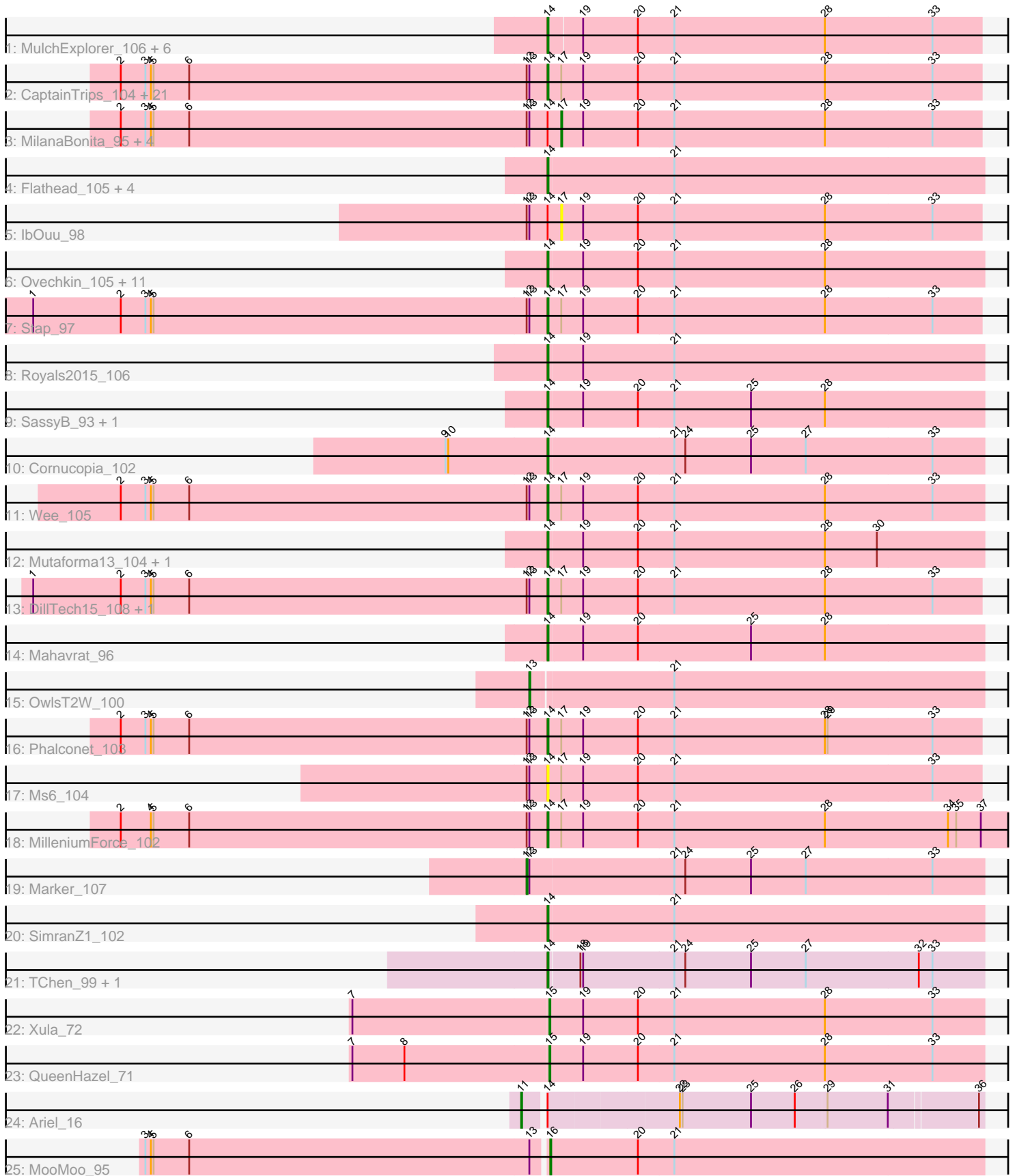


Pham 196493



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 196493 Report

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

Pham number 196493 has 75 members, 5 are drafts.

Phages represented in each track:

- Track 1 : MulchExplorer\_106, GUmbie\_101, DotProduct\_96, Hades\_99, Kimberlium\_103, Boomer\_103, Juice456\_101
- Track 2 : CaptainTrips\_104, Batiatus\_102, Hamulus\_102, Chuckly\_99, Filuzino\_102, Beakin\_95, StAnnes\_107, SG4\_103, Mova\_104, PhesterPhotato\_106, Chevrolet\_106, LittleShirley\_110, DosHalletts\_99, Whatsapiecost\_96, ArcusAngelus\_102, DLane\_102, Seagreen\_103, Fastidio\_105, ShroomBoi\_100, QuickMath\_103, XFactor\_93, Akhila\_96
- Track 3 : MilanaBonita\_95, Fruitloop\_100, Ardmore\_86, IMpilo\_100, Melissauren88\_92
- Track 4 : Flathead\_105, Rockne\_106, Hegedechwinu\_111, PMC\_102, Ogopogo\_107
- Track 5 : IbOuu\_98
- Track 6 : Ovechkin\_105, GigiOuiOui\_97, Juniper1\_94, Wachhund\_99, LunaBlu\_109, Galactic\_107, lbhubesi\_99, Harley\_104, Byougenkin\_99, Kersh\_105, Mozy\_107, Nitzel\_97
- Track 7 : Stap\_97
- Track 8 : Royals2015\_106
- Track 9 : SassyB\_93, PopTart\_93
- Track 10 : Cornucopia\_102
- Track 11 : Wee\_105
- Track 12 : Mutaforma13\_104, Firehouse51\_97
- Track 13 : DillTech15\_108, MinionDave\_100
- Track 14 : Mahavrat\_96
- Track 15 : OwlsT2W\_100
- Track 16 : Phalconet\_103
- Track 17 : Ms6\_104
- Track 18 : MilleniumForce\_102
- Track 19 : Marker\_107
- Track 20 : SimranZ1\_102
- Track 21 : TChen\_99, LunaStella\_99
- Track 22 : Xula\_72
- Track 23 : QueenHazel\_71
- Track 24 : Ariel\_16
- Track 25 : MooMoo\_95

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

The start number called the most often in the published annotations is 14, it was called in 61 of the 70 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Akhila\_96, ArcusAngelus\_102, Batiatus\_102, Beakin\_95, Boomer\_103, Byougenkin\_99, CaptainTrips\_104, Chevrolet\_106, Chuckly\_99, Cornucopia\_102, DLane\_102, DillTech15\_108, DosHalletts\_99, DotProduct\_96, Fastidio\_105, Filuzino\_102, Firehouse51\_97, Flathead\_105, GUmbie\_101, Galactic\_107, GigiOuiOui\_97, Hades\_99, Hamulus\_102, Harley\_104, Hegedechwinu\_111, Ibhubesi\_99, Juice456\_101, Juniper1\_94, Kersh\_105, Kimberlium\_103, LittleShirley\_110, LunaBlu\_109, LunaStella\_99, Mahavrat\_96, MilleniumForce\_102, MinionDave\_100, Mova\_104, Mozy\_107, Ms6\_104, MulchExplorer\_106, Mutaforma13\_104, Nitzel\_97, Ogopogo\_107, Ovechkin\_105, PMC\_102, Phalconet\_103, PhesterPhotato\_106, PopTart\_93, QuickMath\_103, Rockne\_106, Royals2015\_106, SG4\_103, SassyB\_93, Seagreen\_103, ShroomBoi\_100, SimranZ1\_102, StAnnes\_107, Stap\_97, TChen\_99, Wachhund\_99, Wee\_105, Whatsapiecost\_96, XFactor\_93,

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

- Ardmore\_86, Ariel\_16, Fruitloop\_100, IMpilo\_100, IbOuu\_98, Melissauren88\_92, MilanaBonita\_95,

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

- Marker\_107, MooMoo\_95, OwlsT2W\_100, QueenHazel\_71, Xula\_72,

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

Start 11:

- Found in 1 of 75 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ariel\_16 (J),

Start 12:

- Found in 36 of 75 ( 48.0% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 2.8% of time when present
- Phage (with cluster) where this start called: Marker\_107 (F1),

Start 13:

- Found in 38 of 75 ( 50.7% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 2.6% of time when present
- Phage (with cluster) where this start called: OwlsT2W\_100 (F1),

Start 14:

- Found in 70 of 75 ( 93.3% ) of genes in pham
- Manual Annotations of this start: 61 of 70
- Called 90.0% of time when present

- Phage (with cluster) where this start called: Akhila\_96 (F1), ArcusAngelus\_102 (F1), Batiatus\_102 (F1), Beakin\_95 (F1), Boomer\_103 (F1), Byougenkin\_99 (F1), CaptainTrips\_104 (F1), Chevrolet\_106 (F1), Chuckly\_99 (F1), Cornucopia\_102 (F1), DLane\_102 (F1), DillTech15\_108 (F1), DosHalletts\_99 (F1), DotProduct\_96 (F1), Fastidio\_105 (F1), Filuzino\_102 (F1), Firehouse51\_97 (F1), Flathead\_105 (F1), GUmbie\_101 (F1), Galactic\_107 (F1), GigiOuiOui\_97 (F1), Hades\_99 (F1), Hamulus\_102 (F1), Harley\_104 (F1), Hegedechwinu\_111 (F1), Ibhubesi\_99 (F1), Juice456\_101 (F1), Juniper1\_94 (F1), Kersh\_105 (F1), Kimberlium\_103 (F1), LittleShirley\_110 (F1), LunaBlu\_109 (F1), LunaStella\_99 (F4), Mahavrat\_96 (F1), MilleniumForce\_102 (F1), MinionDave\_100 (F1), Mova\_104 (F1), Mozy\_107 (F1), Ms6\_104 (F1), MulchExplorer\_106 (F1), Mutaforma13\_104 (F1), Nitzel\_97 (F1), OgoPogo\_107 (F1), Ovechkin\_105 (F1), PMC\_102 (F1), Phalconet\_103 (F1), PhesterPhotato\_106 (F1), PopTart\_93 (F1), QuickMath\_103 (F1), Rockne\_106 (F1), Royals2015\_106 (F1), SG4\_103 (F1), SassyB\_93 (F1), Seagreen\_103 (F1), ShroomBoi\_100 (F1), SimranZ1\_102 (F1), StAnnes\_107 (F1), Stap\_97 (F1), TChen\_99 (F4), Wachhund\_99 (F1), Wee\_105 (F1), Whatsapiecost\_96 (F1), XFactor\_93 (F1),

Start 15:

- Found in 2 of 75 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: QueenHazel\_71 (I1), Xula\_72 (I1),

Start 16:

- Found in 1 of 75 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MooMoo\_95 (singleton),

Start 17:

- Found in 35 of 75 ( 46.7% ) of genes in pham
- Manual Annotations of this start: 3 of 70
- Called 17.1% of time when present
- Phage (with cluster) where this start called: Ardmore\_86 (F1), Fruitloop\_100 (F1), IMpilo\_100 (F1), IbOuu\_98 (F1), Melissauren88\_92 (F1), MilanaBonita\_95 (F1),

### Summary by clusters:

There are 5 clusters represented in this pham: I1, F1, singleton, J, F4,

Info for manual annotations of cluster F1:

- Start number 12 was manually annotated 1 time for cluster F1.
- Start number 13 was manually annotated 1 time for cluster F1.
- Start number 14 was manually annotated 59 times for cluster F1.
- Start number 17 was manually annotated 3 times for cluster F1.

Info for manual annotations of cluster F4:

- Start number 14 was manually annotated 2 times for cluster F4.

Info for manual annotations of cluster I1:

- Start number 15 was manually annotated 2 times for cluster I1.

Info for manual annotations of cluster J:

•Start number 11 was manually annotated 1 time for cluster J.

**Gene Information:**

Gene: Akhila\_96 Start: 54481, Stop: 54954, Start Num: 14

Candidate Starts for Akhila\_96:

(2, 54016), (3, 54043), (4, 54049), (5, 54052), (6, 54091), (Start: 12 @54460 has 1 MA's), (Start: 13 @54463 has 1 MA's), (Start: 14 @54481 has 61 MA's), (Start: 17 @54496 has 3 MA's), (19, 54520), (20, 54580), (21, 54619), (28, 54784), (33, 54901),

Gene: ArcusAngelus\_102 Start: 56799, Stop: 57272, Start Num: 14

Candidate Starts for ArcusAngelus\_102:

(2, 56334), (3, 56361), (4, 56367), (5, 56370), (6, 56409), (Start: 12 @56778 has 1 MA's), (Start: 13 @56781 has 1 MA's), (Start: 14 @56799 has 61 MA's), (Start: 17 @56814 has 3 MA's), (19, 56838), (20, 56898), (21, 56937), (28, 57102), (33, 57219),

Gene: Ardmore\_86 Start: 50385, Stop: 50843, Start Num: 17

Candidate Starts for Ardmore\_86:

(2, 49905), (3, 49932), (4, 49938), (5, 49941), (6, 49980), (Start: 12 @50349 has 1 MA's), (Start: 13 @50352 has 1 MA's), (Start: 14 @50370 has 61 MA's), (Start: 17 @50385 has 3 MA's), (19, 50409), (20, 50469), (21, 50508), (28, 50673), (33, 50790),

Gene: Ariel\_16 Start: 10208, Stop: 10687, Start Num: 11

Candidate Starts for Ariel\_16:

(Start: 11 @10208 has 1 MA's), (Start: 14 @10226 has 61 MA's), (22, 10364), (23, 10367), (25, 10442), (26, 10490), (29, 10523), (31, 10589), (36, 10682),

Gene: Batiatus\_102 Start: 55920, Stop: 56396, Start Num: 14

Candidate Starts for Batiatus\_102:

(2, 55455), (3, 55482), (4, 55488), (5, 55491), (6, 55530), (Start: 12 @55899 has 1 MA's), (Start: 13 @55902 has 1 MA's), (Start: 14 @55920 has 61 MA's), (Start: 17 @55935 has 3 MA's), (19, 55959), (20, 56019), (21, 56058), (28, 56223), (33, 56340),

Gene: Beakin\_95 Start: 53183, Stop: 53656, Start Num: 14

Candidate Starts for Beakin\_95:

(2, 52718), (3, 52745), (4, 52751), (5, 52754), (6, 52793), (Start: 12 @53162 has 1 MA's), (Start: 13 @53165 has 1 MA's), (Start: 14 @53183 has 61 MA's), (Start: 17 @53198 has 3 MA's), (19, 53222), (20, 53282), (21, 53321), (28, 53486), (33, 53603),

Gene: Boomer\_103 Start: 56660, Stop: 57130, Start Num: 14

Candidate Starts for Boomer\_103:

(Start: 14 @56660 has 61 MA's), (19, 56696), (20, 56756), (21, 56795), (28, 56960), (33, 57077),

Gene: Byougenkin\_99 Start: 53124, Stop: 53597, Start Num: 14

Candidate Starts for Byougenkin\_99:

(Start: 14 @53124 has 61 MA's), (19, 53160), (20, 53220), (21, 53259), (28, 53424),

Gene: CaptainTrips\_104 Start: 55558, Stop: 56031, Start Num: 14

Candidate Starts for CaptainTrips\_104:

(2, 55093), (3, 55120), (4, 55126), (5, 55129), (6, 55168), (Start: 12 @55537 has 1 MA's), (Start: 13 @55540 has 1 MA's), (Start: 14 @55558 has 61 MA's), (Start: 17 @55573 has 3 MA's), (19, 55597), (20, 55657), (21, 55696), (28, 55861), (33, 55978),

Gene: Chevrolet\_106 Start: 56800, Stop: 57273, Start Num: 14

Candidate Starts for Chevrolet\_106:

(2, 56335), (3, 56362), (4, 56368), (5, 56371), (6, 56410), (Start: 12 @56779 has 1 MA's), (Start: 13 @56782 has 1 MA's), (Start: 14 @56800 has 61 MA's), (Start: 17 @56815 has 3 MA's), (19, 56839), (20, 56899), (21, 56938), (28, 57103), (33, 57220),

Gene: Chuckly\_99 Start: 52600, Stop: 53076, Start Num: 14

Candidate Starts for Chuckly\_99:

(2, 52135), (3, 52162), (4, 52168), (5, 52171), (6, 52210), (Start: 12 @52579 has 1 MA's), (Start: 13 @52582 has 1 MA's), (Start: 14 @52600 has 61 MA's), (Start: 17 @52615 has 3 MA's), (19, 52639), (20, 52699), (21, 52738), (28, 52903), (33, 53020),

Gene: Cornucopia\_102 Start: 53860, Stop: 54333, Start Num: 14

Candidate Starts for Cornucopia\_102:

(9, 53749), (10, 53752), (Start: 14 @53860 has 61 MA's), (21, 53995), (24, 54007), (25, 54079), (27, 54139), (33, 54277),

Gene: DLane\_102 Start: 57129, Stop: 57602, Start Num: 14

Candidate Starts for DLane\_102:

(2, 56664), (3, 56691), (4, 56697), (5, 56700), (6, 56739), (Start: 12 @57108 has 1 MA's), (Start: 13 @57111 has 1 MA's), (Start: 14 @57129 has 61 MA's), (Start: 17 @57144 has 3 MA's), (19, 57168), (20, 57228), (21, 57267), (28, 57432), (33, 57549),

Gene: DillTech15\_108 Start: 56028, Stop: 56501, Start Num: 14

Candidate Starts for DillTech15\_108:

(1, 55467), (2, 55563), (3, 55590), (4, 55596), (5, 55599), (6, 55638), (Start: 12 @56007 has 1 MA's), (Start: 13 @56010 has 1 MA's), (Start: 14 @56028 has 61 MA's), (Start: 17 @56043 has 3 MA's), (19, 56067), (20, 56127), (21, 56166), (28, 56331), (33, 56448),

Gene: DosHalletts\_99 Start: 56180, Stop: 56653, Start Num: 14

Candidate Starts for DosHalletts\_99:

(2, 55715), (3, 55742), (4, 55748), (5, 55751), (6, 55790), (Start: 12 @56159 has 1 MA's), (Start: 13 @56162 has 1 MA's), (Start: 14 @56180 has 61 MA's), (Start: 17 @56195 has 3 MA's), (19, 56219), (20, 56279), (21, 56318), (28, 56483), (33, 56600),

Gene: DotProduct\_96 Start: 53549, Stop: 54022, Start Num: 14

Candidate Starts for DotProduct\_96:

(Start: 14 @53549 has 61 MA's), (19, 53585), (20, 53645), (21, 53684), (28, 53849), (33, 53966),

Gene: Fastidio\_105 Start: 54069, Stop: 54542, Start Num: 14

Candidate Starts for Fastidio\_105:

(2, 53604), (3, 53631), (4, 53637), (5, 53640), (6, 53679), (Start: 12 @54048 has 1 MA's), (Start: 13 @54051 has 1 MA's), (Start: 14 @54069 has 61 MA's), (Start: 17 @54084 has 3 MA's), (19, 54108), (20, 54168), (21, 54207), (28, 54372), (33, 54489),

Gene: Filuzino\_102 Start: 57535, Stop: 58008, Start Num: 14

Candidate Starts for Filuzino\_102:

(2, 57070), (3, 57097), (4, 57103), (5, 57106), (6, 57145), (Start: 12 @57514 has 1 MA's), (Start: 13 @57517 has 1 MA's), (Start: 14 @57535 has 61 MA's), (Start: 17 @57550 has 3 MA's), (19, 57574),

(20, 57634), (21, 57673), (28, 57838), (33, 57955),

Gene: Firehouse51\_97 Start: 56605, Stop: 57078, Start Num: 14

Candidate Starts for Firehouse51\_97:

(Start: 14 @56605 has 61 MA's), (19, 56641), (20, 56701), (21, 56740), (28, 56905), (30, 56962),

Gene: Flathead\_105 Start: 56108, Stop: 56581, Start Num: 14

Candidate Starts for Flathead\_105:

(Start: 14 @56108 has 61 MA's), (21, 56243),

Gene: Fruitloop\_100 Start: 56715, Stop: 57173, Start Num: 17

Candidate Starts for Fruitloop\_100:

(2, 56235), (3, 56262), (4, 56268), (5, 56271), (6, 56310), (Start: 12 @56679 has 1 MA's), (Start: 13 @56682 has 1 MA's), (Start: 14 @56700 has 61 MA's), (Start: 17 @56715 has 3 MA's), (19, 56739), (20, 56799), (21, 56838), (28, 57003), (33, 57120),

Gene: GUmbie\_101 Start: 55573, Stop: 56046, Start Num: 14

Candidate Starts for GUmbie\_101:

(Start: 14 @55573 has 61 MA's), (19, 55609), (20, 55669), (21, 55708), (28, 55873), (33, 55990),

Gene: Galactic\_107 Start: 56300, Stop: 56773, Start Num: 14

Candidate Starts for Galactic\_107:

(Start: 14 @56300 has 61 MA's), (19, 56336), (20, 56396), (21, 56435), (28, 56600),

Gene: GigiOuiOui\_97 Start: 54828, Stop: 55301, Start Num: 14

Candidate Starts for GigiOuiOui\_97:

(Start: 14 @54828 has 61 MA's), (19, 54864), (20, 54924), (21, 54963), (28, 55128),

Gene: Hades\_99 Start: 53219, Stop: 53689, Start Num: 14

Candidate Starts for Hades\_99:

(Start: 14 @53219 has 61 MA's), (19, 53255), (20, 53315), (21, 53354), (28, 53519), (33, 53636),

Gene: Hamulus\_102 Start: 55385, Stop: 55858, Start Num: 14

Candidate Starts for Hamulus\_102:

(2, 54920), (3, 54947), (4, 54953), (5, 54956), (6, 54995), (Start: 12 @55364 has 1 MA's), (Start: 13 @55367 has 1 MA's), (Start: 14 @55385 has 61 MA's), (Start: 17 @55400 has 3 MA's), (19, 55424), (20, 55484), (21, 55523), (28, 55688), (33, 55805),

Gene: Harley\_104 Start: 56809, Stop: 57282, Start Num: 14

Candidate Starts for Harley\_104:

(Start: 14 @56809 has 61 MA's), (19, 56845), (20, 56905), (21, 56944), (28, 57109),

Gene: Hegedechwinu\_111 Start: 56173, Stop: 56646, Start Num: 14

Candidate Starts for Hegedechwinu\_111:

(Start: 14 @56173 has 61 MA's), (21, 56308),

Gene: IMPilo\_100 Start: 54178, Stop: 54636, Start Num: 17

Candidate Starts for IMPilo\_100:

(2, 53698), (3, 53725), (4, 53731), (5, 53734), (6, 53773), (Start: 12 @54142 has 1 MA's), (Start: 13 @54145 has 1 MA's), (Start: 14 @54163 has 61 MA's), (Start: 17 @54178 has 3 MA's), (19, 54202), (20, 54262), (21, 54301), (28, 54466), (33, 54583),

Gene: lbOuu\_98 Start: 53542, Stop: 54000, Start Num: 17

Candidate Starts for IbOuu\_98:

(Start: 12 @53506 has 1 MA's), (Start: 13 @53509 has 1 MA's), (Start: 14 @53527 has 61 MA's),  
(Start: 17 @53542 has 3 MA's), (19, 53566), (20, 53626), (21, 53665), (28, 53830), (33, 53947),

Gene: lbhubesi\_99 Start: 53678, Stop: 54151, Start Num: 14

Candidate Starts for lbhubesi\_99:

(Start: 14 @53678 has 61 MA's), (19, 53714), (20, 53774), (21, 53813), (28, 53978),

Gene: Juice456\_101 Start: 55348, Stop: 55818, Start Num: 14

Candidate Starts for Juice456\_101:

(Start: 14 @55348 has 61 MA's), (19, 55384), (20, 55444), (21, 55483), (28, 55648), (33, 55765),

Gene: Juniper1\_94 Start: 54576, Stop: 55049, Start Num: 14

Candidate Starts for Juniper1\_94:

(Start: 14 @54576 has 61 MA's), (19, 54612), (20, 54672), (21, 54711), (28, 54876),

Gene: Kersh\_105 Start: 58630, Stop: 59103, Start Num: 14

Candidate Starts for Kersh\_105:

(Start: 14 @58630 has 61 MA's), (19, 58666), (20, 58726), (21, 58765), (28, 58930),

Gene: Kimberlium\_103 Start: 55448, Stop: 55918, Start Num: 14

Candidate Starts for Kimberlium\_103:

(Start: 14 @55448 has 61 MA's), (19, 55484), (20, 55544), (21, 55583), (28, 55748), (33, 55865),

Gene: LittleShirley\_110 Start: 57229, Stop: 57702, Start Num: 14

Candidate Starts for LittleShirley\_110:

(2, 56764), (3, 56791), (4, 56797), (5, 56800), (6, 56839), (Start: 12 @57208 has 1 MA's), (Start: 13 @57211 has 1 MA's), (Start: 14 @57229 has 61 MA's), (Start: 17 @57244 has 3 MA's), (19, 57268),  
(20, 57328), (21, 57367), (28, 57532), (33, 57649),

Gene: LunaBlu\_109 Start: 57722, Stop: 58195, Start Num: 14

Candidate Starts for LunaBlu\_109:

(Start: 14 @57722 has 61 MA's), (19, 57758), (20, 57818), (21, 57857), (28, 58022),

Gene: LunaStella\_99 Start: 54190, Stop: 54663, Start Num: 14

Candidate Starts for LunaStella\_99:

(Start: 14 @54190 has 61 MA's), (18, 54223), (19, 54226), (21, 54325), (24, 54337), (25, 54409), (27, 54469), (32, 54592), (33, 54607),

Gene: Mahavrat\_96 Start: 53605, Stop: 54078, Start Num: 14

Candidate Starts for Mahavrat\_96:

(Start: 14 @53605 has 61 MA's), (19, 53641), (20, 53701), (25, 53824), (28, 53905),

Gene: Marker\_107 Start: 57234, Stop: 57731, Start Num: 12

Candidate Starts for Marker\_107:

(Start: 12 @57234 has 1 MA's), (Start: 13 @57237 has 1 MA's), (21, 57393), (24, 57405), (25, 57477),  
(27, 57537), (33, 57675),

Gene: Melissauren88\_92 Start: 52600, Stop: 53058, Start Num: 17

Candidate Starts for Melissauren88\_92:

(2, 52120), (3, 52147), (4, 52153), (5, 52156), (6, 52195), (Start: 12 @52564 has 1 MA's), (Start: 13 @52567 has 1 MA's), (Start: 14 @52585 has 61 MA's), (Start: 17 @52600 has 3 MA's), (19, 52624),  
(20, 52684), (21, 52723), (28, 52888), (33, 53005),



Gene: MilanaBonita\_95 Start: 54496, Stop: 54954, Start Num: 17

Candidate Starts for MilanaBonita\_95:

(2, 54016), (3, 54043), (4, 54049), (5, 54052), (6, 54091), (Start: 12 @54460 has 1 MA's), (Start: 13 @54463 has 1 MA's), (Start: 14 @54481 has 61 MA's), (Start: 17 @54496 has 3 MA's), (19, 54520), (20, 54580), (21, 54619), (28, 54784), (33, 54901),

Gene: MilleniumForce\_102 Start: 56288, Stop: 56809, Start Num: 14

Candidate Starts for MilleniumForce\_102:

(2, 55823), (4, 55856), (5, 55859), (6, 55898), (Start: 12 @56267 has 1 MA's), (Start: 13 @56270 has 1 MA's), (Start: 14 @56288 has 61 MA's), (Start: 17 @56303 has 3 MA's), (19, 56327), (20, 56387), (21, 56426), (28, 56591), (34, 56726), (35, 56735), (37, 56762),

Gene: MinionDave\_100 Start: 56257, Stop: 56730, Start Num: 14

Candidate Starts for MinionDave\_100:

(1, 55696), (2, 55792), (3, 55819), (4, 55825), (5, 55828), (6, 55867), (Start: 12 @56236 has 1 MA's), (Start: 13 @56239 has 1 MA's), (Start: 14 @56257 has 61 MA's), (Start: 17 @56272 has 3 MA's), (19, 56296), (20, 56356), (21, 56395), (28, 56560), (33, 56677),

Gene: MooMoo\_95 Start: 53643, Stop: 54116, Start Num: 16

Candidate Starts for MooMoo\_95:

(3, 53208), (4, 53214), (5, 53217), (6, 53256), (Start: 13 @53628 has 1 MA's), (Start: 16 @53643 has 1 MA's), (20, 53739), (21, 53778),

Gene: Mova\_104 Start: 56218, Stop: 56691, Start Num: 14

Candidate Starts for Mova\_104:

(2, 55753), (3, 55780), (4, 55786), (5, 55789), (6, 55828), (Start: 12 @56197 has 1 MA's), (Start: 13 @56200 has 1 MA's), (Start: 14 @56218 has 61 MA's), (Start: 17 @56233 has 3 MA's), (19, 56257), (20, 56317), (21, 56356), (28, 56521), (33, 56638),

Gene: Mozy\_107 Start: 56105, Stop: 56578, Start Num: 14

Candidate Starts for Mozy\_107:

(Start: 14 @56105 has 61 MA's), (19, 56141), (20, 56201), (21, 56240), (28, 56405),

Gene: Ms6\_104 Start: 52476, Stop: 52949, Start Num: 14

Candidate Starts for Ms6\_104:

(Start: 12 @52455 has 1 MA's), (Start: 13 @52458 has 1 MA's), (Start: 14 @52476 has 61 MA's), (Start: 17 @52491 has 3 MA's), (19, 52515), (20, 52575), (21, 52614), (33, 52896),

Gene: MulchExplorer\_106 Start: 55119, Stop: 55589, Start Num: 14

Candidate Starts for MulchExplorer\_106:

(Start: 14 @55119 has 61 MA's), (19, 55155), (20, 55215), (21, 55254), (28, 55419), (33, 55536),

Gene: Mutaforma13\_104 Start: 56140, Stop: 56613, Start Num: 14

Candidate Starts for Mutaforma13\_104:

(Start: 14 @56140 has 61 MA's), (19, 56176), (20, 56236), (21, 56275), (28, 56440), (30, 56497),

Gene: Nitzel\_97 Start: 53296, Stop: 53769, Start Num: 14

Candidate Starts for Nitzel\_97:

(Start: 14 @53296 has 61 MA's), (19, 53332), (20, 53392), (21, 53431), (28, 53596),

Gene: Ogopogo\_107 Start: 55303, Stop: 55776, Start Num: 14

Candidate Starts for Ogopogo\_107:

(Start: 14 @55303 has 61 MA's), (21, 55438),

Gene: Ovechkin\_105 Start: 56777, Stop: 57250, Start Num: 14

Candidate Starts for Ovechkin\_105:

(Start: 14 @56777 has 61 MA's), (19, 56813), (20, 56873), (21, 56912), (28, 57077),

Gene: OwlsT2W\_100 Start: 54967, Stop: 55455, Start Num: 13

Candidate Starts for OwlsT2W\_100:

(Start: 13 @54967 has 1 MA's), (21, 55117),

Gene: PMC\_102 Start: 55131, Stop: 55604, Start Num: 14

Candidate Starts for PMC\_102:

(Start: 14 @55131 has 61 MA's), (21, 55266),

Gene: Phalconet\_103 Start: 55878, Stop: 56351, Start Num: 14

Candidate Starts for Phalconet\_103:

(2, 55413), (3, 55440), (4, 55446), (5, 55449), (6, 55488), (Start: 12 @55857 has 1 MA's), (Start: 13 @55860 has 1 MA's), (Start: 14 @55878 has 61 MA's), (Start: 17 @55893 has 3 MA's), (19, 55917), (20, 55977), (21, 56016), (28, 56181), (29, 56184), (33, 56298),

Gene: PhesterPhotato\_106 Start: 55852, Stop: 56325, Start Num: 14

Candidate Starts for PhesterPhotato\_106:

(2, 55387), (3, 55414), (4, 55420), (5, 55423), (6, 55462), (Start: 12 @55831 has 1 MA's), (Start: 13 @55834 has 1 MA's), (Start: 14 @55852 has 61 MA's), (Start: 17 @55867 has 3 MA's), (19, 55891), (20, 55951), (21, 55990), (28, 56155), (33, 56272),

Gene: PopTart\_93 Start: 53534, Stop: 54007, Start Num: 14

Candidate Starts for PopTart\_93:

(Start: 14 @53534 has 61 MA's), (19, 53570), (20, 53630), (21, 53669), (25, 53753), (28, 53834),

Gene: QueenHazel\_71 Start: 46520, Stop: 46993, Start Num: 15

Candidate Starts for QueenHazel\_71:

(7, 46307), (8, 46364), (Start: 15 @46520 has 2 MA's), (19, 46556), (20, 46616), (21, 46655), (28, 46820), (33, 46937),

Gene: QuickMath\_103 Start: 55756, Stop: 56229, Start Num: 14

Candidate Starts for QuickMath\_103:

(2, 55291), (3, 55318), (4, 55324), (5, 55327), (6, 55366), (Start: 12 @55735 has 1 MA's), (Start: 13 @55738 has 1 MA's), (Start: 14 @55756 has 61 MA's), (Start: 17 @55771 has 3 MA's), (19, 55795), (20, 55855), (21, 55894), (28, 56059), (33, 56176),

Gene: Rockne\_106 Start: 55143, Stop: 55616, Start Num: 14

Candidate Starts for Rockne\_106:

(Start: 14 @55143 has 61 MA's), (21, 55278),

Gene: Royals2015\_106 Start: 55014, Stop: 55487, Start Num: 14

Candidate Starts for Royals2015\_106:

(Start: 14 @55014 has 61 MA's), (19, 55050), (21, 55149),

Gene: SG4\_103 Start: 57246, Stop: 57719, Start Num: 14

Candidate Starts for SG4\_103:

(2, 56781), (3, 56808), (4, 56814), (5, 56817), (6, 56856), (Start: 12 @57225 has 1 MA's), (Start: 13 @57228 has 1 MA's), (Start: 14 @57246 has 61 MA's), (Start: 17 @57261 has 3 MA's), (19, 57285),

(20, 57345), (21, 57384), (28, 57549), (33, 57666),

Gene: SassyB\_93 Start: 53534, Stop: 54007, Start Num: 14

Candidate Starts for SassyB\_93:

(Start: 14 @53534 has 61 MA's), (19, 53570), (20, 53630), (21, 53669), (25, 53753), (28, 53834),

Gene: Seagreen\_103 Start: 56384, Stop: 56857, Start Num: 14

Candidate Starts for Seagreen\_103:

(2, 55919), (3, 55946), (4, 55952), (5, 55955), (6, 55994), (Start: 12 @56363 has 1 MA's), (Start: 13 @56366 has 1 MA's), (Start: 14 @56384 has 61 MA's), (Start: 17 @56399 has 3 MA's), (19, 56423), (20, 56483), (21, 56522), (28, 56687), (33, 56804),

Gene: ShroomBoi\_100 Start: 56090, Stop: 56563, Start Num: 14

Candidate Starts for ShroomBoi\_100:

(2, 55625), (3, 55652), (4, 55658), (5, 55661), (6, 55700), (Start: 12 @56069 has 1 MA's), (Start: 13 @56072 has 1 MA's), (Start: 14 @56090 has 61 MA's), (Start: 17 @56105 has 3 MA's), (19, 56129), (20, 56189), (21, 56228), (28, 56393), (33, 56510),

Gene: SimranZ1\_102 Start: 55162, Stop: 55635, Start Num: 14

Candidate Starts for SimranZ1\_102:

(Start: 14 @55162 has 61 MA's), (21, 55297),

Gene: StAnnes\_107 Start: 57587, Stop: 58060, Start Num: 14

Candidate Starts for StAnnes\_107:

(2, 57122), (3, 57149), (4, 57155), (5, 57158), (6, 57197), (Start: 12 @57566 has 1 MA's), (Start: 13 @57569 has 1 MA's), (Start: 14 @57587 has 61 MA's), (Start: 17 @57602 has 3 MA's), (19, 57626), (20, 57686), (21, 57725), (28, 57890), (33, 58007),

Gene: Stap\_97 Start: 53013, Stop: 53486, Start Num: 14

Candidate Starts for Stap\_97:

(1, 52452), (2, 52548), (3, 52575), (4, 52581), (5, 52584), (Start: 12 @52992 has 1 MA's), (Start: 13 @52995 has 1 MA's), (Start: 14 @53013 has 61 MA's), (Start: 17 @53028 has 3 MA's), (19, 53052), (20, 53112), (21, 53151), (28, 53316), (33, 53433),

Gene: TChen\_99 Start: 56141, Stop: 56614, Start Num: 14

Candidate Starts for TChen\_99:

(Start: 14 @56141 has 61 MA's), (18, 56174), (19, 56177), (21, 56276), (24, 56288), (25, 56360), (27, 56420), (32, 56543), (33, 56558),

Gene: Wachhund\_99 Start: 52953, Stop: 53426, Start Num: 14

Candidate Starts for Wachhund\_99:

(Start: 14 @52953 has 61 MA's), (19, 52989), (20, 53049), (21, 53088), (28, 53253),

Gene: Wee\_105 Start: 57330, Stop: 57806, Start Num: 14

Candidate Starts for Wee\_105:

(2, 56865), (3, 56892), (4, 56898), (5, 56901), (6, 56940), (Start: 12 @57309 has 1 MA's), (Start: 13 @57312 has 1 MA's), (Start: 14 @57330 has 61 MA's), (Start: 17 @57345 has 3 MA's), (19, 57369), (20, 57429), (21, 57468), (28, 57633), (33, 57750),

Gene: Whatsapiecost\_96 Start: 51056, Stop: 51529, Start Num: 14

Candidate Starts for Whatsapiecost\_96:

(2, 50591), (3, 50618), (4, 50624), (5, 50627), (6, 50666), (Start: 12 @51035 has 1 MA's), (Start: 13 @51038 has 1 MA's), (Start: 14 @51056 has 61 MA's), (Start: 17 @51071 has 3 MA's), (19, 51095),

(20, 51155), (21, 51194), (28, 51359), (33, 51476),

Gene: XFactor\_93 Start: 53847, Stop: 54320, Start Num: 14

Candidate Starts for XFactor\_93:

(2, 53382), (3, 53409), (4, 53415), (5, 53418), (6, 53457), (Start: 12 @53826 has 1 MA's), (Start: 13 @53829 has 1 MA's), (Start: 14 @53847 has 61 MA's), (Start: 17 @53862 has 3 MA's), (19, 53886), (20, 53946), (21, 53985), (28, 54150), (33, 54267),

Gene: Xula\_72 Start: 47007, Stop: 47480, Start Num: 15

Candidate Starts for Xula\_72:

(7, 46794), (Start: 15 @47007 has 2 MA's), (19, 47043), (20, 47103), (21, 47142), (28, 47307), (33, 47424),