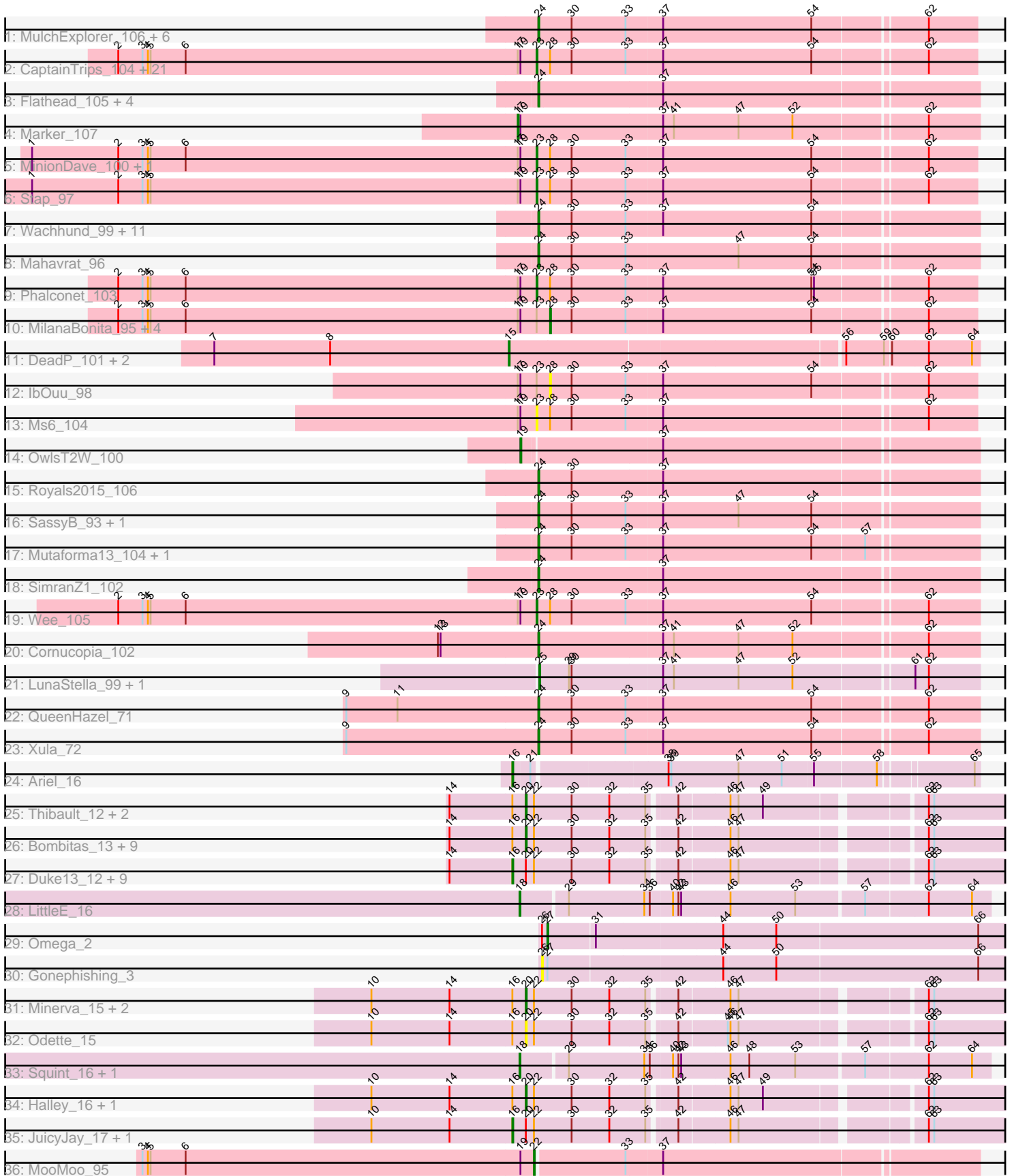


Pham 192443



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 192443 Report

This analysis was run 11/02/24 on database version 579.

Pham number 192443 has 113 members, 8 are drafts.

Phages represented in each track:

- Track 1 : MulchExplorer\_106, DotProduct\_96, Kimberlium\_103, GUmbie\_101, Hades\_99, Boomer\_103, Juice456\_101
- Track 2 : CaptainTrips\_104, PhesterPhotato\_106, DosHalletts\_99, DLane\_102, ShroomBoi\_100, Filuzino\_102, LittleShirley\_110, ArcusAngelus\_102, Seagreen\_103, Chuckly\_99, Hamulus\_102, StAnnes\_107, SG4\_103, Chevrolet\_106, Whatsapiecost\_96, Mova\_104, Fastidio\_105, XFactor\_93, Batiatus\_102, QuickMath\_103, Beakin\_95, Akhila\_96
- Track 3 : Flathead\_105, Rockne\_106, PMC\_102, Ogotogo\_107, Hegedechwinu\_111
- Track 4 : Marker\_107
- Track 5 : MinionDave\_100, DillTech15\_108
- Track 6 : Stap\_97
- Track 7 : Wachhund\_99, Galactic\_107, LunaBlu\_109, Nitzel\_97, Ovechkin\_105, GigiOuiOui\_97, Mozy\_107, Ibhubesi\_99, Kersh\_105, Harley\_104, Byougenkin\_99, Juniper1\_94
- Track 8 : Mahavrat\_96
- Track 9 : Phalconet\_103
- Track 10 : MilanaBonita\_95, Ardmore\_86, Fruitloop\_100, Melissauren88\_92, IMpilo\_100
- Track 11 : DeadP\_101, Tweety\_102, Dante\_99
- Track 12 : IbOuu\_98
- Track 13 : Ms6\_104
- Track 14 : OwlsT2W\_100
- Track 15 : Royals2015\_106
- Track 16 : SassyB\_93, PopTart\_93
- Track 17 : Mutaforma13\_104, Firehouse51\_97
- Track 18 : SimranZ1\_102
- Track 19 : Wee\_105
- Track 20 : Cornucopia\_102
- Track 21 : LunaStella\_99, TChen\_99
- Track 22 : QueenHazel\_71
- Track 23 : Xula\_72
- Track 24 : Ariel\_16
- Track 25 : Thibault\_12, Constella\_11, Bobby\_17
- Track 26 : Bombitas\_13, Ejimix\_17, Phoebus\_16, Pound\_16, DmpstrDiver\_15, Hughesyang\_15, Bagrid\_14, Optimus\_13, BAKA\_12, ThreeRngTarjay\_15

- Track 27 : Duke13\_12, HokkenD\_11, Schatzie\_14, EricMillard\_16, Beem\_16, Dove\_13, Wanda\_16, NihilNomen\_15, Yeet\_14, Kalah2\_16
- Track 28 : LittleE\_16
- Track 29 : Omega\_2
- Track 30 : Gonephishing\_3
- Track 31 : Minerva\_15, Klein\_16, Zelink\_16
- Track 32 : Odette\_15
- Track 33 : Squint\_16, Lucky2013\_16
- Track 34 : Halley\_16, Redno2\_15
- Track 35 : JuicyJay\_17, Dallas\_15
- Track 36 : 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 24, it was called in 33 of the 105 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Boomer\_103, Byougenkin\_99, Cornucopia\_102, DotProduct\_96, Firehouse51\_97, Flathead\_105, GUmbe\_101, Galactic\_107, GigiOuiOui\_97, Hades\_99, Harley\_104, Hegedechwinu\_111, Ibhubesi\_99, Juice456\_101, Juniper1\_94, Kersh\_105, Kimberlium\_103, LunaBlu\_109, Mahavrat\_96, Mozy\_107, MulchExplorer\_106, Mutaforma13\_104, Nitzel\_97, OgoPogo\_107, Ovechkin\_105, PMC\_102, PopTart\_93, QueenHazel\_71, Rockne\_106, Royals2015\_106, SassyB\_93, SimranZ1\_102, Wachhund\_99, Xula\_72,

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

- 

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

- Akhila\_96, ArcusAngelus\_102, Ardmore\_86, Ariel\_16, BAKA\_12, Bagrid\_14, Batiatus\_102, Beakin\_95, Beem\_16, Bobby\_17, Bombitas\_13, CaptainTrips\_104, Chevrolet\_106, Chuckly\_99, Constella\_11, DLane\_102, Dallas\_15, Dante\_99, DeadP\_101, DillTech15\_108, DmpstrDiver\_15, DosHalletts\_99, Dove\_13, Duke13\_12, Ejimix\_17, EricMillard\_16, Fastidio\_105, Filuzino\_102, Fruitloop\_100, Gonephishing\_3, Halley\_16, Hamulus\_102, HokkenD\_11, Hughesyang\_15, IMpilo\_100, IbOuu\_98, JuicyJay\_17, Kalah2\_16, Klein\_16, LittleE\_16, LittleShirley\_110, Lucky2013\_16, LunaStella\_99, Marker\_107, Melissauren88\_92, MilanaBonita\_95, Minerva\_15, MinionDave\_100, MooMoo\_95, Mova\_104, Ms6\_104, NihilNomen\_15, Odette\_15, Omega\_2, Optimus\_13, OwlsT2W\_100, Phalconet\_103, PhesterPhotato\_106, Phoebus\_16, Pound\_16, QuickMath\_103, Redno2\_15, SG4\_103, Schatzie\_14, Seagreen\_103, ShroomBoi\_100, Squint\_16, StAnnes\_107, Stap\_97, TChen\_99, Thibault\_12, ThreeRngTarjay\_15, Tweety\_102, Wanda\_16, Wee\_105, Whatsapiecost\_96, XFactor\_93, Yeet\_14, Zelink\_16,

**Summary by start number:**

Start 15:

- Found in 3 of 113 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 3 of 105

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dante\_99 (F1), DeadP\_101 (F1), Tweety\_102 (F1),

#### Start 16:

- Found in 32 of 113 ( 28.3% ) of genes in pham
- Manual Annotations of this start: 13 of 105
- Called 40.6% of time when present
- Phage (with cluster) where this start called: Ariel\_16 (J), Beem\_16 (J), Dallas\_15 (J), Dove\_13 (J), Duke13\_12 (J), EricMillard\_16 (J), HokkenD\_11 (J), JuicyJay\_17 (J), Kalah2\_16 (J), NihilNomen\_15 (J), Schatzie\_14 (J), Wanda\_16 (J), Yeet\_14 (J),

#### Start 17:

- Found in 35 of 113 ( 31.0% ) of genes in pham
- Manual Annotations of this start: 1 of 105
- Called 2.9% of time when present
- Phage (with cluster) where this start called: Marker\_107 (F1),

#### Start 18:

- Found in 3 of 113 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 3 of 105
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LittleE\_16 (J), Lucky2013\_16 (J), Squint\_16 (J),

#### Start 19:

- Found in 37 of 113 ( 32.7% ) of genes in pham
- Manual Annotations of this start: 1 of 105
- Called 2.7% of time when present
- Phage (with cluster) where this start called: OwlsT2W\_100 (F1),

#### Start 20:

- Found in 31 of 113 ( 27.4% ) of genes in pham
- Manual Annotations of this start: 17 of 105
- Called 61.3% of time when present
- Phage (with cluster) where this start called: BAKA\_12 (J), Bagrid\_14 (J), Bobby\_17 (J), Bombitas\_13 (J), Constella\_11 (J), DmpstrDiver\_15 (J), Ejimix\_17 (J), Halley\_16 (J), Hughesyang\_15 (J), Klein\_16 (J), Minerva\_15 (J), Odette\_15 (J), Optimus\_13 (J), Phoebus\_16 (J), Pound\_16 (J), Redno2\_15 (J), Thibault\_12 (J), ThreeRngTarjay\_15 (J), Zelink\_16 (J),

#### Start 22:

- Found in 32 of 113 ( 28.3% ) of genes in pham
- Manual Annotations of this start: 1 of 105
- Called 3.1% of time when present
- Phage (with cluster) where this start called: MooMoo\_95 (singleton),

#### Start 23:

- Found in 34 of 113 ( 30.1% ) of genes in pham
- Manual Annotations of this start: 27 of 105
- Called 82.4% of time when present
- Phage (with cluster) where this start called: Akhila\_96 (F1), ArcusAngelus\_102 (F1), Batiatus\_102 (F1), Beakin\_95 (F1), CaptainTrips\_104 (F1), Chevrolet\_106 (F1),

Chuckly\_99 (F1), DLane\_102 (F1), DillTech15\_108 (F1), DosHalletts\_99 (F1), Fastidio\_105 (F1), Filuzino\_102 (F1), Hamulus\_102 (F1), LittleShirley\_110 (F1), MinionDave\_100 (F1), Mova\_104 (F1), Ms6\_104 (F1), Phalconet\_103 (F1), PhesterPhotato\_106 (F1), QuickMath\_103 (F1), SG4\_103 (F1), Seagreen\_103 (F1), ShroomBoi\_100 (F1), StAnnes\_107 (F1), Stap\_97 (F1), Wee\_105 (F1), Whatsapiecost\_96 (F1), XFactor\_93 (F1),

#### Start 24:

- Found in 34 of 113 ( 30.1% ) of genes in pham
- Manual Annotations of this start: 33 of 105
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Boomer\_103 (F1), Byougenkin\_99 (F1), Cornucopia\_102 (F1), DotProduct\_96 (F1), Firehouse51\_97 (F1), Flathead\_105 (F1), GUmbie\_101 (F1), Galactic\_107 (F1), GigiOuiOui\_97 (F1), Hades\_99 (F1), Harley\_104 (F1), Hegedechwinu\_111 (F1), Ibhubesi\_99 (F1), Juice456\_101 (F1), Juniper1\_94 (F1), Kersh\_105 (F1), Kimberlium\_103 (F1), LunaBlu\_109 (F1), Mahavrat\_96 (F1), Mozy\_107 (F1), MulchExplorer\_106 (F1), Mutaforma13\_104 (F1), Nitzel\_97 (F1), Ogopogo\_107 (F1), Ovechkin\_105 (F1), PMC\_102 (F1), PopTart\_93 (F1), QueenHazel\_71 (I1), Rockne\_106 (F1), Royals2015\_106 (F1), SassyB\_93 (F1), SimranZ1\_102 (F1), Wachhund\_99 (F1), Xula\_72 (I1),

#### Start 25:

- Found in 2 of 113 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 2 of 105
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LunaStella\_99 (F4), TChen\_99 (F4),

#### Start 26:

- Found in 2 of 113 ( 1.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Gonephishing\_3 (J),

#### Start 27:

- Found in 2 of 113 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 105
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Omega\_2 (J),

#### Start 28:

- Found in 34 of 113 ( 30.1% ) of genes in pham
- Manual Annotations of this start: 3 of 105
- Called 17.6% 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 15 was manually annotated 3 times for cluster F1.
- Start number 17 was manually annotated 1 time for cluster F1.

- Start number 19 was manually annotated 1 time for cluster F1.
- Start number 23 was manually annotated 27 times for cluster F1.
- Start number 24 was manually annotated 31 times for cluster F1.
- Start number 28 was manually annotated 3 times for cluster F1.

Info for manual annotations of cluster F4:

- Start number 25 was manually annotated 2 times for cluster F4.

Info for manual annotations of cluster I1:

- Start number 24 was manually annotated 2 times for cluster I1.

Info for manual annotations of cluster J:

- Start number 16 was manually annotated 13 times for cluster J.
- Start number 18 was manually annotated 3 times for cluster J.
- Start number 20 was manually annotated 17 times for cluster J.
- Start number 27 was manually annotated 1 time for cluster J.

### **Gene Information:**

Gene: Akhila\_96 Start: 54481, Stop: 54954, Start Num: 23

Candidate Starts for Akhila\_96:

(2, 54016), (3, 54043), (4, 54049), (5, 54052), (6, 54091), (Start: 17 @54460 has 1 MA's), (Start: 19 @54463 has 1 MA's), (Start: 23 @54481 has 27 MA's), (Start: 28 @54496 has 3 MA's), (30, 54520), (33, 54580), (37, 54619), (54, 54784), (62, 54901),

Gene: ArcusAngelus\_102 Start: 56799, Stop: 57272, Start Num: 23

Candidate Starts for ArcusAngelus\_102:

(2, 56334), (3, 56361), (4, 56367), (5, 56370), (6, 56409), (Start: 17 @56778 has 1 MA's), (Start: 19 @56781 has 1 MA's), (Start: 23 @56799 has 27 MA's), (Start: 28 @56814 has 3 MA's), (30, 56838), (33, 56898), (37, 56937), (54, 57102), (62, 57219),

Gene: Ardmore\_86 Start: 50385, Stop: 50843, Start Num: 28

Candidate Starts for Ardmore\_86:

(2, 49905), (3, 49932), (4, 49938), (5, 49941), (6, 49980), (Start: 17 @50349 has 1 MA's), (Start: 19 @50352 has 1 MA's), (Start: 23 @50370 has 27 MA's), (Start: 28 @50385 has 3 MA's), (30, 50409), (33, 50469), (37, 50508), (54, 50673), (62, 50790),

Gene: Ariel\_16 Start: 10208, Stop: 10687, Start Num: 16

Candidate Starts for Ariel\_16:

(Start: 16 @10208 has 13 MA's), (21, 10226), (38, 10364), (39, 10367), (47, 10442), (51, 10490), (55, 10523), (58, 10589), (65, 10682),

Gene: BAKA\_12 Start: 10159, Stop: 10653, Start Num: 20

Candidate Starts for BAKA\_12:

(14, 10075), (Start: 16 @10144 has 13 MA's), (Start: 20 @10159 has 17 MA's), (Start: 22 @10168 has 1 MA's), (30, 10210), (32, 10252), (35, 10291), (42, 10318), (46, 10372), (47, 10381), (62, 10567), (63, 10573),

Gene: Bagrid\_14 Start: 9951, Stop: 10445, Start Num: 20

Candidate Starts for Bagrid\_14:

(14, 9867), (Start: 16 @9936 has 13 MA's), (Start: 20 @9951 has 17 MA's), (Start: 22 @9960 has 1 MA's), (30, 10002), (32, 10044), (35, 10083), (42, 10110), (46, 10164), (47, 10173), (62, 10359), (63, 10365),

Gene: Batiatus\_102 Start: 55920, Stop: 56396, Start Num: 23

Candidate Starts for Batiatus\_102:

(2, 55455), (3, 55482), (4, 55488), (5, 55491), (6, 55530), (Start: 17 @55899 has 1 MA's), (Start: 19 @55902 has 1 MA's), (Start: 23 @55920 has 27 MA's), (Start: 28 @55935 has 3 MA's), (30, 55959), (33, 56019), (37, 56058), (54, 56223), (62, 56340),

Gene: Beakin\_95 Start: 53183, Stop: 53656, Start Num: 23

Candidate Starts for Beakin\_95:

(2, 52718), (3, 52745), (4, 52751), (5, 52754), (6, 52793), (Start: 17 @53162 has 1 MA's), (Start: 19 @53165 has 1 MA's), (Start: 23 @53183 has 27 MA's), (Start: 28 @53198 has 3 MA's), (30, 53222), (33, 53282), (37, 53321), (54, 53486), (62, 53603),

Gene: Beem\_16 Start: 10502, Stop: 11011, Start Num: 16

Candidate Starts for Beem\_16:

(14, 10433), (Start: 16 @10502 has 13 MA's), (Start: 20 @10517 has 17 MA's), (Start: 22 @10526 has 1 MA's), (30, 10568), (32, 10610), (35, 10649), (42, 10676), (46, 10730), (47, 10739), (62, 10925), (63, 10931),

Gene: Bobby\_17 Start: 10470, Stop: 10964, Start Num: 20

Candidate Starts for Bobby\_17:

(14, 10386), (Start: 16 @10455 has 13 MA's), (Start: 20 @10470 has 17 MA's), (Start: 22 @10479 has 1 MA's), (30, 10521), (32, 10563), (35, 10602), (42, 10629), (46, 10683), (47, 10692), (49, 10719), (62, 10878), (63, 10884),

Gene: Bombitas\_13 Start: 9826, Stop: 10320, Start Num: 20

Candidate Starts for Bombitas\_13:

(14, 9742), (Start: 16 @9811 has 13 MA's), (Start: 20 @9826 has 17 MA's), (Start: 22 @9835 has 1 MA's), (30, 9877), (32, 9919), (35, 9958), (42, 9985), (46, 10039), (47, 10048), (62, 10234), (63, 10240),

Gene: Boomer\_103 Start: 56660, Stop: 57130, Start Num: 24

Candidate Starts for Boomer\_103:

(Start: 24 @56660 has 33 MA's), (30, 56696), (33, 56756), (37, 56795), (54, 56960), (62, 57077),

Gene: Byougenkin\_99 Start: 53124, Stop: 53597, Start Num: 24

Candidate Starts for Byougenkin\_99:

(Start: 24 @53124 has 33 MA's), (30, 53160), (33, 53220), (37, 53259), (54, 53424),

Gene: CaptainTrips\_104 Start: 55558, Stop: 56031, Start Num: 23

Candidate Starts for CaptainTrips\_104:

(2, 55093), (3, 55120), (4, 55126), (5, 55129), (6, 55168), (Start: 17 @55537 has 1 MA's), (Start: 19 @55540 has 1 MA's), (Start: 23 @55558 has 27 MA's), (Start: 28 @55573 has 3 MA's), (30, 55597), (33, 55657), (37, 55696), (54, 55861), (62, 55978),

Gene: Chevrolet\_106 Start: 56800, Stop: 57273, Start Num: 23

Candidate Starts for Chevrolet\_106:

(2, 56335), (3, 56362), (4, 56368), (5, 56371), (6, 56410), (Start: 17 @56779 has 1 MA's), (Start: 19 @56782 has 1 MA's), (Start: 23 @56800 has 27 MA's), (Start: 28 @56815 has 3 MA's), (30, 56839), (33, 56899), (37, 56938), (54, 57103), (62, 57220),

Gene: Chuckly\_99 Start: 52600, Stop: 53076, Start Num: 23

Candidate Starts for Chuckly\_99:

(2, 52135), (3, 52162), (4, 52168), (5, 52171), (6, 52210), (Start: 17 @52579 has 1 MA's), (Start: 19 @52582 has 1 MA's), (Start: 23 @52600 has 27 MA's), (Start: 28 @52615 has 3 MA's), (30, 52639), (33, 52699), (37, 52738), (54, 52903), (62, 53020),

Gene: Constella\_11 Start: 9340, Stop: 9834, Start Num: 20

Candidate Starts for Constella\_11:

(14, 9256), (Start: 16 @9325 has 13 MA's), (Start: 20 @9340 has 17 MA's), (Start: 22 @9349 has 1 MA's), (30, 9391), (32, 9433), (35, 9472), (42, 9499), (46, 9553), (47, 9562), (49, 9589), (62, 9748), (63, 9754),

Gene: Cornucopia\_102 Start: 53860, Stop: 54333, Start Num: 24

Candidate Starts for Cornucopia\_102:

(12, 53749), (13, 53752), (Start: 24 @53860 has 33 MA's), (37, 53995), (41, 54007), (47, 54079), (52, 54139), (62, 54277),

Gene: DLane\_102 Start: 57129, Stop: 57602, Start Num: 23

Candidate Starts for DLane\_102:

(2, 56664), (3, 56691), (4, 56697), (5, 56700), (6, 56739), (Start: 17 @57108 has 1 MA's), (Start: 19 @57111 has 1 MA's), (Start: 23 @57129 has 27 MA's), (Start: 28 @57144 has 3 MA's), (30, 57168), (33, 57228), (37, 57267), (54, 57432), (62, 57549),

Gene: Dallas\_15 Start: 10042, Stop: 10551, Start Num: 16

Candidate Starts for Dallas\_15:

(10, 9886), (14, 9973), (Start: 16 @10042 has 13 MA's), (Start: 20 @10057 has 17 MA's), (Start: 22 @10066 has 1 MA's), (30, 10108), (32, 10150), (35, 10189), (42, 10216), (46, 10270), (47, 10279), (62, 10465), (63, 10471),

Gene: Dante\_99 Start: 55775, Stop: 56278, Start Num: 15

Candidate Starts for Dante\_99:

(7, 55448), (8, 55577), (Start: 15 @55775 has 3 MA's), (56, 56135), (59, 56177), (60, 56183), (62, 56222), (64, 56270),

Gene: DeadP\_101 Start: 53003, Stop: 53506, Start Num: 15

Candidate Starts for DeadP\_101:

(7, 52676), (8, 52805), (Start: 15 @53003 has 3 MA's), (56, 53363), (59, 53405), (60, 53411), (62, 53450), (64, 53498),

Gene: DillTech15\_108 Start: 56028, Stop: 56501, Start Num: 23

Candidate Starts for DillTech15\_108:

(1, 55467), (2, 55563), (3, 55590), (4, 55596), (5, 55599), (6, 55638), (Start: 17 @56007 has 1 MA's), (Start: 19 @56010 has 1 MA's), (Start: 23 @56028 has 27 MA's), (Start: 28 @56043 has 3 MA's), (30, 56067), (33, 56127), (37, 56166), (54, 56331), (62, 56448),

Gene: DmpstrDiver\_15 Start: 10697, Stop: 11191, Start Num: 20

Candidate Starts for DmpstrDiver\_15:

(14, 10613), (Start: 16 @10682 has 13 MA's), (Start: 20 @10697 has 17 MA's), (Start: 22 @10706 has 1 MA's), (30, 10748), (32, 10790), (35, 10829), (42, 10856), (46, 10910), (47, 10919), (62, 11105), (63, 11111),

Gene: DosHalletts\_99 Start: 56180, Stop: 56653, Start Num: 23



Candidate Starts for DosHalletts\_99:

(2, 55715), (3, 55742), (4, 55748), (5, 55751), (6, 55790), (Start: 17 @56159 has 1 MA's), (Start: 19 @56162 has 1 MA's), (Start: 23 @56180 has 27 MA's), (Start: 28 @56195 has 3 MA's), (30, 56219), (33, 56279), (37, 56318), (54, 56483), (62, 56600),

Gene: DotProduct\_96 Start: 53549, Stop: 54022, Start Num: 24

Candidate Starts for DotProduct\_96:

(Start: 24 @53549 has 33 MA's), (30, 53585), (33, 53645), (37, 53684), (54, 53849), (62, 53966),

Gene: Dove\_13 Start: 9810, Stop: 10319, Start Num: 16

Candidate Starts for Dove\_13:

(14, 9741), (Start: 16 @9810 has 13 MA's), (Start: 20 @9825 has 17 MA's), (Start: 22 @9834 has 1 MA's), (30, 9876), (32, 9918), (35, 9957), (42, 9984), (46, 10038), (47, 10047), (62, 10233), (63, 10239),

Gene: Duke13\_12 Start: 10072, Stop: 10581, Start Num: 16

Candidate Starts for Duke13\_12:

(14, 10003), (Start: 16 @10072 has 13 MA's), (Start: 20 @10087 has 17 MA's), (Start: 22 @10096 has 1 MA's), (30, 10138), (32, 10180), (35, 10219), (42, 10246), (46, 10300), (47, 10309), (62, 10495), (63, 10501),

Gene: Ejimix\_17 Start: 11267, Stop: 11761, Start Num: 20

Candidate Starts for Ejimix\_17:

(14, 11183), (Start: 16 @11252 has 13 MA's), (Start: 20 @11267 has 17 MA's), (Start: 22 @11276 has 1 MA's), (30, 11318), (32, 11360), (35, 11399), (42, 11426), (46, 11480), (47, 11489), (62, 11675), (63, 11681),

Gene: EricMillard\_16 Start: 10792, Stop: 11301, Start Num: 16

Candidate Starts for EricMillard\_16:

(14, 10723), (Start: 16 @10792 has 13 MA's), (Start: 20 @10807 has 17 MA's), (Start: 22 @10816 has 1 MA's), (30, 10858), (32, 10900), (35, 10939), (42, 10966), (46, 11020), (47, 11029), (62, 11215), (63, 11221),

Gene: Fastidio\_105 Start: 54069, Stop: 54542, Start Num: 23

Candidate Starts for Fastidio\_105:

(2, 53604), (3, 53631), (4, 53637), (5, 53640), (6, 53679), (Start: 17 @54048 has 1 MA's), (Start: 19 @54051 has 1 MA's), (Start: 23 @54069 has 27 MA's), (Start: 28 @54084 has 3 MA's), (30, 54108), (33, 54168), (37, 54207), (54, 54372), (62, 54489),

Gene: Filuzino\_102 Start: 57535, Stop: 58008, Start Num: 23

Candidate Starts for Filuzino\_102:

(2, 57070), (3, 57097), (4, 57103), (5, 57106), (6, 57145), (Start: 17 @57514 has 1 MA's), (Start: 19 @57517 has 1 MA's), (Start: 23 @57535 has 27 MA's), (Start: 28 @57550 has 3 MA's), (30, 57574), (33, 57634), (37, 57673), (54, 57838), (62, 57955),

Gene: Firehouse51\_97 Start: 56605, Stop: 57078, Start Num: 24

Candidate Starts for Firehouse51\_97:

(Start: 24 @56605 has 33 MA's), (30, 56641), (33, 56701), (37, 56740), (54, 56905), (57, 56962),

Gene: Flathead\_105 Start: 56108, Stop: 56581, Start Num: 24

Candidate Starts for Flathead\_105:

(Start: 24 @56108 has 33 MA's), (37, 56243),

Gene: Fruitloop\_100 Start: 56715, Stop: 57173, Start Num: 28

Candidate Starts for Fruitloop\_100:

(2, 56235), (3, 56262), (4, 56268), (5, 56271), (6, 56310), (Start: 17 @56679 has 1 MA's), (Start: 19 @56682 has 1 MA's), (Start: 23 @56700 has 27 MA's), (Start: 28 @56715 has 3 MA's), (30, 56739), (33, 56799), (37, 56838), (54, 57003), (62, 57120),

Gene: GUmbie\_101 Start: 55573, Stop: 56046, Start Num: 24

Candidate Starts for GUmbie\_101:

(Start: 24 @55573 has 33 MA's), (30, 55609), (33, 55669), (37, 55708), (54, 55873), (62, 55990),

Gene: Galactic\_107 Start: 56300, Stop: 56773, Start Num: 24

Candidate Starts for Galactic\_107:

(Start: 24 @56300 has 33 MA's), (30, 56336), (33, 56396), (37, 56435), (54, 56600),

Gene: GigiOuiOui\_97 Start: 54828, Stop: 55301, Start Num: 24

Candidate Starts for GigiOuiOui\_97:

(Start: 24 @54828 has 33 MA's), (30, 54864), (33, 54924), (37, 54963), (54, 55128),

Gene: Gonephishing\_3 Start: 980, Stop: 1483, Start Num: 26

Candidate Starts for Gonephishing\_3:

(26, 980), (Start: 27 @986 has 1 MA's), (44, 1172), (50, 1229), (66, 1451),

Gene: Hades\_99 Start: 53219, Stop: 53689, Start Num: 24

Candidate Starts for Hades\_99:

(Start: 24 @53219 has 33 MA's), (30, 53255), (33, 53315), (37, 53354), (54, 53519), (62, 53636),

Gene: Halley\_16 Start: 10517, Stop: 11011, Start Num: 20

Candidate Starts for Halley\_16:

(10, 10346), (14, 10433), (Start: 16 @10502 has 13 MA's), (Start: 20 @10517 has 17 MA's), (Start: 22 @10526 has 1 MA's), (30, 10568), (32, 10610), (35, 10649), (42, 10676), (46, 10730), (47, 10739), (49, 10766), (62, 10925), (63, 10931),

Gene: Hamulus\_102 Start: 55385, Stop: 55858, Start Num: 23

Candidate Starts for Hamulus\_102:

(2, 54920), (3, 54947), (4, 54953), (5, 54956), (6, 54995), (Start: 17 @55364 has 1 MA's), (Start: 19 @55367 has 1 MA's), (Start: 23 @55385 has 27 MA's), (Start: 28 @55400 has 3 MA's), (30, 55424), (33, 55484), (37, 55523), (54, 55688), (62, 55805),

Gene: Harley\_104 Start: 56809, Stop: 57282, Start Num: 24

Candidate Starts for Harley\_104:

(Start: 24 @56809 has 33 MA's), (30, 56845), (33, 56905), (37, 56944), (54, 57109),

Gene: Hegedechwinu\_111 Start: 56173, Stop: 56646, Start Num: 24

Candidate Starts for Hegedechwinu\_111:

(Start: 24 @56173 has 33 MA's), (37, 56308),

Gene: HokkenD\_11 Start: 10075, Stop: 10584, Start Num: 16

Candidate Starts for HokkenD\_11:

(14, 10006), (Start: 16 @10075 has 13 MA's), (Start: 20 @10090 has 17 MA's), (Start: 22 @10099 has 1 MA's), (30, 10141), (32, 10183), (35, 10222), (42, 10249), (46, 10303), (47, 10312), (62, 10498), (63, 10504),

Gene: Hughesyang\_15 Start: 10697, Stop: 11191, Start Num: 20

Candidate Starts for Hughesyang\_15:

(14, 10613), (Start: 16 @10682 has 13 MA's), (Start: 20 @10697 has 17 MA's), (Start: 22 @10706 has 1 MA's), (30, 10748), (32, 10790), (35, 10829), (42, 10856), (46, 10910), (47, 10919), (62, 11105), (63, 11111),

Gene: IMpilo\_100 Start: 54178, Stop: 54636, Start Num: 28

Candidate Starts for IMpilo\_100:

(2, 53698), (3, 53725), (4, 53731), (5, 53734), (6, 53773), (Start: 17 @54142 has 1 MA's), (Start: 19 @54145 has 1 MA's), (Start: 23 @54163 has 27 MA's), (Start: 28 @54178 has 3 MA's), (30, 54202), (33, 54262), (37, 54301), (54, 54466), (62, 54583),

Gene: lbOuu\_98 Start: 53542, Stop: 54000, Start Num: 28

Candidate Starts for lbOuu\_98:

(Start: 17 @53506 has 1 MA's), (Start: 19 @53509 has 1 MA's), (Start: 23 @53527 has 27 MA's), (Start: 28 @53542 has 3 MA's), (30, 53566), (33, 53626), (37, 53665), (54, 53830), (62, 53947),

Gene: lbhubesi\_99 Start: 53678, Stop: 54151, Start Num: 24

Candidate Starts for lbhubesi\_99:

(Start: 24 @53678 has 33 MA's), (30, 53714), (33, 53774), (37, 53813), (54, 53978),

Gene: Juice456\_101 Start: 55348, Stop: 55818, Start Num: 24

Candidate Starts for Juice456\_101:

(Start: 24 @55348 has 33 MA's), (30, 55384), (33, 55444), (37, 55483), (54, 55648), (62, 55765),

Gene: JuicyJay\_17 Start: 11333, Stop: 11842, Start Num: 16

Candidate Starts for JuicyJay\_17:

(10, 11177), (14, 11264), (Start: 16 @11333 has 13 MA's), (Start: 20 @11348 has 17 MA's), (Start: 22 @11357 has 1 MA's), (30, 11399), (32, 11441), (35, 11480), (42, 11507), (46, 11561), (47, 11570), (62, 11756), (63, 11762),

Gene: Juniper1\_94 Start: 54576, Stop: 55049, Start Num: 24

Candidate Starts for Juniper1\_94:

(Start: 24 @54576 has 33 MA's), (30, 54612), (33, 54672), (37, 54711), (54, 54876),

Gene: Kalah2\_16 Start: 11101, Stop: 11610, Start Num: 16

Candidate Starts for Kalah2\_16:

(14, 11032), (Start: 16 @11101 has 13 MA's), (Start: 20 @11116 has 17 MA's), (Start: 22 @11125 has 1 MA's), (30, 11167), (32, 11209), (35, 11248), (42, 11275), (46, 11329), (47, 11338), (62, 11524), (63, 11530),

Gene: Kersh\_105 Start: 58630, Stop: 59103, Start Num: 24

Candidate Starts for Kersh\_105:

(Start: 24 @58630 has 33 MA's), (30, 58666), (33, 58726), (37, 58765), (54, 58930),

Gene: Kimberlium\_103 Start: 55448, Stop: 55918, Start Num: 24

Candidate Starts for Kimberlium\_103:

(Start: 24 @55448 has 33 MA's), (30, 55484), (33, 55544), (37, 55583), (54, 55748), (62, 55865),

Gene: Klein\_16 Start: 10094, Stop: 10588, Start Num: 20

Candidate Starts for Klein\_16:

(10, 9923), (14, 10010), (Start: 16 @10079 has 13 MA's), (Start: 20 @10094 has 17 MA's), (Start: 22 @10103 has 1 MA's), (30, 10145), (32, 10187), (35, 10226), (42, 10253), (46, 10307), (47, 10316), (62, 10502), (63, 10508),

Gene: LittleE\_16 Start: 11249, Stop: 11752, Start Num: 18

Candidate Starts for LittleE\_16:

(Start: 18 @11249 has 3 MA's), (29, 11297), (34, 11381), (36, 11387), (40, 11411), (42, 11417), (43, 11420), (46, 11474), (53, 11546), (57, 11618), (62, 11684), (64, 11732),

Gene: LittleShirley\_110 Start: 57229, Stop: 57702, Start Num: 23

Candidate Starts for LittleShirley\_110:

(2, 56764), (3, 56791), (4, 56797), (5, 56800), (6, 56839), (Start: 17 @57208 has 1 MA's), (Start: 19 @57211 has 1 MA's), (Start: 23 @57229 has 27 MA's), (Start: 28 @57244 has 3 MA's), (30, 57268), (33, 57328), (37, 57367), (54, 57532), (62, 57649),

Gene: Lucky2013\_16 Start: 9992, Stop: 10495, Start Num: 18

Candidate Starts for Lucky2013\_16:

(Start: 18 @9992 has 3 MA's), (29, 10040), (34, 10124), (36, 10130), (40, 10154), (42, 10160), (43, 10163), (46, 10217), (48, 10238), (53, 10289), (57, 10361), (62, 10427), (64, 10475),

Gene: LunaBlu\_109 Start: 57722, Stop: 58195, Start Num: 24

Candidate Starts for LunaBlu\_109:

(Start: 24 @57722 has 33 MA's), (30, 57758), (33, 57818), (37, 57857), (54, 58022),

Gene: LunaStella\_99 Start: 54190, Stop: 54663, Start Num: 25

Candidate Starts for LunaStella\_99:

(Start: 25 @54190 has 2 MA's), (29, 54223), (30, 54226), (37, 54325), (41, 54337), (47, 54409), (52, 54469), (61, 54592), (62, 54607),

Gene: Mahavrat\_96 Start: 53605, Stop: 54078, Start Num: 24

Candidate Starts for Mahavrat\_96:

(Start: 24 @53605 has 33 MA's), (30, 53641), (33, 53701), (47, 53824), (54, 53905),

Gene: Marker\_107 Start: 57234, Stop: 57731, Start Num: 17

Candidate Starts for Marker\_107:

(Start: 17 @57234 has 1 MA's), (Start: 19 @57237 has 1 MA's), (37, 57393), (41, 57405), (47, 57477), (52, 57537), (62, 57675),

Gene: Melissauren88\_92 Start: 52600, Stop: 53058, Start Num: 28

Candidate Starts for Melissauren88\_92:

(2, 52120), (3, 52147), (4, 52153), (5, 52156), (6, 52195), (Start: 17 @52564 has 1 MA's), (Start: 19 @52567 has 1 MA's), (Start: 23 @52585 has 27 MA's), (Start: 28 @52600 has 3 MA's), (30, 52624), (33, 52684), (37, 52723), (54, 52888), (62, 53005),

Gene: MilanaBonita\_95 Start: 54496, Stop: 54954, Start Num: 28

Candidate Starts for MilanaBonita\_95:

(2, 54016), (3, 54043), (4, 54049), (5, 54052), (6, 54091), (Start: 17 @54460 has 1 MA's), (Start: 19 @54463 has 1 MA's), (Start: 23 @54481 has 27 MA's), (Start: 28 @54496 has 3 MA's), (30, 54520), (33, 54580), (37, 54619), (54, 54784), (62, 54901),

Gene: Minerva\_15 Start: 10577, Stop: 11071, Start Num: 20

Candidate Starts for Minerva\_15:

(10, 10406), (14, 10493), (Start: 16 @10562 has 13 MA's), (Start: 20 @10577 has 17 MA's), (Start: 22 @10586 has 1 MA's), (30, 10628), (32, 10670), (35, 10709), (42, 10736), (46, 10790), (47, 10799), (62, 10985), (63, 10991),

Gene: MinionDave\_100 Start: 56257, Stop: 56730, Start Num: 23

Candidate Starts for MinionDave\_100:

(1, 55696), (2, 55792), (3, 55819), (4, 55825), (5, 55828), (6, 55867), (Start: 17 @56236 has 1 MA's), (Start: 19 @56239 has 1 MA's), (Start: 23 @56257 has 27 MA's), (Start: 28 @56272 has 3 MA's), (30, 56296), (33, 56356), (37, 56395), (54, 56560), (62, 56677),

Gene: MooMoo\_95 Start: 53643, Stop: 54116, Start Num: 22

Candidate Starts for MooMoo\_95:

(3, 53208), (4, 53214), (5, 53217), (6, 53256), (Start: 19 @53628 has 1 MA's), (Start: 22 @53643 has 1 MA's), (33, 53739), (37, 53778),

Gene: Mova\_104 Start: 56218, Stop: 56691, Start Num: 23

Candidate Starts for Mova\_104:

(2, 55753), (3, 55780), (4, 55786), (5, 55789), (6, 55828), (Start: 17 @56197 has 1 MA's), (Start: 19 @56200 has 1 MA's), (Start: 23 @56218 has 27 MA's), (Start: 28 @56233 has 3 MA's), (30, 56257), (33, 56317), (37, 56356), (54, 56521), (62, 56638),

Gene: Mozy\_107 Start: 56105, Stop: 56578, Start Num: 24

Candidate Starts for Mozy\_107:

(Start: 24 @56105 has 33 MA's), (30, 56141), (33, 56201), (37, 56240), (54, 56405),

Gene: Ms6\_104 Start: 52476, Stop: 52949, Start Num: 23

Candidate Starts for Ms6\_104:

(Start: 17 @52455 has 1 MA's), (Start: 19 @52458 has 1 MA's), (Start: 23 @52476 has 27 MA's), (Start: 28 @52491 has 3 MA's), (30, 52515), (33, 52575), (37, 52614), (62, 52896),

Gene: MulchExplorer\_106 Start: 55119, Stop: 55589, Start Num: 24

Candidate Starts for MulchExplorer\_106:

(Start: 24 @55119 has 33 MA's), (30, 55155), (33, 55215), (37, 55254), (54, 55419), (62, 55536),

Gene: Mutaforma13\_104 Start: 56140, Stop: 56613, Start Num: 24

Candidate Starts for Mutaforma13\_104:

(Start: 24 @56140 has 33 MA's), (30, 56176), (33, 56236), (37, 56275), (54, 56440), (57, 56497),

Gene: NihilNomen\_15 Start: 10561, Stop: 11070, Start Num: 16

Candidate Starts for NihilNomen\_15:

(14, 10492), (Start: 16 @10561 has 13 MA's), (Start: 20 @10576 has 17 MA's), (Start: 22 @10585 has 1 MA's), (30, 10627), (32, 10669), (35, 10708), (42, 10735), (46, 10789), (47, 10798), (62, 10984), (63, 10990),

Gene: Nitzel\_97 Start: 53296, Stop: 53769, Start Num: 24

Candidate Starts for Nitzel\_97:

(Start: 24 @53296 has 33 MA's), (30, 53332), (33, 53392), (37, 53431), (54, 53596),

Gene: Odette\_15 Start: 10059, Stop: 10553, Start Num: 20

Candidate Starts for Odette\_15:

(10, 9888), (14, 9975), (Start: 16 @10044 has 13 MA's), (Start: 20 @10059 has 17 MA's), (Start: 22 @10068 has 1 MA's), (30, 10110), (32, 10152), (35, 10191), (42, 10218), (45, 10269), (46, 10272), (47, 10281), (62, 10467), (63, 10473),

Gene: Ogopogo\_107 Start: 55303, Stop: 55776, Start Num: 24

Candidate Starts for Ogopogo\_107:

(Start: 24 @55303 has 33 MA's), (37, 55438),

Gene: Omega\_2 Start: 991, Stop: 1488, Start Num: 27

Candidate Starts for Omega\_2:

(26, 985), (Start: 27 @991 has 1 MA's), (31, 1042), (44, 1177), (50, 1234), (66, 1456),

Gene: Optimus\_13 Start: 10160, Stop: 10654, Start Num: 20

Candidate Starts for Optimus\_13:

(14, 10076), (Start: 16 @10145 has 13 MA's), (Start: 20 @10160 has 17 MA's), (Start: 22 @10169 has 1 MA's), (30, 10211), (32, 10253), (35, 10292), (42, 10319), (46, 10373), (47, 10382), (62, 10568), (63, 10574),

Gene: Ovechkin\_105 Start: 56777, Stop: 57250, Start Num: 24

Candidate Starts for Ovechkin\_105:

(Start: 24 @56777 has 33 MA's), (30, 56813), (33, 56873), (37, 56912), (54, 57077),

Gene: OwlsT2W\_100 Start: 54967, Stop: 55455, Start Num: 19

Candidate Starts for OwlsT2W\_100:

(Start: 19 @54967 has 1 MA's), (37, 55117),

Gene: PMC\_102 Start: 55131, Stop: 55604, Start Num: 24

Candidate Starts for PMC\_102:

(Start: 24 @55131 has 33 MA's), (37, 55266),

Gene: Phalconet\_103 Start: 55878, Stop: 56351, Start Num: 23

Candidate Starts for Phalconet\_103:

(2, 55413), (3, 55440), (4, 55446), (5, 55449), (6, 55488), (Start: 17 @55857 has 1 MA's), (Start: 19 @55860 has 1 MA's), (Start: 23 @55878 has 27 MA's), (Start: 28 @55893 has 3 MA's), (30, 55917), (33, 55977), (37, 56016), (54, 56181), (55, 56184), (62, 56298),

Gene: PhesterPhotato\_106 Start: 55852, Stop: 56325, Start Num: 23

Candidate Starts for PhesterPhotato\_106:

(2, 55387), (3, 55414), (4, 55420), (5, 55423), (6, 55462), (Start: 17 @55831 has 1 MA's), (Start: 19 @55834 has 1 MA's), (Start: 23 @55852 has 27 MA's), (Start: 28 @55867 has 3 MA's), (30, 55891), (33, 55951), (37, 55990), (54, 56155), (62, 56272),

Gene: Phoebus\_16 Start: 10807, Stop: 11301, Start Num: 20

Candidate Starts for Phoebus\_16:

(14, 10723), (Start: 16 @10792 has 13 MA's), (Start: 20 @10807 has 17 MA's), (Start: 22 @10816 has 1 MA's), (30, 10858), (32, 10900), (35, 10939), (42, 10966), (46, 11020), (47, 11029), (62, 11215), (63, 11221),

Gene: PopTart\_93 Start: 53534, Stop: 54007, Start Num: 24

Candidate Starts for PopTart\_93:

(Start: 24 @53534 has 33 MA's), (30, 53570), (33, 53630), (37, 53669), (47, 53753), (54, 53834),

Gene: Pound\_16 Start: 10895, Stop: 11389, Start Num: 20

Candidate Starts for Pound\_16:

(14, 10811), (Start: 16 @10880 has 13 MA's), (Start: 20 @10895 has 17 MA's), (Start: 22 @10904 has 1 MA's), (30, 10946), (32, 10988), (35, 11027), (42, 11054), (46, 11108), (47, 11117), (62, 11303), (63, 11309),

Gene: QueenHazel\_71 Start: 46520, Stop: 46993, Start Num: 24

Candidate Starts for QueenHazel\_71:

(9, 46307), (11, 46364), (Start: 24 @46520 has 33 MA's), (30, 46556), (33, 46616), (37, 46655), (54, 46820), (62, 46937),

Gene: QuickMath\_103 Start: 55756, Stop: 56229, Start Num: 23

Candidate Starts for QuickMath\_103:

(2, 55291), (3, 55318), (4, 55324), (5, 55327), (6, 55366), (Start: 17 @55735 has 1 MA's), (Start: 19 @55738 has 1 MA's), (Start: 23 @55756 has 27 MA's), (Start: 28 @55771 has 3 MA's), (30, 55795), (33, 55855), (37, 55894), (54, 56059), (62, 56176),

Gene: Redno2\_15 Start: 10287, Stop: 10781, Start Num: 20

Candidate Starts for Redno2\_15:

(10, 10116), (14, 10203), (Start: 16 @10272 has 13 MA's), (Start: 20 @10287 has 17 MA's), (Start: 22 @10296 has 1 MA's), (30, 10338), (32, 10380), (35, 10419), (42, 10446), (46, 10500), (47, 10509), (49, 10536), (62, 10695), (63, 10701),

Gene: Rockne\_106 Start: 55143, Stop: 55616, Start Num: 24

Candidate Starts for Rockne\_106:

(Start: 24 @55143 has 33 MA's), (37, 55278),

Gene: Royals2015\_106 Start: 55014, Stop: 55487, Start Num: 24

Candidate Starts for Royals2015\_106:

(Start: 24 @55014 has 33 MA's), (30, 55050), (37, 55149),

Gene: SG4\_103 Start: 57246, Stop: 57719, Start Num: 23

Candidate Starts for SG4\_103:

(2, 56781), (3, 56808), (4, 56814), (5, 56817), (6, 56856), (Start: 17 @57225 has 1 MA's), (Start: 19 @57228 has 1 MA's), (Start: 23 @57246 has 27 MA's), (Start: 28 @57261 has 3 MA's), (30, 57285), (33, 57345), (37, 57384), (54, 57549), (62, 57666),

Gene: SassyB\_93 Start: 53534, Stop: 54007, Start Num: 24

Candidate Starts for SassyB\_93:

(Start: 24 @53534 has 33 MA's), (30, 53570), (33, 53630), (37, 53669), (47, 53753), (54, 53834),

Gene: Schatzie\_14 Start: 9811, Stop: 10320, Start Num: 16

Candidate Starts for Schatzie\_14:

(14, 9742), (Start: 16 @9811 has 13 MA's), (Start: 20 @9826 has 17 MA's), (Start: 22 @9835 has 1 MA's), (30, 9877), (32, 9919), (35, 9958), (42, 9985), (46, 10039), (47, 10048), (62, 10234), (63, 10240),

Gene: Seagreen\_103 Start: 56384, Stop: 56857, Start Num: 23

Candidate Starts for Seagreen\_103:

(2, 55919), (3, 55946), (4, 55952), (5, 55955), (6, 55994), (Start: 17 @56363 has 1 MA's), (Start: 19 @56366 has 1 MA's), (Start: 23 @56384 has 27 MA's), (Start: 28 @56399 has 3 MA's), (30, 56423), (33, 56483), (37, 56522), (54, 56687), (62, 56804),

Gene: ShroomBoi\_100 Start: 56090, Stop: 56563, Start Num: 23

Candidate Starts for ShroomBoi\_100:

(2, 55625), (3, 55652), (4, 55658), (5, 55661), (6, 55700), (Start: 17 @56069 has 1 MA's), (Start: 19 @56072 has 1 MA's), (Start: 23 @56090 has 27 MA's), (Start: 28 @56105 has 3 MA's), (30, 56129), (33, 56189), (37, 56228), (54, 56393), (62, 56510),

Gene: SimranZ1\_102 Start: 55162, Stop: 55635, Start Num: 24

Candidate Starts for SimranZ1\_102:

(Start: 24 @55162 has 33 MA's), (37, 55297),

Gene: Squint\_16 Start: 9809, Stop: 10312, Start Num: 18

Candidate Starts for Squint\_16:

(Start: 18 @9809 has 3 MA's), (29, 9857), (34, 9941), (36, 9947), (40, 9971), (42, 9977), (43, 9980), (46, 10034), (48, 10055), (53, 10106), (57, 10178), (62, 10244), (64, 10292),

Gene: StAnnes\_107 Start: 57587, Stop: 58060, Start Num: 23

Candidate Starts for StAnnes\_107:

(2, 57122), (3, 57149), (4, 57155), (5, 57158), (6, 57197), (Start: 17 @57566 has 1 MA's), (Start: 19 @57569 has 1 MA's), (Start: 23 @57587 has 27 MA's), (Start: 28 @57602 has 3 MA's), (30, 57626), (33, 57686), (37, 57725), (54, 57890), (62, 58007),

Gene: Stap\_97 Start: 53013, Stop: 53486, Start Num: 23

Candidate Starts for Stap\_97:

(1, 52452), (2, 52548), (3, 52575), (4, 52581), (5, 52584), (Start: 17 @52992 has 1 MA's), (Start: 19 @52995 has 1 MA's), (Start: 23 @53013 has 27 MA's), (Start: 28 @53028 has 3 MA's), (30, 53052), (33, 53112), (37, 53151), (54, 53316), (62, 53433),

Gene: TChen\_99 Start: 56141, Stop: 56614, Start Num: 25

Candidate Starts for TChen\_99:

(Start: 25 @56141 has 2 MA's), (29, 56174), (30, 56177), (37, 56276), (41, 56288), (47, 56360), (52, 56420), (61, 56543), (62, 56558),

Gene: Thibault\_12 Start: 10087, Stop: 10581, Start Num: 20

Candidate Starts for Thibault\_12:

(14, 10003), (Start: 16 @10072 has 13 MA's), (Start: 20 @10087 has 17 MA's), (Start: 22 @10096 has 1 MA's), (30, 10138), (32, 10180), (35, 10219), (42, 10246), (46, 10300), (47, 10309), (49, 10336), (62, 10495), (63, 10501),

Gene: ThreeRngTarjay\_15 Start: 10651, Stop: 11145, Start Num: 20

Candidate Starts for ThreeRngTarjay\_15:

(14, 10567), (Start: 16 @10636 has 13 MA's), (Start: 20 @10651 has 17 MA's), (Start: 22 @10660 has 1 MA's), (30, 10702), (32, 10744), (35, 10783), (42, 10810), (46, 10864), (47, 10873), (62, 11059), (63, 11065),

Gene: Tweety\_102 Start: 55234, Stop: 55737, Start Num: 15

Candidate Starts for Tweety\_102:

(7, 54907), (8, 55036), (Start: 15 @55234 has 3 MA's), (56, 55594), (59, 55636), (60, 55642), (62, 55681), (64, 55729),

Gene: Wachhund\_99 Start: 52953, Stop: 53426, Start Num: 24

Candidate Starts for Wachhund\_99:

(Start: 24 @52953 has 33 MA's), (30, 52989), (33, 53049), (37, 53088), (54, 53253),

Gene: Wanda\_16 Start: 10079, Stop: 10588, Start Num: 16

Candidate Starts for Wanda\_16:

(14, 10010), (Start: 16 @10079 has 13 MA's), (Start: 20 @10094 has 17 MA's), (Start: 22 @10103 has 1 MA's), (30, 10145), (32, 10187), (35, 10226), (42, 10253), (46, 10307), (47, 10316), (62, 10502), (63, 10508),

Gene: Wee\_105 Start: 57330, Stop: 57806, Start Num: 23

Candidate Starts for Wee\_105:



(2, 56865), (3, 56892), (4, 56898), (5, 56901), (6, 56940), (Start: 17 @57309 has 1 MA's), (Start: 19 @57312 has 1 MA's), (Start: 23 @57330 has 27 MA's), (Start: 28 @57345 has 3 MA's), (30, 57369), (33, 57429), (37, 57468), (54, 57633), (62, 57750),

Gene: Whatsapiecost\_96 Start: 51056, Stop: 51529, Start Num: 23

Candidate Starts for Whatsapiecost\_96:

(2, 50591), (3, 50618), (4, 50624), (5, 50627), (6, 50666), (Start: 17 @51035 has 1 MA's), (Start: 19 @51038 has 1 MA's), (Start: 23 @51056 has 27 MA's), (Start: 28 @51071 has 3 MA's), (30, 51095), (33, 51155), (37, 51194), (54, 51359), (62, 51476),

Gene: XFactor\_93 Start: 53847, Stop: 54320, Start Num: 23

Candidate Starts for XFactor\_93:

(2, 53382), (3, 53409), (4, 53415), (5, 53418), (6, 53457), (Start: 17 @53826 has 1 MA's), (Start: 19 @53829 has 1 MA's), (Start: 23 @53847 has 27 MA's), (Start: 28 @53862 has 3 MA's), (30, 53886), (33, 53946), (37, 53985), (54, 54150), (62, 54267),

Gene: Xula\_72 Start: 47007, Stop: 47480, Start Num: 24

Candidate Starts for Xula\_72:

(9, 46794), (Start: 24 @47007 has 33 MA's), (30, 47043), (33, 47103), (37, 47142), (54, 47307), (62, 47424),

Gene: Yeet\_14 Start: 9811, Stop: 10320, Start Num: 16

Candidate Starts for Yeet\_14:

(14, 9742), (Start: 16 @9811 has 13 MA's), (Start: 20 @9826 has 17 MA's), (Start: 22 @9835 has 1 MA's), (30, 9877), (32, 9919), (35, 9958), (42, 9985), (46, 10039), (47, 10048), (62, 10234), (63, 10240),

Gene: Zelink\_16 Start: 10679, Stop: 11173, Start Num: 20

Candidate Starts for Zelink\_16:

(10, 10508), (14, 10595), (Start: 16 @10664 has 13 MA's), (Start: 20 @10679 has 17 MA's), (Start: 22 @10688 has 1 MA's), (30, 10730), (32, 10772), (35, 10811), (42, 10838), (46, 10892), (47, 10901), (62, 11087), (63, 11093),