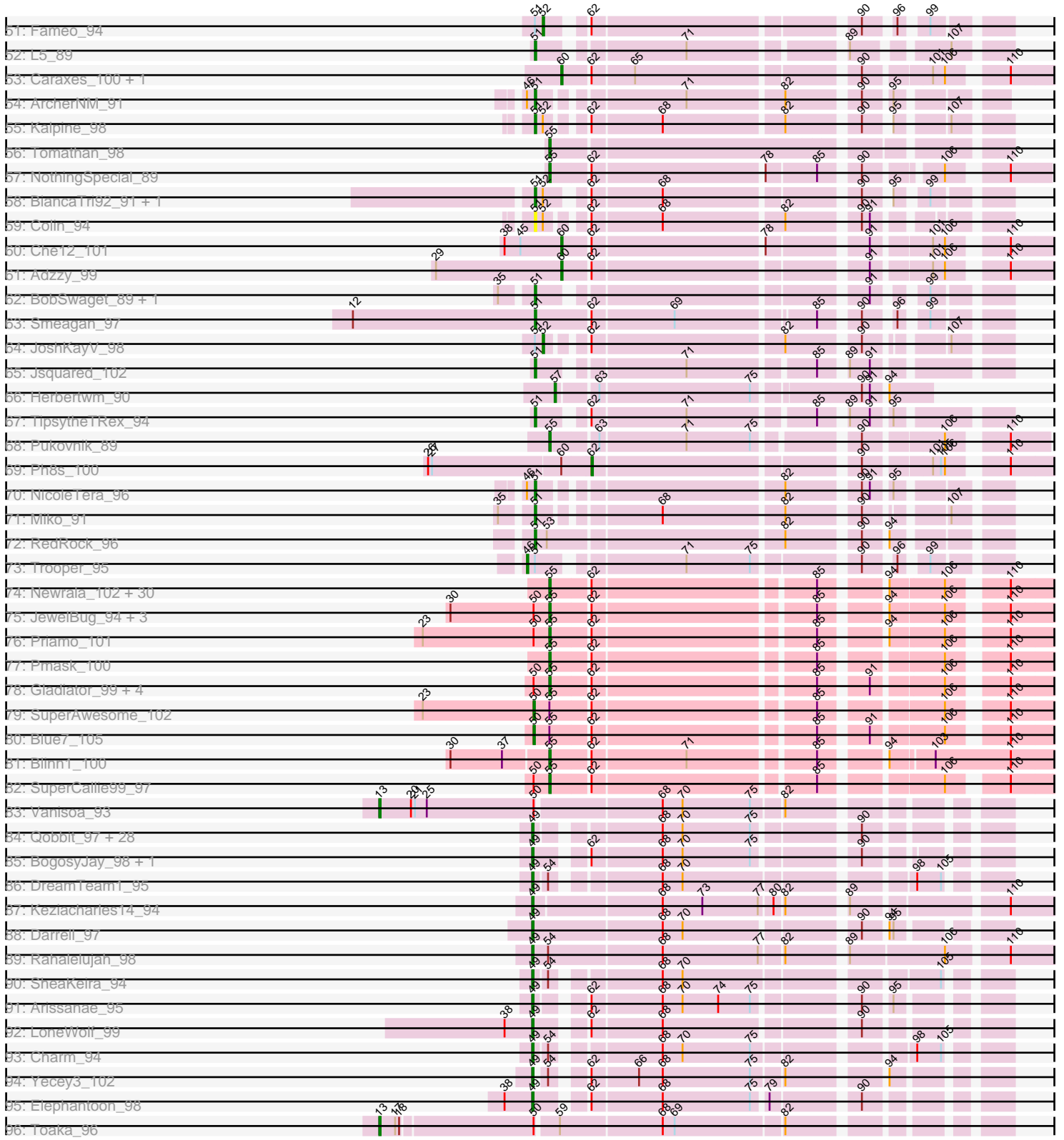


# Pham 196271



Pham 196271



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 196271 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196271 has 242 members, 28 are drafts.

Phages represented in each track:

- Track 1 : Chargerpower\_101
- Track 2 : Lucivia\_101, TinyTimmy\_98, Timothy\_100, Orange\_100, Jabith\_100, Munch\_98, Joselito\_98, Sham4\_97, Salz\_97, Flaverint\_101, Ebony\_99, Mulciber\_99, Bud\_92, Et2Brutus\_101, MaCh\_100, Snape\_100, Aneem\_100, Mabel\_100, Petersenfast\_94, Gilberta\_98, Bowtie\_96, Insomnia\_100, Hutc2\_98, Fibonacci\_100, Bachome\_97
- Track 3 : DarthPhader\_92
- Track 4 : Zimmer\_91
- Track 5 : Pharaoh\_81
- Track 6 : Refuge\_92
- Track 7 : Steamy\_92
- Track 8 : Phlei\_77
- Track 9 : Sunhee\_102
- Track 10 : Gail\_102
- Track 11 : Luchador\_97
- Track 12 : SororFago\_98
- Track 13 : Jeeves\_102
- Track 14 : PainterBoy\_94
- Track 15 : 40AC\_91
- Track 16 : Leviathan\_96, AbbyPaige\_97, Whabigail7\_93, Turbido\_95, Buggy\_85, Jerm\_96, Agape74\_97, Dignity\_97
- Track 17 : EZMoney23\_90
- Track 18 : Jaan\_91, Phaded\_88
- Track 19 : Crucio\_95
- Track 20 : Drake55\_97, Piro94\_95, Centaur\_98, NaSiaTalie\_98, Flare16\_97, Baehexic\_97, Equemioh13\_97, WideWale\_98, MiculUcigas\_97, HarryHoudini\_96, Updawg\_98
- Track 21 : Trixie\_94, WeiHuaDA\_96
- Track 22 : BengiVuitton\_95, Deloris\_95
- Track 23 : Odin\_96
- Track 24 : MissWhite\_94
- Track 25 : KingCyrus\_92, EvilGenius\_94, ChipMunk\_95
- Track 26 : AN9\_95, Kerberos\_98, VC3\_94, ANI8\_95, C3\_88
- Track 27 : Journey13\_81
- Track 28 : D29\_89, Naji\_87, Duplo\_99, Travvers\_98, Pomar16\_98, DBQu4n\_98, StarStuff\_98, D32\_86
- Track 29 : LilTurb\_96

- Track 30 : SnapTap\_95, QueenBeesly\_95, FiringLine\_95, Georgie2\_97, SemperFi\_95, Larenn\_93, Malec\_93, Power\_95, SweetiePie\_95
- Track 31 : IronMan\_92
- Track 32 : Serenity\_99, Quokka\_99, MajorMajor\_94, Bradman\_100
- Track 33 : BabyBack\_92
- Track 34 : First\_0096, 20ES\_97
- Track 35 : Heffalump\_92, QueenB2\_94
- Track 36 : Anselm\_98, DudeLittle\_94
- Track 37 : TarsusIV\_92
- Track 38 : GaugeLDP\_91
- Track 39 : Koduck\_98
- Track 40 : Changeling\_93
- Track 41 : XianYue\_93
- Track 42 : Benvolio\_95, Echild\_100
- Track 43 : Landor\_93, Bactobuster\_87
- Track 44 : Iwokeuplikedis\_98
- Track 45 : Loser\_98, AnnaL29\_97
- Track 46 : AN3\_94, VA6\_94
- Track 47 : LOKK\_90
- Track 48 : LadyBird\_97, CRB1\_95
- Track 49 : Retro23\_96, Dalmatian\_95
- Track 50 : Acolyte\_91
- Track 51 : Fameo\_94
- Track 52 : L5\_89
- Track 53 : Caraxes\_100, Superchunk\_99
- Track 54 : ArcherNM\_91
- Track 55 : Kalpine\_98
- Track 56 : Tomathan\_98
- Track 57 : NothingSpecial\_89
- Track 58 : BiancaTri92\_91, Leogania\_78
- Track 59 : Colin\_94
- Track 60 : Che12\_101
- Track 61 : Adzzy\_99
- Track 62 : BobSwaget\_89, Rachaly\_92
- Track 63 : Smeagan\_97
- Track 64 : JoshKayV\_98
- Track 65 : Jsquared\_102
- Track 66 : Herbertwm\_90
- Track 67 : TipsytheTRex\_94
- Track 68 : Pukovnik\_89
- Track 69 : Ph8s\_100
- Track 70 : NicoleTera\_96
- Track 71 : Miko\_91
- Track 72 : RedRock\_96
- Track 73 : Trooper\_95
- Track 74 : Newrala\_102, Neeharika16\_99, EricB\_100, DaVinci\_100, Chartreuse\_100, Hexamo\_105, Yokurt\_102, CloudWang3\_106, Wiks\_103, Helmet\_105, Candra\_100, Hoot\_98, Artemis2UCLA\_105, Lilbunny\_99, SmellyB\_103, Jeffabunny\_94, Cookiedough\_101, Garak\_104, GreedyLawyer\_91, Roksolana\_106, ToneTone\_99, WunderPhul\_92, VohminGhazi\_103, Isiphiwo\_99, Indra\_105, Zulu\_104, Kazan\_104, Tucker\_104, BABullseye\_96, McFly\_102, Zaka\_104
- Track 75 : JewelBug\_94, Dorothea\_102, Jordennis\_99, Kipper29\_101
- Track 76 : Priamo\_101

- Track 77 : Pmask\_100
- Track 78 : Gladiator\_99, Gruunaga\_104, Hammer\_104, Koko\_105, Rifter\_104
- Track 79 : SuperAwesome\_102
- Track 80 : Blue7\_105
- Track 81 : Blinn1\_100
- Track 82 : SuperCallie99\_97
- Track 83 : Vanisoa\_93
- Track 84 : Qobbit\_97, Aliter\_93, Catalina\_102, Onglai\_97, Scherzo\_98, Phonnegut\_100, Alma\_97, Fayely\_96, ExplosioNervosa\_96, Tubs\_100, Conquerage\_97, Sachima\_95, EmyBug\_96, Phaeder\_100, Priya\_97, Pioneer\_100, Spouty\_97, Jiawan\_97, Eidsmoe\_97, Beemo\_100, Lilleskat\_96, Myxus\_100, HortumSL17\_101, Holey\_98, PackMan\_94, RyeScarlet\_100, Hanray\_97, Ugenie5\_86, EdogawaKiddo\_98
- Track 85 : BogosyJay\_98, Maminiaina\_98
- Track 86 : DreamTeam1\_95
- Track 87 : Keziacharles14\_94
- Track 88 : Darrell\_97
- Track 89 : Rahalelujah\_98
- Track 90 : SheaKeira\_94
- Track 91 : Arissanae\_95
- Track 92 : LoneWolf\_99
- Track 93 : Charm\_94
- Track 94 : Yecey3\_102
- Track 95 : Elephantoon\_98
- Track 96 : Toaka\_96

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

The start number called the most often in the published annotations is 51, it was called in 96 of the 214 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 20ES\_97, AN3\_94, AN9\_95, ANI8\_95, AbbyPaige\_97, Agape74\_97, Aneem\_100, Anselm\_98, ArcherNM\_91, Bachome\_97, Baehexic\_97, BengiVuitton\_95, Benvolio\_95, BiancaTri92\_91, BobSwaget\_89, Bowtie\_96, Bradman\_100, Bud\_92, Buggy\_85, C3\_88, CRB1\_95, Centaur\_98, Changeling\_93, ChipMunk\_95, Colin\_94, Crucio\_95, Dalmatian\_95, Deloris\_95, Dignity\_97, Drake55\_97, DudeLittle\_94, EZMoney23\_90, Ebony\_99, Echid\_100, Equemioh13\_97, Et2Brutus\_101, EvilGenius\_94, Fibonacci\_100, FiringLine\_95, First\_0096, Flare16\_97, Flaverint\_101, Georgie2\_97, Gilberta\_98, HarryHoudini\_96, Heffalump\_92, Hutc2\_98, Insomnia\_100, Jabith\_100, Jerm\_96, Joselito\_98, Journey13\_81, Jsquared\_102, Kalpine\_98, Kerberos\_98, KingCyrus\_92, Koduck\_98, L5\_89, LadyBird\_97, Larenn\_93, Leogania\_78, Leviathan\_96, LilTurb\_96, Lokk\_90, Lucivia\_101, MaCh\_100, Mabel\_100, MajorMajor\_94, Malec\_93, MiculUcigas\_97, Miko\_91, MissWhite\_94, Mulciber\_99, Munch\_98, NaSiaTalie\_98, NicoleTera\_96, Orange\_100, Petersenfast\_94, Piro94\_95, Power\_95, QueenB2\_94, QueenBeesly\_95, Quokka\_99, Rachaly\_92, RedRock\_96, Retro23\_96, Salz\_97, SemperFi\_95, Serenity\_99, Sham4\_97, Smeagan\_97, SnapTap\_95, Snape\_100, SweetiePie\_95, TarsusIV\_92, Timothy\_100, TinyTimmy\_98, TipsytheTRex\_94, Trixie\_94, Turbido\_95, Updawg\_98, VA6\_94, VC3\_94, WeiHuaDA\_96,

Whabigail7\_93, WideWale\_98, XianYue\_93,

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

- AnnaL29\_97, Fameo\_94, JoshKayV\_98, Loser\_98, Trooper\_95,

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

- 40AC\_91, Acolyte\_91, Adzzy\_99, Aliter\_93, Alma\_97, Arissanae\_95, Artemis2UCLA\_105, BABullseye\_96, BabyBack\_92, Bactobuster\_87, Beemo\_100, Blinn1\_100, Blue7\_105, BogosyJay\_98, Candra\_100, Caraxes\_100, Catalina\_102, Chargerpower\_101, Charm\_94, Chartreuse\_100, Che12\_101, CloudWang3\_106, Conquerage\_97, Cookiedough\_101, D29\_89, D32\_86, DBQu4n\_98, DaVinci\_100, Darrell\_97, DARTHPhader\_92, Dorothea\_102, DreamTeam1\_95, Duplo\_99, EdogawaKiddo\_98, Eidsmoe\_97, Elephantoon\_98, EmyBug\_96, EricB\_100, ExplosioNervosa\_96, Fayely\_96, Gail\_102, Garak\_104, GaugeLDP\_91, Gladiator\_99, GreedyLawyer\_91, Gruunaga\_104, Hammer\_104, Hanray\_97, Helmet\_105, Herbertwm\_90, Hexamo\_105, Holes\_98, Hoot\_98, HortumSL17\_101, Indra\_105, IronMan\_92, Isiphiwo\_99, Iwokeuplikedis\_98, Jaan\_91, Jeeves\_102, Jeffabunny\_94, JewelBug\_94, Jiawan\_97, Jordennis\_99, Kazan\_104, Keziacharles14\_94, Kipper29\_101, Koko\_105, Landor\_93, Lilbunny\_99, Lilleskat\_96, LoneWolf\_99, Luchador\_97, Maminiaina\_98, McFly\_102, Myxus\_100, Naji\_87, Neeharika16\_99, Newrala\_102, NothingSpecial\_89, Odin\_96, Onglai\_97, PackMan\_94, PainterBoy\_94, Ph8s\_100, Phaded\_88, Phaeder\_100, Pharaoh\_81, Phlei\_77, Phonnegut\_100, Pioneer\_100, Pmask\_100, Pomar16\_98, Priamo\_101, Priya\_97, Pukovnik\_89, Qobbit\_97, Rahalelujah\_98, Refuge\_92, Rifter\_104, Roksolana\_106, RyeScarlet\_100, Sachima\_95, Scherzo\_98, SheaKeira\_94, SmellyB\_103, SororFago\_98, Spouty\_97, StarStuff\_98, Steamy\_92, Sunhee\_102, SuperAwesome\_102, SuperCallie99\_97, Superchunk\_99, Toaka\_96, Tomathan\_98, ToneTone\_99, Travvers\_98, Tubs\_100, Tucker\_104, Ugenie5\_86, Vanisoa\_93, VohminGhazi\_103, Wiks\_103, WunderPhul\_92, Yecey3\_102, Yokurt\_102, Zaka\_104, Zimmer\_91, Zulu\_104,

### Summary by start number:

Start 13:

- Found in 2 of 242 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 2 of 214
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Toaka\_96 (A9), Vanisoa\_93 (A9),

Start 42:

- Found in 1 of 242 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 214
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chargerpower\_101 (A),

Start 46:

- Found in 11 of 242 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 1 of 214
- Called 9.1% of time when present
- Phage (with cluster) where this start called: Trooper\_95 (A2),

Start 48:

- Found in 2 of 242 ( 0.8% ) of genes in pham

- Manual Annotations of this start: 2 of 214
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AnnaL29\_97 (A2), Loser\_98 (A2),

#### Start 49:

- Found in 46 of 242 ( 19.0% ) of genes in pham
- Manual Annotations of this start: 35 of 214
- Called 95.7% of time when present
- Phage (with cluster) where this start called: Aliter\_93 (A9), Alma\_97 (A9), Arissanae\_95 (A9), Beemo\_100 (A9), BogosyJay\_98 (A9), Catalina\_102 (A9), Charm\_94 (A9), Conquerage\_97 (A9), Darrell\_97 (A9), DreamTeam1\_95 (A9), EdogawaKiddo\_98 (A9), Eidsmoe\_97 (A9), Elephantoon\_98 (A9), EmyBug\_96 (A9), ExplosioNervosa\_96 (A9), Fayely\_96 (A9), Gail\_102 (A14), Hanray\_97 (A9), Horex\_98 (A9), HortumSL17\_101 (A9), Jiawan\_97 (A9), Keziacharles14\_94 (A9), Lilleskat\_96 (A9), LoneWolf\_99 (A9), Maminaiina\_98 (A9), Myxus\_100 (A9), Onglai\_97 (A9), PackMan\_94 (A9), Phaeder\_100 (A9), Phonnegut\_100 (A9), Pioneer\_100 (A9), Priya\_97 (A9), Qobbit\_97 (A9), Rahalelujah\_98 (A9), RyeScarlet\_100 (A9), Sachima\_95 (A9), Scherzo\_98 (A9), SheaKeira\_94 (A9), SororFago\_98 (A14), Spouty\_97 (A9), Sunhee\_102 (A14), Tubs\_100 (A9), Ugenie5\_86 (A9), Yecey3\_102 (A9),

#### Start 50:

- Found in 17 of 242 ( 7.0% ) of genes in pham
- Manual Annotations of this start: 4 of 214
- Called 23.5% of time when present
- Phage (with cluster) where this start called: Blue7\_105 (A6), Pharaoh\_81 (A12), Steamy\_92 (A12), SuperAwesome\_102 (A6),

#### Start 51:

- Found in 112 of 242 ( 46.3% ) of genes in pham
- Manual Annotations of this start: 96 of 214
- Called 95.5% of time when present
- Phage (with cluster) where this start called: 20ES\_97 (A2), AN3\_94 (A2), AN9\_95 (A2), ANi8\_95 (A2), AbbyPaige\_97 (A2), Agape74\_97 (A2), Aneem\_100 (A11), Anselm\_98 (A2), ArcherNM\_91 (A2), Bachome\_97 (A11), Baehexic\_97 (A2), BengiVuitton\_95 (A2), Benvolio\_95 (A2), BiancaTri92\_91 (A2), BobSwaget\_89 (A2), Bowtie\_96 (A11), Bradman\_100 (A2), Bud\_92 (A11), Buggy\_85 (A2), C3\_88 (A2), CRB1\_95 (A2), Centaur\_98 (A2), Changeling\_93 (A2), ChipMunk\_95 (A2), Colin\_94 (A2), Crucio\_95 (A2), Dalmatian\_95 (A2), Deloris\_95 (A2), Dignity\_97 (A2), Drake55\_97 (A2), DudeLittle\_94 (A2), EZMoney23\_90 (A2), Ebony\_99 (A11), Echild\_100 (A2), Equemioh13\_97 (A2), Et2Brutus\_101 (A11), EvilGenius\_94 (A2), Fibonacci\_100 (A11), FiringLine\_95 (A2), First\_0096 (A2), Flare16\_97 (A2), Flaverint\_101 (A11), Georgie2\_97 (A2), Gilberta\_98 (A11), HarryHoudini\_96 (A2), Heffalump\_92 (A2), Hutc2\_98 (A11), Insomnia\_100 (A11), Jabith\_100 (A11), Jerm\_96 (A2), Joselito\_98 (A11), Journey13\_81 (A2), Jsquared\_102 (A2), Kalpine\_98 (A2), Kerberos\_98 (A2), KingCyrus\_92 (A2), Koduck\_98 (A2), L5\_89 (A2), LadyBird\_97 (A2), Larenn\_93 (A2), Leogania\_78 (A2), Leviathan\_96 (A2), LilTurb\_96 (A2), Lokk\_90 (A2), Lucivia\_101 (A11), MaCh\_100 (A11), Mabel\_100 (A11), MajorMajor\_94 (A2), Malec\_93 (A2), MiculUcigas\_97 (A2), Miko\_91 (A2), MissWhite\_94 (A2), Mulciber\_99 (A11), Munch\_98 (A11), NaSiaTalie\_98 (A2), NicoleTera\_96 (A2), Orange\_100 (A11), Petersenfast\_94 (A11), Piro94\_95 (A2), Power\_95 (A2), QueenB2\_94 (A2), QueenBeesly\_95 (A2), Quokka\_99 (A2), Rachaly\_92 (A2), RedRock\_96 (A2), Retro23\_96 (A2), Salz\_97 (A11), SemperFi\_95

(A2), Serenity\_99 (A2), Sham4\_97 (A11), Smeagan\_97 (A2), SnapTap\_95 (A2), Snape\_100 (A11), SweetiePie\_95 (A2), TarsusIV\_92 (A2), Timothy\_100 (A11), TinyTimmy\_98 (A11), TipsytheTRex\_94 (A2), Trixie\_94 (A2), Turbido\_95 (A2), Updawg\_98 (A2), VA6\_94 (A2), VC3\_94 (A2), WeiHuaDA\_96 (A2), Whabigail7\_93 (A2), WideWale\_98 (A2), XianYue\_93 (A2),

#### Start 52:

- Found in 15 of 242 ( 6.2% ) of genes in pham
- Manual Annotations of this start: 2 of 214
- Called 13.3% of time when present
- Phage (with cluster) where this start called: Fameo\_94 (A2), JoshKayV\_98 (A2),

#### Start 54:

- Found in 7 of 242 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 1 of 214
- Called 28.6% of time when present
- Phage (with cluster) where this start called: Acolyte\_91 (A2), Phlei\_77 (A13),

#### Start 55:

- Found in 66 of 242 ( 27.3% ) of genes in pham
- Manual Annotations of this start: 58 of 214
- Called 97.0% of time when present
- Phage (with cluster) where this start called: 40AC\_91 (A17), Artemis2UCLA\_105 (A6), BABullseye\_96 (A6), BabyBack\_92 (A2), Bactobuster\_87 (A2), Blinn1\_100 (A6), Candra\_100 (A6), Chartreuse\_100 (A6), CloudWang3\_106 (A6), Cookiedough\_101 (A6), D29\_89 (A2), D32\_86 (A2), DBQu4n\_98 (A2), DaVinci\_100 (A6), Dorothea\_102 (A6), Duplo\_99 (A2), EricB\_100 (A6), Garak\_104 (A6), GaugeLDP\_91 (A2), Gladiator\_99 (A6), GreedyLawyer\_91 (A6), Gruunaga\_104 (A6), Hammer\_104 (A6), Helmet\_105 (A6), Hexamo\_105 (A6), Hoot\_98 (A6), Indra\_105 (A6), IronMan\_92 (A2), Isiphiwo\_99 (A6), Iwokeuplikedis\_98 (A2), Jaan\_91 (A2), Jeffabunny\_94 (A6), JewelBug\_94 (A6), Jordennis\_99 (A6), Kazan\_104 (A6), Kipper29\_101 (A6), Koko\_105 (A6), Landor\_93 (A2), Lilbunny\_99 (A6), McFly\_102 (A6), Naji\_87 (A2), Neeharika16\_99 (A6), Newrala\_102 (A6), NothingSpecial\_89 (A2), Phaded\_88 (A2), Pmask\_100 (A6), Pomar16\_98 (A2), Priamo\_101 (A6), Pukovnik\_89 (A2), Rifter\_104 (A6), Roksolana\_106 (A6), SmellyB\_103 (A6), StarStuff\_98 (A2), SuperCallie99\_97 (A6), Tomathan\_98 (A2), ToneTone\_99 (A6), Travvers\_98 (A2), Tucker\_104 (A6), VohminGhazi\_103 (A6), Wiks\_103 (A6), WunderPhul\_92 (A6), Yokurt\_102 (A6), Zaka\_104 (A6), Zulu\_104 (A6),

#### Start 56:

- Found in 3 of 242 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 3 of 214
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DARTHPhader\_92 (A12), Refuge\_92 (A12), Zimmer\_91 (A12),

#### Start 57:

- Found in 3 of 242 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 2 of 214
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Herbertwm\_90 (A2), PainterBoy\_94 (A16),



Start 58:

- Found in 2 of 242 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 2 of 214
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jeeves\_102 (A14), Luchador\_97 (A14),

Start 60:

- Found in 7 of 242 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 3 of 214
- Called 57.1% of time when present
- Phage (with cluster) where this start called: Adzzy\_99 (A2), Caraxes\_100 (A2), Che12\_101 (A2), Superchunk\_99 (A2),

Start 62:

- Found in 94 of 242 ( 38.8% ) of genes in pham
- Manual Annotations of this start: 2 of 214
- Called 2.1% of time when present
- Phage (with cluster) where this start called: Odin\_96 (A2), Ph8s\_100 (A2),

**Summary by clusters:**

There are 10 clusters represented in this pham: A, A14, A17, A16, A11, A13, A12, A2, A6, A9,

Info for manual annotations of cluster A:

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

Info for manual annotations of cluster A11:

- Start number 51 was manually annotated 24 times for cluster A11.

Info for manual annotations of cluster A12:

- Start number 50 was manually annotated 2 times for cluster A12.
- Start number 56 was manually annotated 3 times for cluster A12.

Info for manual annotations of cluster A14:

- Start number 49 was manually annotated 2 times for cluster A14.
- Start number 58 was manually annotated 2 times for cluster A14.

Info for manual annotations of cluster A16:

- Start number 57 was manually annotated 1 time for cluster A16.

Info for manual annotations of cluster A2:

- Start number 46 was manually annotated 1 time for cluster A2.
- Start number 48 was manually annotated 2 times for cluster A2.
- Start number 51 was manually annotated 72 times for cluster A2.
- Start number 52 was manually annotated 2 times for cluster A2.
- Start number 54 was manually annotated 1 time for cluster A2.
- Start number 55 was manually annotated 18 times for cluster A2.
- Start number 57 was manually annotated 1 time for cluster A2.
- Start number 60 was manually annotated 3 times for cluster A2.
- Start number 62 was manually annotated 2 times for cluster A2.

Info for manual annotations of cluster A6:

- Start number 50 was manually annotated 2 times for cluster A6.
- Start number 55 was manually annotated 40 times for cluster A6.

Info for manual annotations of cluster A9:

- Start number 13 was manually annotated 2 times for cluster A9.
- Start number 49 was manually annotated 33 times for cluster A9.

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

Gene: 20ES\_97 Start: 51864, Stop: 51574, Start Num: 51

Candidate Starts for 20ES\_97:

(32, 51900), (33, 51888), (Start: 51 @51864 has 96 MA's), (85, 51681), (90, 51657), (96, 51639),

Gene: 40AC\_91 Start: 52143, Stop: 51862, Start Num: 55

Candidate Starts for 40AC\_91:

(Start: 55 @52143 has 58 MA's), (Start: 60 @52140 has 3 MA's), (85, 51966), (90, 51942), (108, 51891),

Gene: AN3\_94 Start: 49778, Stop: 49488, Start Num: 51

Candidate Starts for AN3\_94:

(Start: 51 @49778 has 96 MA's), (71, 49682), (85, 49595), (90, 49571), (96, 49553),

Gene: AN9\_95 Start: 49945, Stop: 49628, Start Num: 51

Candidate Starts for AN9\_95:

(34, 49969), (Start: 51 @49945 has 96 MA's), (Start: 52 @49939 has 2 MA's), (Start: 62 @49906 has 2 MA's), (65, 49876), (67, 49867), (78, 49783),

Gene: ANI8\_95 Start: 49945, Stop: 49628, Start Num: 51

Candidate Starts for ANI8\_95:

(34, 49969), (Start: 51 @49945 has 96 MA's), (Start: 52 @49939 has 2 MA's), (Start: 62 @49906 has 2 MA's), (65, 49876), (67, 49867), (78, 49783),

Gene: AbbyPaige\_97 Start: 51958, Stop: 51668, Start Num: 51

Candidate Starts for AbbyPaige\_97:

(Start: 51 @51958 has 96 MA's), (71, 51862), (85, 51775), (90, 51751), (91, 51745), (96, 51733), (99, 51718),

Gene: Acolyte\_91 Start: 51451, Stop: 51122, Start Num: 54

Candidate Starts for Acolyte\_91:

(47, 51463), (Start: 54 @51451 has 1 MA's), (65, 51394), (67, 51385), (68, 51373), (90, 51241), (111, 51142),

Gene: Adzzy\_99 Start: 51234, Stop: 50908, Start Num: 60

Candidate Starts for Adzzy\_99:

(29, 51327), (Start: 60 @51234 has 3 MA's), (Start: 62 @51216 has 2 MA's), (91, 51027), (101, 50988), (106, 50979), (110, 50943),

Gene: Agape74\_97 Start: 51931, Stop: 51641, Start Num: 51

Candidate Starts for Agape74\_97:

(Start: 51 @51931 has 96 MA's), (71, 51835), (85, 51748), (90, 51724), (91, 51718), (96, 51706), (99, 51691),

Gene: Aliter\_93 Start: 49003, Stop: 48707, Start Num: 49

Candidate Starts for Aliter\_93:

(Start: 49 @49003 has 35 MA's), (68, 48925), (70, 48910), (75, 48859), (90, 48793),

Gene: Alma\_97 Start: 51713, Stop: 51417, Start Num: 49

Candidate Starts for Alma\_97:

(Start: 49 @51713 has 35 MA's), (68, 51635), (70, 51620), (75, 51569), (90, 51503),

Gene: Aneem\_100 Start: 51418, Stop: 51101, Start Num: 51

Candidate Starts for Aneem\_100:

(Start: 51 @51418 has 96 MA's), (78, 51256), (86, 51205),

Gene: AnnaL29\_97 Start: 52055, Stop: 51741, Start Num: 48

Candidate Starts for AnnaL29\_97:

(Start: 48 @52055 has 2 MA's), (Start: 51 @52052 has 96 MA's), (Start: 62 @52013 has 2 MA's), (65, 51983), (67, 51974), (82, 51875), (90, 51827), (91, 51821),

Gene: Anselm\_98 Start: 52336, Stop: 52043, Start Num: 51

Candidate Starts for Anselm\_98:

(Start: 46 @52342 has 1 MA's), (Start: 51 @52336 has 96 MA's), (90, 52126), (96, 52108), (99, 52093),

Gene: ArcherNM\_91 Start: 51333, Stop: 51034, Start Num: 51

Candidate Starts for ArcherNM\_91:

(Start: 46 @51339 has 1 MA's), (Start: 51 @51333 has 96 MA's), (71, 51237), (82, 51168), (90, 51120), (95, 51102),

Gene: Arissanae\_95 Start: 51941, Stop: 51645, Start Num: 49

Candidate Starts for Arissanae\_95:

(Start: 49 @51941 has 35 MA's), (Start: 62 @51914 has 2 MA's), (68, 51863), (70, 51848), (74, 51821), (75, 51797), (90, 51731), (95, 51713),

Gene: Artemis2UCLA\_105 Start: 51118, Stop: 50786, Start Num: 55

Candidate Starts for Artemis2UCLA\_105:

(Start: 55 @51118 has 58 MA's), (Start: 62 @51091 has 2 MA's), (85, 50935), (94, 50896), (106, 50857), (110, 50821),

Gene: BABullseye\_96 Start: 49256, Stop: 48924, Start Num: 55

Candidate Starts for BABullseye\_96:

(Start: 55 @49256 has 58 MA's), (Start: 62 @49229 has 2 MA's), (85, 49073), (94, 49034), (106, 48995), (110, 48959),

Gene: BabyBack\_92 Start: 52424, Stop: 52089, Start Num: 55

Candidate Starts for BabyBack\_92:

(Start: 55 @52424 has 58 MA's), (90, 52214), (92, 52202), (106, 52160), (110, 52124),

Gene: Bachome\_97 Start: 50466, Stop: 50149, Start Num: 51

Candidate Starts for Bachome\_97:

(Start: 51 @50466 has 96 MA's), (78, 50304), (86, 50253),

Gene: Bactobuster\_87 Start: 50956, Stop: 50639, Start Num: 55  
Candidate Starts for Bactobuster\_87:  
(Start: 55 @50956 has 58 MA's), (68, 50887), (75, 50821), (90, 50758), (106, 50704), (110, 50668),

Gene: Baehexic\_97 Start: 51948, Stop: 51655, Start Num: 51  
Candidate Starts for Baehexic\_97:  
(Start: 51 @51948 has 96 MA's), (69, 51861), (90, 51738), (96, 51720), (99, 51705),

Gene: Beemo\_100 Start: 51834, Stop: 51538, Start Num: 49  
Candidate Starts for Beemo\_100:  
(Start: 49 @51834 has 35 MA's), (68, 51756), (70, 51741), (75, 51690), (90, 51624),

Gene: BengiVuitton\_95 Start: 51703, Stop: 51413, Start Num: 51  
Candidate Starts for BengiVuitton\_95:  
(Start: 51 @51703 has 96 MA's), (69, 51616), (90, 51496), (96, 51478), (107, 51451),

Gene: Benvolio\_95 Start: 51929, Stop: 51636, Start Num: 51  
Candidate Starts for Benvolio\_95:  
(Start: 51 @51929 has 96 MA's), (Start: 62 @51902 has 2 MA's), (96, 51701), (99, 51686),

Gene: BiancaTri92\_91 Start: 50985, Stop: 50692, Start Num: 51  
Candidate Starts for BiancaTri92\_91:  
(Start: 51 @50985 has 96 MA's), (Start: 52 @50979 has 2 MA's), (Start: 62 @50958 has 2 MA's), (68, 50907), (90, 50775), (95, 50760), (99, 50742),

Gene: Blinn1\_100 Start: 50561, Stop: 50217, Start Num: 55  
Candidate Starts for Blinn1\_100:  
(30, 50633), (37, 50594), (Start: 55 @50561 has 58 MA's), (Start: 62 @50534 has 2 MA's), (71, 50465), (85, 50378), (94, 50339), (103, 50309), (110, 50252),

Gene: Blue7\_105 Start: 51037, Stop: 50693, Start Num: 50  
Candidate Starts for Blue7\_105:  
(Start: 50 @51037 has 4 MA's), (Start: 55 @51025 has 58 MA's), (Start: 62 @50998 has 2 MA's), (85, 50842), (91, 50812), (106, 50764), (110, 50728),

Gene: BobSwaget\_89 Start: 49131, Stop: 48838, Start Num: 51  
Candidate Starts for BobSwaget\_89:  
(35, 49152), (Start: 51 @49131 has 96 MA's), (91, 48915), (99, 48888),

Gene: BogosyJay\_98 Start: 51847, Stop: 51551, Start Num: 49  
Candidate Starts for BogosyJay\_98:  
(Start: 49 @51847 has 35 MA's), (Start: 62 @51817 has 2 MA's), (68, 51766), (70, 51751), (75, 51700), (90, 51634),

Gene: Bowtie\_96 Start: 50025, Stop: 49708, Start Num: 51  
Candidate Starts for Bowtie\_96:  
(Start: 51 @50025 has 96 MA's), (78, 49863), (86, 49812),

Gene: Bradman\_100 Start: 51499, Stop: 51200, Start Num: 51  
Candidate Starts for Bradman\_100:  
(Start: 51 @51499 has 96 MA's), (Start: 62 @51472 has 2 MA's), (85, 51316), (89, 51301), (91, 51286), (95, 51274),

Gene: Bud\_92 Start: 50124, Stop: 49807, Start Num: 51  
Candidate Starts for Bud\_92:  
(Start: 51 @50124 has 96 MA's), (78, 49962), (86, 49911),

Gene: Buggy\_85 Start: 48670, Stop: 48380, Start Num: 51  
Candidate Starts for Buggy\_85:  
(Start: 51 @48670 has 96 MA's), (71, 48574), (85, 48487), (90, 48463), (91, 48457), (96, 48445), (99, 48430),

Gene: C3\_88 Start: 49945, Stop: 49628, Start Num: 51  
Candidate Starts for C3\_88:  
(34, 49969), (Start: 51 @49945 has 96 MA's), (Start: 52 @49939 has 2 MA's), (Start: 62 @49906 has 2 MA's), (65, 49876), (67, 49867), (78, 49783),

Gene: CRB1\_95 Start: 51714, Stop: 51424, Start Num: 51  
Candidate Starts for CRB1\_95:  
(39, 51729), (Start: 51 @51714 has 96 MA's), (Start: 62 @51687 has 2 MA's), (71, 51618), (90, 51507), (96, 51489),

Gene: Candra\_100 Start: 50964, Stop: 50632, Start Num: 55  
Candidate Starts for Candra\_100:  
(Start: 55 @50964 has 58 MA's), (Start: 62 @50937 has 2 MA's), (85, 50781), (94, 50742), (106, 50703), (110, 50667),

Gene: Caraxes\_100 Start: 51590, Stop: 51264, Start Num: 60  
Candidate Starts for Caraxes\_100:  
(Start: 60 @51590 has 3 MA's), (Start: 62 @51572 has 2 MA's), (65, 51542), (90, 51389), (101, 51344), (106, 51335), (110, 51299),

Gene: Catalina\_102 Start: 51947, Stop: 51651, Start Num: 49  
Candidate Starts for Catalina\_102:  
(Start: 49 @51947 has 35 MA's), (68, 51869), (70, 51854), (75, 51803), (90, 51737),

Gene: Centaur\_98 Start: 51815, Stop: 51522, Start Num: 51  
Candidate Starts for Centaur\_98:  
(Start: 51 @51815 has 96 MA's), (69, 51728), (90, 51605), (96, 51587), (99, 51572),

Gene: Changeling\_93 Start: 51752, Stop: 51453, Start Num: 51  
Candidate Starts for Changeling\_93:  
(Start: 51 @51752 has 96 MA's), (68, 51674), (69, 51665), (82, 51587), (90, 51539), (91, 51533),

Gene: Chargerpower\_101 Start: 51440, Stop: 51123, Start Num: 42  
Candidate Starts for Chargerpower\_101:  
(Start: 42 @51440 has 1 MA's), (68, 51347), (70, 51332), (80, 51266), (82, 51260), (90, 51212), (105, 51161),

Gene: Charm\_94 Start: 51212, Stop: 50910, Start Num: 49  
Candidate Starts for Charm\_94:  
(Start: 49 @51212 has 35 MA's), (Start: 54 @51203 has 1 MA's), (68, 51134), (70, 51119), (75, 51068), (98, 50966), (105, 50948),

Gene: Chartreuse\_100 Start: 50265, Stop: 49933, Start Num: 55  
Candidate Starts for Chartreuse\_100:

(Start: 55 @50265 has 58 MA's), (Start: 62 @50238 has 2 MA's), (85, 50082), (94, 50043), (106, 50004), (110, 49968),

Gene: Che12\_101 Start: 51704, Stop: 51378, Start Num: 60

Candidate Starts for Che12\_101:

(38, 51746), (45, 51734), (Start: 60 @51704 has 3 MA's), (Start: 62 @51686 has 2 MA's), (78, 51563), (91, 51497), (101, 51458), (106, 51449), (110, 51413),

Gene: ChipMunk\_95 Start: 52668, Stop: 52378, Start Num: 51

Candidate Starts for ChipMunk\_95:

(Start: 46 @52674 has 1 MA's), (Start: 51 @52668 has 96 MA's), (90, 52461), (96, 52443), (107, 52416),

Gene: CloudWang3\_106 Start: 51647, Stop: 51315, Start Num: 55

Candidate Starts for CloudWang3\_106:

(Start: 55 @51647 has 58 MA's), (Start: 62 @51620 has 2 MA's), (85, 51464), (94, 51425), (106, 51386), (110, 51350),

Gene: Colin\_94 Start: 52297, Stop: 51998, Start Num: 51

Candidate Starts for Colin\_94:

(Start: 51 @52297 has 96 MA's), (Start: 52 @52291 has 2 MA's), (Start: 62 @52270 has 2 MA's), (68, 52219), (82, 52132), (90, 52084), (91, 52078),

Gene: Conquerage\_97 Start: 51489, Stop: 51193, Start Num: 49

Candidate Starts for Conquerage\_97:

(Start: 49 @51489 has 35 MA's), (68, 51411), (70, 51396), (75, 51345), (90, 51279),

Gene: Cookiedough\_101 Start: 51239, Stop: 50907, Start Num: 55

Candidate Starts for Cookiedough\_101:

(Start: 55 @51239 has 58 MA's), (Start: 62 @51212 has 2 MA's), (85, 51056), (94, 51017), (106, 50978), (110, 50942),

Gene: Crucio\_95 Start: 52008, Stop: 51718, Start Num: 51

Candidate Starts for Crucio\_95:

(32, 52044), (33, 52032), (Start: 51 @52008 has 96 MA's), (71, 51912), (96, 51783), (99, 51768),

Gene: D29\_89 Start: 47930, Stop: 47619, Start Num: 55

Candidate Starts for D29\_89:

(Start: 55 @47930 has 58 MA's), (78, 47774),

Gene: D32\_86 Start: 47930, Stop: 47619, Start Num: 55

Candidate Starts for D32\_86:

(Start: 55 @47930 has 58 MA's), (78, 47774),

Gene: DBQu4n\_98 Start: 51545, Stop: 51234, Start Num: 55

Candidate Starts for DBQu4n\_98:

(Start: 55 @51545 has 58 MA's), (78, 51389),

Gene: DaVinci\_100 Start: 50319, Stop: 49987, Start Num: 55

Candidate Starts for DaVinci\_100:

(Start: 55 @50319 has 58 MA's), (Start: 62 @50292 has 2 MA's), (85, 50136), (94, 50097), (106, 50058), (110, 50022),

Gene: Dalmatian\_95 Start: 51637, Stop: 51344, Start Num: 51

Candidate Starts for Dalmatian\_95:

(Start: 46 @51643 has 1 MA's), (Start: 51 @51637 has 96 MA's), (81, 51478), (90, 51427), (96, 51409), (99, 51394),

Gene: Darrell\_97 Start: 50844, Stop: 50530, Start Num: 49

Candidate Starts for Darrell\_97:

(Start: 49 @50844 has 35 MA's), (68, 50748), (70, 50733), (90, 50616), (94, 50601), (95, 50598),

Gene: DarthPhader\_92 Start: 52006, Stop: 51671, Start Num: 56

Candidate Starts for DarthPhader\_92:

(31, 52078), (Start: 56 @52006 has 3 MA's), (68, 51928), (73, 51898), (75, 51862), (83, 51832), (90, 51796), (105, 51745), (106, 51742), (110, 51706),

Gene: Deloris\_95 Start: 51396, Stop: 51106, Start Num: 51

Candidate Starts for Deloris\_95:

(Start: 51 @51396 has 96 MA's), (69, 51309), (90, 51189), (96, 51171), (107, 51144),

Gene: Dignity\_97 Start: 52038, Stop: 51748, Start Num: 51

Candidate Starts for Dignity\_97:

(Start: 51 @52038 has 96 MA's), (71, 51942), (85, 51855), (90, 51831), (91, 51825), (96, 51813), (99, 51798),

Gene: Dorothea\_102 Start: 51419, Stop: 51087, Start Num: 55

Candidate Starts for Dorothea\_102:

(30, 51494), (Start: 50 @51431 has 4 MA's), (Start: 55 @51419 has 58 MA's), (Start: 62 @51392 has 2 MA's), (85, 51236), (94, 51197), (106, 51158), (110, 51122),

Gene: Drake55\_97 Start: 51533, Stop: 51240, Start Num: 51

Candidate Starts for Drake55\_97:

(Start: 51 @51533 has 96 MA's), (69, 51446), (90, 51323), (96, 51305), (99, 51290),

Gene: DreamTeam1\_95 Start: 51173, Stop: 50871, Start Num: 49

Candidate Starts for DreamTeam1\_95:

(Start: 49 @51173 has 35 MA's), (Start: 54 @51164 has 1 MA's), (68, 51095), (70, 51080), (98, 50927), (105, 50909),

Gene: DudeLittle\_94 Start: 51703, Stop: 51410, Start Num: 51

Candidate Starts for DudeLittle\_94:

(Start: 46 @51709 has 1 MA's), (Start: 51 @51703 has 96 MA's), (90, 51493), (96, 51475), (99, 51460),

Gene: Duplo\_99 Start: 51602, Stop: 51291, Start Num: 55

Candidate Starts for Duplo\_99:

(Start: 55 @51602 has 58 MA's), (78, 51446),

Gene: EZMoney23\_90 Start: 50589, Stop: 50290, Start Num: 51

Candidate Starts for EZMoney23\_90:

(Start: 51 @50589 has 96 MA's), (Start: 62 @50562 has 2 MA's), (68, 50511), (82, 50424), (90, 50376), (91, 50370),

Gene: Ebony\_99 Start: 50989, Stop: 50672, Start Num: 51

Candidate Starts for Ebony\_99:

(Start: 51 @50989 has 96 MA's), (78, 50827), (86, 50776),

Gene: Echild\_100 Start: 51953, Stop: 51660, Start Num: 51

Candidate Starts for Echild\_100:

(Start: 51 @51953 has 96 MA's), (Start: 62 @51926 has 2 MA's), (96, 51725), (99, 51710),

Gene: EdogawaKiddo\_98 Start: 51910, Stop: 51614, Start Num: 49

Candidate Starts for EdogawaKiddo\_98:

(Start: 49 @51910 has 35 MA's), (68, 51832), (70, 51817), (75, 51766), (90, 51700),

Gene: Eidsmoe\_97 Start: 51482, Stop: 51186, Start Num: 49

Candidate Starts for Eidsmoe\_97:

(Start: 49 @51482 has 35 MA's), (68, 51404), (70, 51389), (75, 51338), (90, 51272),

Gene: Elephantoon\_98 Start: 51617, Stop: 51318, Start Num: 49

Candidate Starts for Elephantoon\_98:

(38, 51638), (Start: 49 @51617 has 35 MA's), (Start: 62 @51587 has 2 MA's), (68, 51536), (75, 51470), (79, 51461), (90, 51404),

Gene: EmyBug\_96 Start: 51484, Stop: 51188, Start Num: 49

Candidate Starts for EmyBug\_96:

(Start: 49 @51484 has 35 MA's), (68, 51406), (70, 51391), (75, 51340), (90, 51274),

Gene: Equemioh13\_97 Start: 51856, Stop: 51563, Start Num: 51

Candidate Starts for Equemioh13\_97:

(Start: 51 @51856 has 96 MA's), (69, 51769), (90, 51646), (96, 51628), (99, 51613),

Gene: EricB\_100 Start: 50464, Stop: 50132, Start Num: 55

Candidate Starts for EricB\_100:

(Start: 55 @50464 has 58 MA's), (Start: 62 @50437 has 2 MA's), (85, 50281), (94, 50242), (106, 50203), (110, 50167),

Gene: Et2Brutus\_101 Start: 51334, Stop: 51017, Start Num: 51

Candidate Starts for Et2Brutus\_101:

(Start: 51 @51334 has 96 MA's), (78, 51172), (86, 51121),

Gene: EvilGenius\_94 Start: 52669, Stop: 52379, Start Num: 51

Candidate Starts for EvilGenius\_94:

(Start: 46 @52675 has 1 MA's), (Start: 51 @52669 has 96 MA's), (90, 52462), (96, 52444), (107, 52417),

Gene: ExplosioNervosa\_96 Start: 51550, Stop: 51254, Start Num: 49

Candidate Starts for ExplosioNervosa\_96:

(Start: 49 @51550 has 35 MA's), (68, 51472), (70, 51457), (75, 51406), (90, 51340),

Gene: Fameo\_94 Start: 51403, Stop: 51116, Start Num: 52

Candidate Starts for Fameo\_94:

(Start: 51 @51409 has 96 MA's), (Start: 52 @51403 has 2 MA's), (Start: 62 @51382 has 2 MA's), (90, 51199), (96, 51181), (99, 51166),

Gene: Fayely\_96 Start: 51458, Stop: 51162, Start Num: 49

Candidate Starts for Fayely\_96:

(Start: 49 @51458 has 35 MA's), (68, 51380), (70, 51365), (75, 51314), (90, 51248),



Gene: Fibonacci\_100 Start: 51272, Stop: 50955, Start Num: 51  
Candidate Starts for Fibonacci\_100:  
(Start: 51 @51272 has 96 MA's), (78, 51110), (86, 51059),

Gene: FiringLine\_95 Start: 52104, Stop: 51814, Start Num: 51  
Candidate Starts for FiringLine\_95:  
(32, 52140), (33, 52128), (Start: 51 @52104 has 96 MA's), (71, 52008), (90, 51897), (96, 51879), (99, 51864),

Gene: First\_0096 Start: 51767, Stop: 51477, Start Num: 51  
Candidate Starts for First\_0096:  
(32, 51803), (33, 51791), (Start: 51 @51767 has 96 MA's), (85, 51584), (90, 51560), (96, 51542),

Gene: Flare16\_97 Start: 51671, Stop: 51378, Start Num: 51  
Candidate Starts for Flare16\_97:  
(Start: 51 @51671 has 96 MA's), (69, 51584), (90, 51461), (96, 51443), (99, 51428),

Gene: Flaverint\_101 Start: 51416, Stop: 51099, Start Num: 51  
Candidate Starts for Flaverint\_101:  
(Start: 51 @51416 has 96 MA's), (78, 51254), (86, 51203),

Gene: Gail\_102 Start: 52375, Stop: 52022, Start Num: 49  
Candidate Starts for Gail\_102:  
(Start: 49 @52375 has 35 MA's), (Start: 62 @52336 has 2 MA's), (73, 52255), (77, 52213), (80, 52204), (90, 52150), (93, 52135), (105, 52099), (110, 52060),

Gene: Garak\_104 Start: 51265, Stop: 50933, Start Num: 55  
Candidate Starts for Garak\_104:  
(Start: 55 @51265 has 58 MA's), (Start: 62 @51238 has 2 MA's), (85, 51082), (94, 51043), (106, 51004), (110, 50968),

Gene: GaugeLDP\_91 Start: 51816, Stop: 51487, Start Num: 55  
Candidate Starts for GaugeLDP\_91:  
(Start: 55 @51816 has 58 MA's), (Start: 62 @51789 has 2 MA's), (90, 51609), (110, 51522),

Gene: Georgie2\_97 Start: 52152, Stop: 51862, Start Num: 51  
Candidate Starts for Georgie2\_97:  
(32, 52188), (33, 52176), (Start: 51 @52152 has 96 MA's), (71, 52056), (90, 51945), (96, 51927), (99, 51912),

Gene: Gilberta\_98 Start: 50292, Stop: 49975, Start Num: 51  
Candidate Starts for Gilberta\_98:  
(Start: 51 @50292 has 96 MA's), (78, 50130), (86, 50079),

Gene: Gladiator\_99 Start: 50976, Stop: 50644, Start Num: 55  
Candidate Starts for Gladiator\_99:  
(Start: 50 @50988 has 4 MA's), (Start: 55 @50976 has 58 MA's), (Start: 62 @50949 has 2 MA's), (85, 50793), (91, 50763), (106, 50715), (110, 50679),

Gene: GreedyLawyer\_91 Start: 50897, Stop: 50565, Start Num: 55  
Candidate Starts for GreedyLawyer\_91:

(Start: 55 @50897 has 58 MA's), (Start: 62 @50870 has 2 MA's), (85, 50714), (94, 50675), (106, 50636), (110, 50600),

Gene: Gruunaga\_104 Start: 50932, Stop: 50600, Start Num: 55

Candidate Starts for Gruunaga\_104:

(Start: 50 @50944 has 4 MA's), (Start: 55 @50932 has 58 MA's), (Start: 62 @50905 has 2 MA's), (85, 50749), (91, 50719), (106, 50671), (110, 50635),

Gene: Hammer\_104 Start: 50626, Stop: 50297, Start Num: 55

Candidate Starts for Hammer\_104:

(Start: 50 @50638 has 4 MA's), (Start: 55 @50626 has 58 MA's), (Start: 62 @50599 has 2 MA's), (85, 50443), (91, 50413), (106, 50368), (110, 50332),

Gene: Hanray\_97 Start: 51899, Stop: 51603, Start Num: 49

Candidate Starts for Hanray\_97:

(Start: 49 @51899 has 35 MA's), (68, 51821), (70, 51806), (75, 51755), (90, 51689),

Gene: HarryHoudini\_96 Start: 51537, Stop: 51244, Start Num: 51

Candidate Starts for HarryHoudini\_96:

(Start: 51 @51537 has 96 MA's), (69, 51450), (90, 51327), (96, 51309), (99, 51294),

Gene: Heffalump\_92 Start: 51878, Stop: 51585, Start Num: 51

Candidate Starts for Heffalump\_92:

(Start: 51 @51878 has 96 MA's), (Start: 52 @51872 has 2 MA's), (Start: 62 @51851 has 2 MA's), (90, 51668), (96, 51650), (99, 51635),

Gene: Helmet\_105 Start: 51401, Stop: 51069, Start Num: 55

Candidate Starts for Helmet\_105:

(Start: 55 @51401 has 58 MA's), (Start: 62 @51374 has 2 MA's), (85, 51218), (94, 51179), (106, 51140), (110, 51104),

Gene: Herbertwm\_90 Start: 50464, Stop: 50207, Start Num: 57

Candidate Starts for Herbertwm\_90:

(Start: 57 @50464 has 2 MA's), (63, 50437), (75, 50326), (90, 50254), (91, 50248), (94, 50239),

Gene: Hexamo\_105 Start: 51133, Stop: 50801, Start Num: 55

Candidate Starts for Hexamo\_105:

(Start: 55 @51133 has 58 MA's), (Start: 62 @51106 has 2 MA's), (85, 50950), (94, 50911), (106, 50872), (110, 50836),

Gene: Horex\_98 Start: 51912, Stop: 51616, Start Num: 49

Candidate Starts for Horex\_98:

(Start: 49 @51912 has 35 MA's), (68, 51834), (70, 51819), (75, 51768), (90, 51702),

Gene: Hoot\_98 Start: 48781, Stop: 48449, Start Num: 55

Candidate Starts for Hoot\_98:

(Start: 55 @48781 has 58 MA's), (Start: 62 @48754 has 2 MA's), (85, 48598), (94, 48559), (106, 48520), (110, 48484),

Gene: HortumSL17\_101 Start: 51948, Stop: 51652, Start Num: 49

Candidate Starts for HortumSL17\_101:

(Start: 49 @51948 has 35 MA's), (68, 51870), (70, 51855), (75, 51804), (90, 51738),

Gene: Hutc2\_98 Start: 50224, Stop: 49907, Start Num: 51  
Candidate Starts for Hutc2\_98:  
(Start: 51 @50224 has 96 MA's), (78, 50062), (86, 50011),

Gene: Indra\_105 Start: 51266, Stop: 50934, Start Num: 55  
Candidate Starts for Indra\_105:  
(Start: 55 @51266 has 58 MA's), (Start: 62 @51239 has 2 MA's), (85, 51083), (94, 51044), (106, 51005), (110, 50969),

Gene: Insomnia\_100 Start: 51450, Stop: 51133, Start Num: 51  
Candidate Starts for Insomnia\_100:  
(Start: 51 @51450 has 96 MA's), (78, 51288), (86, 51237),

Gene: IronMan\_92 Start: 52365, Stop: 52033, Start Num: 55  
Candidate Starts for IronMan\_92:  
(10, 52521), (11, 52515), (22, 52461), (36, 52401), (43, 52389), (Start: 55 @52365 has 58 MA's), (65, 52308), (67, 52299), (90, 52158), (110, 52068),

Gene: Isiphiwo\_99 Start: 50683, Stop: 50351, Start Num: 55  
Candidate Starts for Isiphiwo\_99:  
(Start: 55 @50683 has 58 MA's), (Start: 62 @50656 has 2 MA's), (85, 50500), (94, 50461), (106, 50422), (110, 50386),

Gene: Iwokeuplikedis\_98 Start: 52088, Stop: 51759, Start Num: 55  
Candidate Starts for Iwokeuplikedis\_98:  
(Start: 55 @52088 has 58 MA's), (63, 52055), (65, 52031), (67, 52022), (90, 51881), (105, 51830), (110, 51791),

Gene: Jaan\_91 Start: 51391, Stop: 51071, Start Num: 55  
Candidate Starts for Jaan\_91:  
(Start: 55 @51391 has 58 MA's), (68, 51322), (75, 51256), (90, 51193), (106, 51142), (110, 51106),

Gene: Jabith\_100 Start: 51532, Stop: 51215, Start Num: 51  
Candidate Starts for Jabith\_100:  
(Start: 51 @51532 has 96 MA's), (78, 51370), (86, 51319),

Gene: Jeeves\_102 Start: 51140, Stop: 50811, Start Num: 58  
Candidate Starts for Jeeves\_102:  
(Start: 49 @51158 has 35 MA's), (Start: 58 @51140 has 2 MA's), (77, 50999), (80, 50990), (90, 50936), (93, 50921), (97, 50909), (110, 50849),

Gene: Jeffabunny\_94 Start: 47736, Stop: 47404, Start Num: 55  
Candidate Starts for Jeffabunny\_94:  
(Start: 55 @47736 has 58 MA's), (Start: 62 @47709 has 2 MA's), (85, 47553), (94, 47514), (106, 47475), (110, 47439),

Gene: Jerm\_96 Start: 51896, Stop: 51606, Start Num: 51  
Candidate Starts for Jerm\_96:  
(Start: 51 @51896 has 96 MA's), (71, 51800), (85, 51713), (90, 51689), (91, 51683), (96, 51671), (99, 51656),

Gene: JewelBug\_94 Start: 49112, Stop: 48780, Start Num: 55  
Candidate Starts for JewelBug\_94:

(30, 49187), (Start: 50 @49124 has 4 MA's), (Start: 55 @49112 has 58 MA's), (Start: 62 @49085 has 2 MA's), (85, 48929), (94, 48890), (106, 48851), (110, 48815),

Gene: Jiawan\_97 Start: 51929, Stop: 51633, Start Num: 49

Candidate Starts for Jiawan\_97:

(Start: 49 @51929 has 35 MA's), (68, 51851), (70, 51836), (75, 51785), (90, 51719),

Gene: Jordennis\_99 Start: 51016, Stop: 50684, Start Num: 55

Candidate Starts for Jordennis\_99:

(30, 51091), (Start: 50 @51028 has 4 MA's), (Start: 55 @51016 has 58 MA's), (Start: 62 @50989 has 2 MA's), (85, 50833), (94, 50794), (106, 50755), (110, 50719),

Gene: Joselito\_98 Start: 51170, Stop: 50853, Start Num: 51

Candidate Starts for Joselito\_98:

(Start: 51 @51170 has 96 MA's), (78, 51008), (86, 50957),

Gene: JoshKayV\_98 Start: 52139, Stop: 51846, Start Num: 52

Candidate Starts for JoshKayV\_98:

(Start: 51 @52145 has 96 MA's), (Start: 52 @52139 has 2 MA's), (Start: 62 @52118 has 2 MA's), (82, 51980), (90, 51932), (107, 51884),

Gene: Journey13\_81 Start: 47229, Stop: 46915, Start Num: 51

Candidate Starts for Journey13\_81:

(Start: 51 @47229 has 96 MA's), (Start: 62 @47190 has 2 MA's), (65, 47160), (67, 47151), (68, 47139), (82, 47052), (84, 47034), (94, 46989), (107, 46953),

Gene: Jsquared\_102 Start: 51747, Stop: 51448, Start Num: 51

Candidate Starts for Jsquared\_102:

(Start: 51 @51747 has 96 MA's), (71, 51651), (85, 51564), (89, 51549), (91, 51534),

Gene: Kalpine\_98 Start: 52161, Stop: 51862, Start Num: 51

Candidate Starts for Kalpine\_98:

(Start: 51 @52161 has 96 MA's), (Start: 52 @52155 has 2 MA's), (Start: 62 @52134 has 2 MA's), (68, 52083), (82, 51996), (90, 51948), (95, 51933), (107, 51900),

Gene: Kazan\_104 Start: 50934, Stop: 50602, Start Num: 55

Candidate Starts for Kazan\_104:

(Start: 55 @50934 has 58 MA's), (Start: 62 @50907 has 2 MA's), (85, 50751), (94, 50712), (106, 50673), (110, 50637),

Gene: Kerberos\_98 Start: 51574, Stop: 51257, Start Num: 51

Candidate Starts for Kerberos\_98:

(34, 51598), (Start: 51 @51574 has 96 MA's), (Start: 52 @51568 has 2 MA's), (Start: 62 @51535 has 2 MA's), (65, 51505), (67, 51496), (78, 51412),

Gene: Keziacharles14\_94 Start: 52148, Stop: 51786, Start Num: 49

Candidate Starts for Keziacharles14\_94:

(Start: 49 @52148 has 35 MA's), (68, 52055), (73, 52025), (77, 51983), (80, 51974), (82, 51968), (89, 51929), (110, 51824),

Gene: KingCyrus\_92 Start: 52682, Stop: 52392, Start Num: 51

Candidate Starts for KingCyrus\_92:

(Start: 46 @52688 has 1 MA's), (Start: 51 @52682 has 96 MA's), (90, 52475), (96, 52457), (107, 52430),

Gene: Kipper29\_101 Start: 50791, Stop: 50459, Start Num: 55

Candidate Starts for Kipper29\_101:

(30, 50866), (Start: 50 @50803 has 4 MA's), (Start: 55 @50791 has 58 MA's), (Start: 62 @50764 has 2 MA's), (85, 50608), (94, 50569), (106, 50530), (110, 50494),

Gene: Koduck\_98 Start: 51378, Stop: 51082, Start Num: 51

Candidate Starts for Koduck\_98:

(Start: 51 @51378 has 96 MA's), (71, 51282), (85, 51195), (107, 51120),

Gene: Koko\_105 Start: 51643, Stop: 51314, Start Num: 55

Candidate Starts for Koko\_105:

(Start: 50 @51655 has 4 MA's), (Start: 55 @51643 has 58 MA's), (Start: 62 @51616 has 2 MA's), (85, 51460), (91, 51430), (106, 51385), (110, 51349),

Gene: L5\_89 Start: 51082, Stop: 50786, Start Num: 51

Candidate Starts for L5\_89:

(Start: 51 @51082 has 96 MA's), (71, 50986), (89, 50884), (107, 50824),

Gene: LadyBird\_97 Start: 51890, Stop: 51600, Start Num: 51

Candidate Starts for LadyBird\_97:

(39, 51905), (Start: 51 @51890 has 96 MA's), (Start: 62 @51863 has 2 MA's), (71, 51794), (90, 51683), (96, 51665),

Gene: Landor\_93 Start: 52502, Stop: 52185, Start Num: 55

Candidate Starts for Landor\_93:

(Start: 55 @52502 has 58 MA's), (68, 52433), (75, 52367), (90, 52304), (106, 52250), (110, 52214),

Gene: Larenn\_93 Start: 51727, Stop: 51437, Start Num: 51

Candidate Starts for Larenn\_93:

(32, 51763), (33, 51751), (Start: 51 @51727 has 96 MA's), (71, 51631), (90, 51520), (96, 51502), (99, 51487),

Gene: Leogania\_78 Start: 47800, Stop: 47507, Start Num: 51

Candidate Starts for Leogania\_78:

(Start: 51 @47800 has 96 MA's), (Start: 52 @47794 has 2 MA's), (Start: 62 @47773 has 2 MA's), (68, 47722), (90, 47590), (95, 47575), (99, 47557),

Gene: Leviathan\_96 Start: 51974, Stop: 51684, Start Num: 51

Candidate Starts for Leviathan\_96:

(Start: 51 @51974 has 96 MA's), (71, 51878), (85, 51791), (90, 51767), (91, 51761), (96, 51749), (99, 51734),

Gene: LilTurb\_96 Start: 51886, Stop: 51596, Start Num: 51

Candidate Starts for LilTurb\_96:

(Start: 46 @51892 has 1 MA's), (Start: 51 @51886 has 96 MA's), (71, 51790), (85, 51703), (90, 51679), (91, 51673), (96, 51661), (99, 51646),

Gene: Lilbunny\_99 Start: 49513, Stop: 49181, Start Num: 55

Candidate Starts for Lilbunny\_99:

(Start: 55 @49513 has 58 MA's), (Start: 62 @49486 has 2 MA's), (85, 49330), (94, 49291), (106, 49252), (110, 49216),

Gene: Lilleskat\_96 Start: 51900, Stop: 51604, Start Num: 49

Candidate Starts for Lilleskat\_96:

(Start: 49 @51900 has 35 MA's), (68, 51822), (70, 51807), (75, 51756), (90, 51690),

Gene: Lokk\_90 Start: 49752, Stop: 49459, Start Num: 51

Candidate Starts for Lokk\_90:

(Start: 51 @49752 has 96 MA's), (91, 49536), (99, 49509),

Gene: LoneWolf\_99 Start: 51833, Stop: 51534, Start Num: 49

Candidate Starts for LoneWolf\_99:

(38, 51854), (Start: 49 @51833 has 35 MA's), (Start: 62 @51803 has 2 MA's), (68, 51752), (90, 51620),

Gene: Loser\_98 Start: 52299, Stop: 51985, Start Num: 48

Candidate Starts for Loser\_98:

(Start: 48 @52299 has 2 MA's), (Start: 51 @52296 has 96 MA's), (Start: 62 @52257 has 2 MA's), (65, 52227), (67, 52218), (82, 52119), (90, 52071), (91, 52065),

Gene: Luchador\_97 Start: 52062, Stop: 51730, Start Num: 58

Candidate Starts for Luchador\_97:

(Start: 49 @52080 has 35 MA's), (Start: 58 @52062 has 2 MA's), (68, 51993), (77, 51921), (80, 51912), (90, 51858), (93, 51843), (110, 51768),

Gene: Lucivia\_101 Start: 51449, Stop: 51132, Start Num: 51

Candidate Starts for Lucivia\_101:

(Start: 51 @51449 has 96 MA's), (78, 51287), (86, 51236),

Gene: MaCh\_100 Start: 51413, Stop: 51096, Start Num: 51

Candidate Starts for MaCh\_100:

(Start: 51 @51413 has 96 MA's), (78, 51251), (86, 51200),

Gene: Mabel\_100 Start: 51414, Stop: 51097, Start Num: 51

Candidate Starts for Mabel\_100:

(Start: 51 @51414 has 96 MA's), (78, 51252), (86, 51201),

Gene: MajorMajor\_94 Start: 49791, Stop: 49492, Start Num: 51

Candidate Starts for MajorMajor\_94:

(Start: 51 @49791 has 96 MA's), (Start: 62 @49764 has 2 MA's), (85, 49608), (89, 49593), (91, 49578), (95, 49566),

Gene: Malec\_93 Start: 52135, Stop: 51845, Start Num: 51

Candidate Starts for Malec\_93:

(32, 52171), (33, 52159), (Start: 51 @52135 has 96 MA's), (71, 52039), (90, 51928), (96, 51910), (99, 51895),

Gene: Maminiaina\_98 Start: 51829, Stop: 51533, Start Num: 49

Candidate Starts for Maminiaina\_98:

(Start: 49 @51829 has 35 MA's), (Start: 62 @51799 has 2 MA's), (68, 51748), (70, 51733), (75, 51682), (90, 51616),

Gene: McFly\_102 Start: 51273, Stop: 50941, Start Num: 55

Candidate Starts for McFly\_102:

(Start: 55 @51273 has 58 MA's), (Start: 62 @51246 has 2 MA's), (85, 51090), (94, 51051), (106, 51012), (110, 50976),

Gene: MiculUcigas\_97 Start: 51574, Stop: 51281, Start Num: 51

Candidate Starts for MiculUcigas\_97:

(Start: 51 @51574 has 96 MA's), (69, 51487), (90, 51364), (96, 51346), (99, 51331),

Gene: Miko\_91 Start: 50615, Stop: 50316, Start Num: 51

Candidate Starts for Miko\_91:

(35, 50636), (Start: 51 @50615 has 96 MA's), (68, 50537), (82, 50450), (90, 50402), (107, 50354),

Gene: MissWhite\_94 Start: 49072, Stop: 48758, Start Num: 51

Candidate Starts for MissWhite\_94:

(Start: 51 @49072 has 96 MA's), (Start: 62 @49033 has 2 MA's), (65, 49003), (67, 48994), (82, 48895), (90, 48847), (107, 48796),

Gene: Mulciber\_99 Start: 51269, Stop: 50952, Start Num: 51

Candidate Starts for Mulciber\_99:

(Start: 51 @51269 has 96 MA's), (78, 51107), (86, 51056),

Gene: Munch\_98 Start: 51418, Stop: 51101, Start Num: 51

Candidate Starts for Munch\_98:

(Start: 51 @51418 has 96 MA's), (78, 51256), (86, 51205),

Gene: Myxus\_100 Start: 51948, Stop: 51652, Start Num: 49

Candidate Starts for Myxus\_100:

(Start: 49 @51948 has 35 MA's), (68, 51870), (70, 51855), (75, 51804), (90, 51738),

Gene: NaSiaTalie\_98 Start: 51735, Stop: 51442, Start Num: 51

Candidate Starts for NaSiaTalie\_98:

(Start: 51 @51735 has 96 MA's), (69, 51648), (90, 51525), (96, 51507), (99, 51492),

Gene: Naji\_87 Start: 47930, Stop: 47619, Start Num: 55

Candidate Starts for Naji\_87:

(Start: 55 @47930 has 58 MA's), (78, 47774),

Gene: Neeharika16\_99 Start: 50690, Stop: 50358, Start Num: 55

Candidate Starts for Neeharika16\_99:

(Start: 55 @50690 has 58 MA's), (Start: 62 @50663 has 2 MA's), (85, 50507), (94, 50468), (106, 50429), (110, 50393),

Gene: Newrala\_102 Start: 51372, Stop: 51040, Start Num: 55

Candidate Starts for Newrala\_102:

(Start: 55 @51372 has 58 MA's), (Start: 62 @51345 has 2 MA's), (85, 51189), (94, 51150), (106, 51111), (110, 51075),

Gene: NicoleTera\_96 Start: 51731, Stop: 51429, Start Num: 51

Candidate Starts for NicoleTera\_96:

(Start: 46 @51737 has 1 MA's), (Start: 51 @51731 has 96 MA's), (82, 51566), (90, 51518), (91, 51512), (95, 51500),

Gene: NothingSpecial\_89 Start: 51297, Stop: 50974, Start Num: 55  
Candidate Starts for NothingSpecial\_89:  
(Start: 55 @51297 has 58 MA's), (Start: 62 @51270 has 2 MA's), (78, 51147), (85, 51111), (90, 51087), (106, 51039), (110, 51003),

Gene: Odin\_96 Start: 51483, Stop: 51175, Start Num: 62  
Candidate Starts for Odin\_96:  
(Start: 60 @51501 has 3 MA's), (Start: 62 @51483 has 2 MA's), (65, 51453), (90, 51300), (101, 51255), (106, 51246), (110, 51210),

Gene: Onglai\_97 Start: 50101, Stop: 49805, Start Num: 49  
Candidate Starts for Onglai\_97:  
(Start: 49 @50101 has 35 MA's), (68, 50023), (70, 50008), (75, 49957), (90, 49891),

Gene: Orange\_100 Start: 50968, Stop: 50651, Start Num: 51  
Candidate Starts for Orange\_100:  
(Start: 51 @50968 has 96 MA's), (78, 50806), (86, 50755),

Gene: PackMan\_94 Start: 49862, Stop: 49566, Start Num: 49  
Candidate Starts for PackMan\_94:  
(Start: 49 @49862 has 35 MA's), (68, 49784), (70, 49769), (75, 49718), (90, 49652),

Gene: PainterBoy\_94 Start: 51441, Stop: 51139, Start Num: 57  
Candidate Starts for PainterBoy\_94:  
(21, 51546), (25, 51537), (41, 51474), (Start: 57 @51441 has 2 MA's), (64, 51393), (65, 51387), (75, 51300), (76, 51297), (87, 51243), (88, 51237), (90, 51225), (102, 51177),

Gene: Petersenfast\_94 Start: 49849, Stop: 49532, Start Num: 51  
Candidate Starts for Petersenfast\_94:  
(Start: 51 @49849 has 96 MA's), (78, 49687), (86, 49636),

Gene: Ph8s\_100 Start: 51547, Stop: 51239, Start Num: 62  
Candidate Starts for Ph8s\_100:  
(26, 51664), (27, 51661), (Start: 60 @51565 has 3 MA's), (Start: 62 @51547 has 2 MA's), (90, 51364), (101, 51319), (105, 51313), (106, 51310), (110, 51274),

Gene: Phaded\_88 Start: 52515, Stop: 52198, Start Num: 55  
Candidate Starts for Phaded\_88:  
(Start: 55 @52515 has 58 MA's), (68, 52446), (75, 52380), (90, 52317), (106, 52263), (110, 52227),

Gene: Phaeder\_100 Start: 51823, Stop: 51527, Start Num: 49  
Candidate Starts for Phaeder\_100:  
(Start: 49 @51823 has 35 MA's), (68, 51745), (70, 51730), (75, 51679), (90, 51613),

Gene: Pharaoh\_81 Start: 49009, Stop: 48674, Start Num: 50  
Candidate Starts for Pharaoh\_81:  
(44, 49021), (Start: 50 @49009 has 4 MA's), (61, 48988), (68, 48928), (90, 48796), (98, 48763), (110, 48706),

Gene: Phlei\_77 Start: 47718, Stop: 47371, Start Num: 54  
Candidate Starts for Phlei\_77:  
(Start: 54 @47718 has 1 MA's), (68, 47640), (69, 47631), (72, 47616), (104, 47454), (109, 47421), (111, 47400),



Gene: Phonnegut\_100 Start: 51833, Stop: 51537, Start Num: 49  
Candidate Starts for Phonnegut\_100:  
(Start: 49 @51833 has 35 MA's), (68, 51755), (70, 51740), (75, 51689), (90, 51623),

Gene: Pioneer\_100 Start: 51833, Stop: 51537, Start Num: 49  
Candidate Starts for Pioneer\_100:  
(Start: 49 @51833 has 35 MA's), (68, 51755), (70, 51740), (75, 51689), (90, 51623),

Gene: Piro94\_95 Start: 51462, Stop: 51169, Start Num: 51  
Candidate Starts for Piro94\_95:  
(Start: 51 @51462 has 96 MA's), (69, 51375), (90, 51252), (96, 51234), (99, 51219),

Gene: Pmask\_100 Start: 51382, Stop: 51050, Start Num: 55  
Candidate Starts for Pmask\_100:  
(Start: 55 @51382 has 58 MA's), (Start: 62 @51355 has 2 MA's), (85, 51199), (106, 51121), (110, 51085),

Gene: Pomar16\_98 Start: 51638, Stop: 51327, Start Num: 55  
Candidate Starts for Pomar16\_98:  
(Start: 55 @51638 has 58 MA's), (78, 51482),

Gene: Power\_95 Start: 52151, Stop: 51861, Start Num: 51  
Candidate Starts for Power\_95:  
(32, 52187), (33, 52175), (Start: 51 @52151 has 96 MA's), (71, 52055), (90, 51944), (96, 51926), (99, 51911),

Gene: Priamo\_101 Start: 50425, Stop: 50093, Start Num: 55  
Candidate Starts for Priamo\_101:  
(23, 50521), (Start: 50 @50437 has 4 MA's), (Start: 55 @50425 has 58 MA's), (Start: 62 @50398 has 2 MA's), (85, 50242), (94, 50203), (106, 50164), (110, 50128),

Gene: Priya\_97 Start: 51485, Stop: 51189, Start Num: 49  
Candidate Starts for Priya\_97:  
(Start: 49 @51485 has 35 MA's), (68, 51407), (70, 51392), (75, 51341), (90, 51275),

Gene: Pukovnik\_89 Start: 51834, Stop: 51508, Start Num: 55  
Candidate Starts for Pukovnik\_89:  
(Start: 55 @51834 has 58 MA's), (63, 51801), (71, 51738), (75, 51690), (90, 51627), (106, 51573), (110, 51537),

Gene: Qobbit\_97 Start: 51447, Stop: 51151, Start Num: 49  
Candidate Starts for Qobbit\_97:  
(Start: 49 @51447 has 35 MA's), (68, 51369), (70, 51354), (75, 51303), (90, 51237),

Gene: QueenB2\_94 Start: 51529, Stop: 51236, Start Num: 51  
Candidate Starts for QueenB2\_94:  
(Start: 51 @51529 has 96 MA's), (Start: 52 @51523 has 2 MA's), (Start: 62 @51502 has 2 MA's), (90, 51319), (96, 51301), (99, 51286),

Gene: QueenBeesly\_95 Start: 52104, Stop: 51814, Start Num: 51  
Candidate Starts for QueenBeesly\_95:

(32, 52140), (33, 52128), (Start: 51 @52104 has 96 MA's), (71, 52008), (90, 51897), (96, 51879), (99, 51864),

Gene: Quokka\_99 Start: 51500, Stop: 51201, Start Num: 51

Candidate Starts for Quokka\_99:

(Start: 51 @51500 has 96 MA's), (Start: 62 @51473 has 2 MA's), (85, 51317), (89, 51302), (91, 51287), (95, 51275),

Gene: Rachaly\_92 Start: 50752, Stop: 50459, Start Num: 51

Candidate Starts for Rachaly\_92:

(35, 50773), (Start: 51 @50752 has 96 MA's), (91, 50536), (99, 50509),

Gene: Rahalelujah\_98 Start: 51421, Stop: 51050, Start Num: 49

Candidate Starts for Rahalelujah\_98:

(Start: 49 @51421 has 35 MA's), (Start: 54 @51409 has 1 MA's), (68, 51325), (77, 51253), (82, 51238), (89, 51199), (106, 51130), (110, 51088),

Gene: RedRock\_96 Start: 52057, Stop: 51743, Start Num: 51

Candidate Starts for RedRock\_96:

(Start: 51 @52057 has 96 MA's), (53, 52048), (82, 51880), (90, 51832), (94, 51817),

Gene: Refuge\_92 Start: 52220, Stop: 51888, Start Num: 56

Candidate Starts for Refuge\_92:

(1, 52604), (2, 52577), (3, 52562), (4, 52556), (5, 52535), (6, 52508), (7, 52502), (8, 52421), (9, 52403), (14, 52349), (16, 52340), (19, 52328), (28, 52310), (44, 52247), (Start: 56 @52220 has 3 MA's), (61, 52205), (Start: 62 @52196 has 2 MA's), (68, 52145), (73, 52115), (75, 52079), (83, 52049), (90, 52013), (91, 52007), (105, 51962), (110, 51923),

Gene: Retro23\_96 Start: 51827, Stop: 51534, Start Num: 51

Candidate Starts for Retro23\_96:

(Start: 46 @51833 has 1 MA's), (Start: 51 @51827 has 96 MA's), (81, 51668), (90, 51617), (96, 51599), (99, 51584),

Gene: Rifter\_104 Start: 50424, Stop: 50092, Start Num: 55

Candidate Starts for Rifter\_104:

(Start: 50 @50436 has 4 MA's), (Start: 55 @50424 has 58 MA's), (Start: 62 @50397 has 2 MA's), (85, 50241), (91, 50211), (106, 50163), (110, 50127),

Gene: Roksolana\_106 Start: 51476, Stop: 51144, Start Num: 55

Candidate Starts for Roksolana\_106:

(Start: 55 @51476 has 58 MA's), (Start: 62 @51449 has 2 MA's), (85, 51293), (94, 51254), (106, 51215), (110, 51179),

Gene: RyeScarlet\_100 Start: 51819, Stop: 51523, Start Num: 49

Candidate Starts for RyeScarlet\_100:

(Start: 49 @51819 has 35 MA's), (68, 51741), (70, 51726), (75, 51675), (90, 51609),

Gene: Sachima\_95 Start: 51847, Stop: 51551, Start Num: 49

Candidate Starts for Sachima\_95:

(Start: 49 @51847 has 35 MA's), (68, 51769), (70, 51754), (75, 51703), (90, 51637),

Gene: Salz\_97 Start: 50146, Stop: 49829, Start Num: 51

Candidate Starts for Salz\_97:

(Start: 51 @50146 has 96 MA's), (78, 49984), (86, 49933),

Gene: Scherzo\_98 Start: 51864, Stop: 51568, Start Num: 49

Candidate Starts for Scherzo\_98:

(Start: 49 @51864 has 35 MA's), (68, 51786), (70, 51771), (75, 51720), (90, 51654),

Gene: SemperFi\_95 Start: 51992, Stop: 51702, Start Num: 51

Candidate Starts for SemperFi\_95:

(32, 52028), (33, 52016), (Start: 51 @51992 has 96 MA's), (71, 51896), (90, 51785), (96, 51767), (99, 51752),

Gene: Serenity\_99 Start: 50858, Stop: 50559, Start Num: 51

Candidate Starts for Serenity\_99:

(Start: 51 @50858 has 96 MA's), (Start: 62 @50831 has 2 MA's), (85, 50675), (89, 50660), (91, 50645), (95, 50633),

Gene: Sham4\_97 Start: 50164, Stop: 49847, Start Num: 51

Candidate Starts for Sham4\_97:

(Start: 51 @50164 has 96 MA's), (78, 50002), (86, 49951),

Gene: SheaKeira\_94 Start: 51085, Stop: 50783, Start Num: 49

Candidate Starts for SheaKeira\_94:

(Start: 49 @51085 has 35 MA's), (Start: 54 @51076 has 1 MA's), (68, 51007), (70, 50992), (105, 50821),

Gene: Smeagan\_97 Start: 52047, Stop: 51745, Start Num: 51

Candidate Starts for Smeagan\_97:

(12, 52185), (Start: 51 @52047 has 96 MA's), (Start: 62 @52008 has 2 MA's), (69, 51948), (85, 51852), (90, 51828), (96, 51810), (99, 51795),

Gene: SmellyB\_103 Start: 50928, Stop: 50596, Start Num: 55

Candidate Starts for SmellyB\_103:

(Start: 55 @50928 has 58 MA's), (Start: 62 @50901 has 2 MA's), (85, 50745), (94, 50706), (106, 50667), (110, 50631),

Gene: SnapTap\_95 Start: 51807, Stop: 51517, Start Num: 51

Candidate Starts for SnapTap\_95:

(32, 51843), (33, 51831), (Start: 51 @51807 has 96 MA's), (71, 51711), (90, 51600), (96, 51582), (99, 51567),

Gene: Snape\_100 Start: 50957, Stop: 50640, Start Num: 51

Candidate Starts for Snape\_100:

(Start: 51 @50957 has 96 MA's), (78, 50795), (86, 50744),

Gene: SororFago\_98 Start: 52138, Stop: 51785, Start Num: 49

Candidate Starts for SororFago\_98:

(40, 52156), (Start: 49 @52138 has 35 MA's), (Start: 62 @52099 has 2 MA's), (73, 52018), (80, 51967), (90, 51913), (93, 51898), (110, 51823),

Gene: Spouty\_97 Start: 51484, Stop: 51188, Start Num: 49

Candidate Starts for Spouty\_97:

(Start: 49 @51484 has 35 MA's), (68, 51406), (70, 51391), (75, 51340), (90, 51274),

Gene: StarStuff\_98 Start: 51600, Stop: 51289, Start Num: 55  
Candidate Starts for StarStuff\_98:  
(Start: 55 @51600 has 58 MA's), (78, 51444),

Gene: Steamy\_92 Start: 52060, Stop: 51728, Start Num: 50  
Candidate Starts for Steamy\_92:  
(Start: 50 @52060 has 4 MA's), (61, 52039), (64, 52006), (68, 51979), (70, 51964), (90, 51847), (110, 51757),

Gene: Sunhee\_102 Start: 50973, Stop: 50626, Start Num: 49  
Candidate Starts for Sunhee\_102:  
(15, 51078), (24, 51054), (Start: 49 @50973 has 35 MA's), (68, 50880), (69, 50871), (73, 50850), (75, 50814), (80, 50799), (90, 50745), (93, 50730), (105, 50697), (110, 50658),

Gene: SuperAwesome\_102 Start: 51433, Stop: 51089, Start Num: 50  
Candidate Starts for SuperAwesome\_102:  
(23, 51517), (Start: 50 @51433 has 4 MA's), (Start: 55 @51421 has 58 MA's), (Start: 62 @51394 has 2 MA's), (85, 51238), (106, 51160), (110, 51124),

Gene: SuperCallie99\_97 Start: 50848, Stop: 50516, Start Num: 55  
Candidate Starts for SuperCallie99\_97:  
(Start: 50 @50860 has 4 MA's), (Start: 55 @50848 has 58 MA's), (Start: 62 @50821 has 2 MA's), (85, 50665), (106, 50587), (110, 50551),

Gene: Superchunk\_99 Start: 51590, Stop: 51264, Start Num: 60  
Candidate Starts for Superchunk\_99:  
(Start: 60 @51590 has 3 MA's), (Start: 62 @51572 has 2 MA's), (65, 51542), (90, 51389), (101, 51344), (106, 51335), (110, 51299),

Gene: SweetiePie\_95 Start: 51940, Stop: 51650, Start Num: 51  
Candidate Starts for SweetiePie\_95:  
(32, 51976), (33, 51964), (Start: 51 @51940 has 96 MA's), (71, 51844), (90, 51733), (96, 51715), (99, 51700),

Gene: TarsusIV\_92 Start: 51423, Stop: 51133, Start Num: 51  
Candidate Starts for TarsusIV\_92:  
(Start: 51 @51423 has 96 MA's), (84, 51246), (90, 51216), (96, 51198),

Gene: Timothy\_100 Start: 50934, Stop: 50617, Start Num: 51  
Candidate Starts for Timothy\_100:  
(Start: 51 @50934 has 96 MA's), (78, 50772), (86, 50721),

Gene: TinyTimmy\_98 Start: 50663, Stop: 50346, Start Num: 51  
Candidate Starts for TinyTimmy\_98:  
(Start: 51 @50663 has 96 MA's), (78, 50501), (86, 50450),

Gene: TipsytheTRex\_94 Start: 51132, Stop: 50833, Start Num: 51  
Candidate Starts for TipsytheTRex\_94:  
(Start: 51 @51132 has 96 MA's), (Start: 62 @51105 has 2 MA's), (71, 51036), (85, 50949), (89, 50934), (91, 50919), (95, 50907),

Gene: Toaka\_96 Start: 51786, Stop: 51364, Start Num: 13  
Candidate Starts for Toaka\_96:

(Start: 13 @51786 has 2 MA's), (17, 51774), (18, 51771), (Start: 50 @51675 has 4 MA's), (59, 51660), (68, 51585), (69, 51576), (82, 51498),

Gene: Tomathan\_98 Start: 51679, Stop: 51368, Start Num: 55  
Candidate Starts for Tomathan\_98:  
(Start: 55 @51679 has 58 MA's),

Gene: ToneTone\_99 Start: 50816, Stop: 50484, Start Num: 55  
Candidate Starts for ToneTone\_99:  
(Start: 55 @50816 has 58 MA's), (Start: 62 @50789 has 2 MA's), (85, 50633), (94, 50594), (106, 50555), (110, 50519),

Gene: Travvers\_98 Start: 51596, Stop: 51285, Start Num: 55  
Candidate Starts for Travvers\_98:  
(Start: 55 @51596 has 58 MA's), (78, 51440),

Gene: Trixie\_94 Start: 52346, Stop: 52047, Start Num: 51  
Candidate Starts for Trixie\_94:  
(Start: 51 @52346 has 96 MA's), (Start: 52 @52340 has 2 MA's), (Start: 62 @52319 has 2 MA's), (68, 52268), (82, 52181), (90, 52133), (95, 52118),

Gene: Trooper\_95 Start: 51322, Stop: 51023, Start Num: 46  
Candidate Starts for Trooper\_95:  
(Start: 46 @51322 has 1 MA's), (Start: 51 @51316 has 96 MA's), (71, 51220), (75, 51172), (90, 51106), (96, 51088), (99, 51073),

Gene: Tubs\_100 Start: 51823, Stop: 51527, Start Num: 49  
Candidate Starts for Tubs\_100:  
(Start: 49 @51823 has 35 MA's), (68, 51745), (70, 51730), (75, 51679), (90, 51613),

Gene: Tucker\_104 Start: 51019, Stop: 50687, Start Num: 55  
Candidate Starts for Tucker\_104:  
(Start: 55 @51019 has 58 MA's), (Start: 62 @50992 has 2 MA's), (85, 50836), (94, 50797), (106, 50758), (110, 50722),

Gene: Turbido\_95 Start: 51902, Stop: 51612, Start Num: 51  
Candidate Starts for Turbido\_95:  
(Start: 51 @51902 has 96 MA's), (71, 51806), (85, 51719), (90, 51695), (91, 51689), (96, 51677), (99, 51662),

Gene: Ugenie5\_86 Start: 49308, Stop: 49012, Start Num: 49  
Candidate Starts for Ugenie5\_86:  
(Start: 49 @49308 has 35 MA's), (68, 49230), (70, 49215), (75, 49164), (90, 49098),

Gene: Updawg\_98 Start: 51856, Stop: 51563, Start Num: 51  
Candidate Starts for Updawg\_98:  
(Start: 51 @51856 has 96 MA's), (69, 51769), (90, 51646), (96, 51628), (99, 51613),

Gene: VA6\_94 Start: 51349, Stop: 51059, Start Num: 51  
Candidate Starts for VA6\_94:  
(Start: 51 @51349 has 96 MA's), (71, 51253), (85, 51166), (90, 51142), (96, 51124),

Gene: VC3\_94 Start: 49945, Stop: 49628, Start Num: 51

Candidate Starts for VC3\_94:

(34, 49969), (Start: 51 @49945 has 96 MA's), (Start: 52 @49939 has 2 MA's), (Start: 62 @49906 has 2 MA's), (65, 49876), (67, 49867), (78, 49783),

Gene: Vanisoa\_93 Start: 52085, Stop: 51657, Start Num: 13

Candidate Starts for Vanisoa\_93:

(Start: 13 @52085 has 2 MA's), (20, 52061), (21, 52058), (25, 52049), (Start: 50 @51968 has 4 MA's), (68, 51878), (70, 51863), (75, 51812), (82, 51791),

Gene: VohminGhazi\_103 Start: 50929, Stop: 50597, Start Num: 55

Candidate Starts for VohminGhazi\_103:

(Start: 55 @50929 has 58 MA's), (Start: 62 @50902 has 2 MA's), (85, 50746), (94, 50707), (106, 50668), (110, 50632),

Gene: WeiHuaDA\_96 Start: 52378, Stop: 52079, Start Num: 51

Candidate Starts for WeiHuaDA\_96:

(Start: 51 @52378 has 96 MA's), (Start: 52 @52372 has 2 MA's), (Start: 62 @52351 has 2 MA's), (68, 52300), (82, 52213), (90, 52165), (95, 52150),

Gene: Whabigail7\_93 Start: 51900, Stop: 51610, Start Num: 51

Candidate Starts for Whabigail7\_93:

(Start: 51 @51900 has 96 MA's), (71, 51804), (85, 51717), (90, 51693), (91, 51687), (96, 51675), (99, 51660),

Gene: WideWale\_98 Start: 51856, Stop: 51563, Start Num: 51

Candidate Starts for WideWale\_98:

(Start: 51 @51856 has 96 MA's), (69, 51769), (90, 51646), (96, 51628), (99, 51613),

Gene: Wiks\_103 Start: 50896, Stop: 50564, Start Num: 55

Candidate Starts for Wiks\_103:

(Start: 55 @50896 has 58 MA's), (Start: 62 @50869 has 2 MA's), (85, 50713), (94, 50674), (106, 50635), (110, 50599),

Gene: WunderPhul\_92 Start: 47498, Stop: 47166, Start Num: 55

Candidate Starts for WunderPhul\_92:

(Start: 55 @47498 has 58 MA's), (Start: 62 @47471 has 2 MA's), (85, 47315), (94, 47276), (106, 47237), (110, 47201),

Gene: XianYue\_93 Start: 51675, Stop: 51385, Start Num: 51

Candidate Starts for XianYue\_93:

(32, 51711), (33, 51699), (Start: 51 @51675 has 96 MA's), (Start: 57 @51660 has 2 MA's), (Start: 62 @51648 has 2 MA's), (64, 51624), (70, 51582), (90, 51468), (99, 51435),

Gene: Yecey3\_102 Start: 51908, Stop: 51612, Start Num: 49

Candidate Starts for Yecey3\_102:

(Start: 49 @51908 has 35 MA's), (Start: 54 @51902 has 1 MA's), (Start: 62 @51884 has 2 MA's), (66, 51851), (68, 51833), (75, 51767), (82, 51746), (94, 51683),

Gene: Yokurt\_102 Start: 50896, Stop: 50564, Start Num: 55

Candidate Starts for Yokurt\_102:

(Start: 55 @50896 has 58 MA's), (Start: 62 @50869 has 2 MA's), (85, 50713), (94, 50674), (106, 50635), (110, 50599),

Gene: Zaka\_104 Start: 50896, Stop: 50564, Start Num: 55

Candidate Starts for Zaka\_104:

(Start: 55 @50896 has 58 MA's), (Start: 62 @50869 has 2 MA's), (85, 50713), (94, 50674), (106, 50635), (110, 50599),

Gene: Zimmer\_91 Start: 51677, Stop: 51342, Start Num: 56

Candidate Starts for Zimmer\_91:

(31, 51749), (44, 51704), (Start: 56 @51677 has 3 MA's), (68, 51599), (73, 51569), (83, 51503), (90, 51467), (100, 51422), (105, 51416), (110, 51377),

Gene: Zulu\_104 Start: 51273, Stop: 50941, Start Num: 55

Candidate Starts for Zulu\_104:

(Start: 55 @51273 has 58 MA's), (Start: 62 @51246 has 2 MA's), (85, 51090), (94, 51051), (106, 51012), (110, 50976),