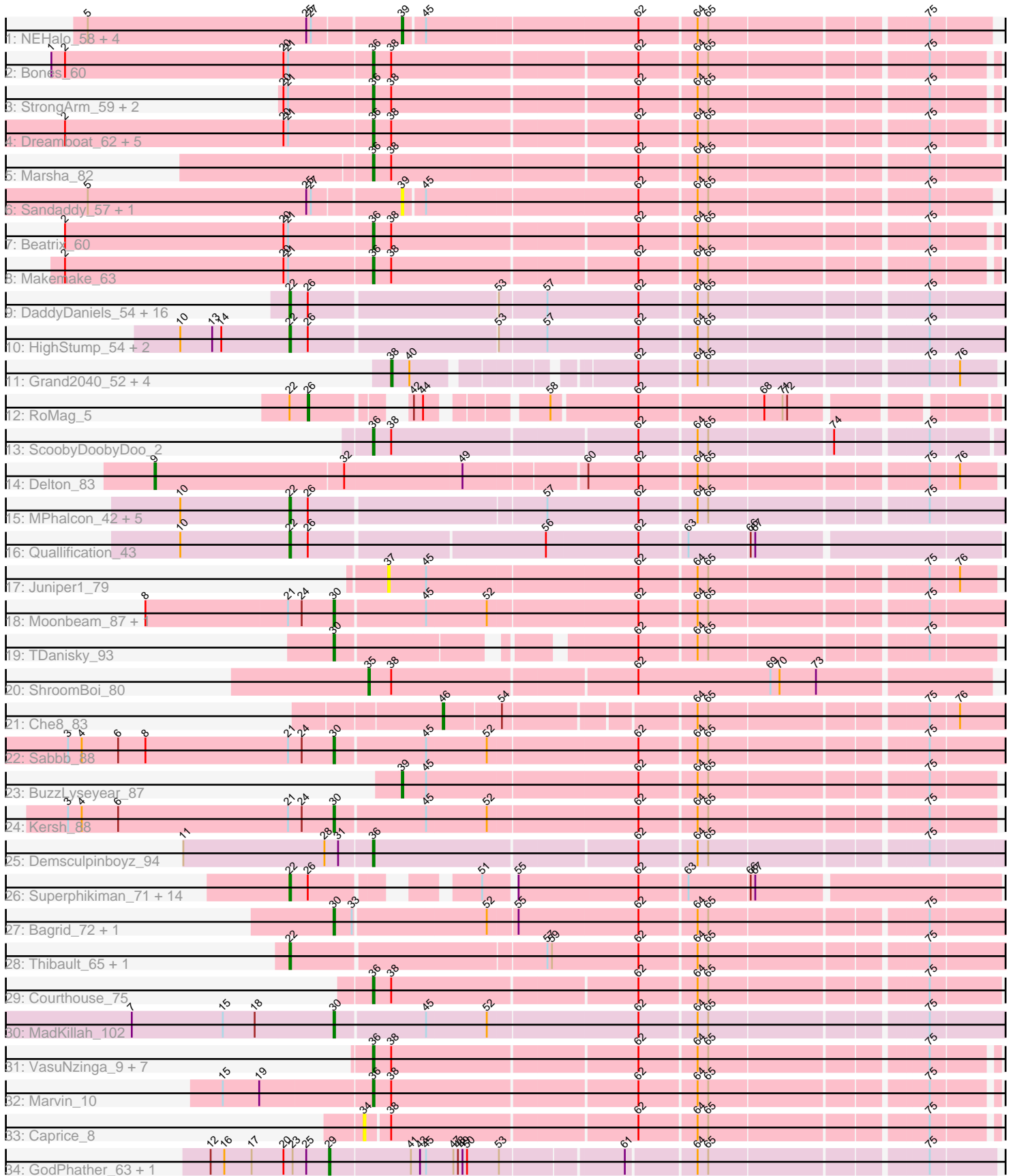


Pham 163497



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 163497 Report

This analysis was run 04/28/24 on database version 559.

Pham number 163497 has 98 members, 12 are drafts.

Phages represented in each track:

- Track 1 : NEHalo\_58, GageAP\_62, AFIS\_57, SpikeBT\_59, Pollywog\_86
- Track 2 : Bones\_60
- Track 3 : StrongArm\_59, Bexan\_58, Scowl\_62
- Track 4 : Dreamboat\_62, Graduation\_65, Cueyllyss\_61, Ohno789\_61, PherrisBueller\_60, Jasper\_61
- Track 5 : Marsha\_82
- Track 6 : Sandaddy\_57, Sorpresa\_56
- Track 7 : Beatrix\_60
- Track 8 : Makemake\_63
- Track 9 : DaddyDaniels\_54, Kronus\_50, Childish\_52, MmasiCarm\_51, Obutu\_51, Soile\_53, Phayeta\_52, Mortcellus\_50, Brilliant\_54, Kahve\_52, Casbah\_50, Ben11\_50, Gervas\_51, HenryJackson\_52, Rita1961\_51, Craff\_55, SlippinJimmy\_52
- Track 10 : HighStump\_54, Longacauda\_53, Legolas\_54
- Track 11 : Grand2040\_52, LeiMonet\_54, Cosmolli16\_53, Giraffe\_53, Maru\_52
- Track 12 : RoMag\_5
- Track 13 : ScoobyDoobyDoo\_2
- Track 14 : Delton\_83
- Track 15 : MPhalcon\_42, Nala\_43, MISSy\_42, Rimmer\_43, Buck\_43, Youngblood\_44
- Track 16 : Quallification\_43
- Track 17 : Juniper1\_79
- Track 18 : Moonbeam\_87, Rialto\_90
- Track 19 : TDanisky\_93
- Track 20 : ShroomBoi\_80
- Track 21 : Che8\_83
- Track 22 : Sabbb\_88
- Track 23 : BuzzLyseyear\_87
- Track 24 : Kersh\_88
- Track 25 : Demsculpinboyz\_94
- Track 26 : Superphikiman\_71, Kalah2\_68, Redno2\_70, Squint\_74, Beem\_73, JuicyJay\_72, NihilNomen\_74, Phoebus\_76, DmpstrDiver\_73, Dallas\_72, Odette\_72, HokkenD\_66, Porcelain\_73, MiaZeal\_74, Halley\_75
- Track 27 : Bagrid\_72, EricMillard\_72
- Track 28 : Thibault\_65, Constella\_64
- Track 29 : Courthouse\_75
- Track 30 : MadKillah\_102

- Track 31 : VasuNzinga\_9, Latretium\_78, MrPhizzler\_53, RedRaider77\_10, Rimu\_56, Fringe\_56, Lumine\_53, Gwilliam\_54
- Track 32 : Marvin\_10
- Track 33 : Caprice\_8
- Track 34 : GodPhather\_63, Jeon\_62

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

The start number called the most often in the published annotations is 22, it was called in 41 of the 86 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Beem\_73, Ben11\_50, Brilliant\_54, Buck\_43, Casbah\_50, Childish\_52, Constella\_64, Craff\_55, DaddyDaniels\_54, Dallas\_72, DmpstrDiver\_73, Gervas\_51, Halley\_75, HenryJackson\_52, HighStump\_54, HokkenD\_66, JuicyJay\_72, Kahve\_52, Kalah2\_68, Kronus\_50, Legolas\_54, Longacauda\_53, MISSy\_42, MPhalcon\_42, MiaZeal\_74, MmasiCarm\_51, Mortcellus\_50, Nala\_43, NihilNomen\_74, Obutu\_51, Odette\_72, Phayeta\_52, Phoebus\_76, Porcelain\_73, Quallification\_43, Redno2\_70, Rimmer\_43, Rita1961\_51, SlippinJimmy\_52, Soile\_53, Squint\_74, Superphikiman\_71, Thibault\_65, Youngblood\_44,

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

- RoMag\_5,

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

- AFIS\_57, Bagrid\_72, Beatrix\_60, Bexan\_58, Bones\_60, BuzzLyseyear\_87, Caprice\_8, Che8\_83, Cosmolli16\_53, Courthouse\_75, Cueylyss\_61, Delton\_83, Demsculpinboyz\_94, Dreamboat\_62, EricMillard\_72, Fringe\_56, GageAP\_62, Giraffe\_53, GodPhather\_63, Graduation\_65, Grand2040\_52, Gwilliam\_54, Jasper\_61, Jeon\_62, Juniper1\_79, Kersh\_88, Latretium\_78, LeiMonet\_54, Lumine\_53, MadKillah\_102, Makemake\_63, Marsha\_82, Maru\_52, Marvin\_10, Moonbeam\_87, MrPhizzler\_53, NEHalo\_58, Ohno789\_61, PherrisBueller\_60, Pollywog\_86, RedRaider77\_10, Rialto\_90, Rimu\_56, Sabbb\_88, Sandaddy\_57, ScoobyDoobyDoo\_2, Scowl\_62, ShroomBoi\_80, Sorpresa\_56, SpikeBT\_59, StrongArm\_59, TDanisky\_93, VasuNzinga\_9,

**Summary by start number:**

Start 9:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 86
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Delton\_83 (D1),

Start 22:

- Found in 45 of 98 ( 45.9% ) of genes in pham
- Manual Annotations of this start: 41 of 86
- Called 97.8% of time when present
- Phage (with cluster) where this start called: Beem\_73 (J), Ben11\_50 (B3), Brilliant\_54 (B1), Buck\_43 (E), Casbah\_50 (B3), Childish\_52 (B1), Constella\_64 (J),

Craff\_55 (B1), DaddyDaniels\_54 (B1), Dallas\_72 (J), DmpstrDiver\_73 (J), Gervas\_51 (B3), Halley\_75 (J), HenryJackson\_52 (B1), HighStump\_54 (B1), HokkenD\_66 (J), JuicyJay\_72 (J), Kahve\_52 (B1), Kalah2\_68 (J), Kronus\_50 (B3), Legolas\_54 (B1), Longacauda\_53 (B1), MISSy\_42 (E), MPhalcon\_42 (E), MiaZeal\_74 (J), MmasiCarm\_51 (B3), Mortcellus\_50 (B3), Nala\_43 (E), NihilNomen\_74 (J), Obutu\_51 (B3), Odette\_72 (J), Phayeta\_52 (B3), Phoebus\_76 (J), Porcelain\_73 (J), Quallification\_43 (E), Redno2\_70 (J), Rimmer\_43 (E), Rita1961\_51 (B3), SlippinJimmy\_52 (B3), Soile\_53 (B1), Squint\_74 (J), Superphikiman\_71 (J), Thibault\_65 (J), Youngblood\_44 (E),

Start 26:

- Found in 43 of 98 ( 43.9% ) of genes in pham
- Manual Annotations of this start: 1 of 86
- Called 2.3% of time when present
- Phage (with cluster) where this start called: RoMag\_5 (C1),

Start 29:

- Found in 2 of 98 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 86
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GodPhather\_63 (W), Jeon\_62 (W),

Start 30:

- Found in 8 of 98 ( 8.2% ) of genes in pham
- Manual Annotations of this start: 7 of 86
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bagrid\_72 (J), EricMillard\_72 (J), Kersh\_88 (F1), MadKillah\_102 (O), Moonbeam\_87 (F1), Rialto\_90 (F1), Sabbb\_88 (F1), TDanisky\_93 (F1),

Start 34:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Caprice\_8 (S),

Start 35:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 86
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ShroomBoi\_80 (F1),

Start 36:

- Found in 25 of 98 ( 25.5% ) of genes in pham
- Manual Annotations of this start: 22 of 86
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beatrix\_60 (A1), Bexan\_58 (A1), Bones\_60 (A1), Courthouse\_75 (J), Cueyllyss\_61 (A1), Demsculpinboyz\_94 (F2), Dreamboat\_62 (A1), Fringe\_56 (B1), Graduation\_65 (A1), Gwilliam\_54 (B1), Jasper\_61 (A1), Latretium\_78 (F1), Lumine\_53 (B1), Makemake\_63 (A1), Marsha\_82 (A1), Marvin\_10 (S), MrPhizzler\_53 (B1), Ohno789\_61 (A1), PherrisBueller\_60 (A1), RedRaider77\_10 (S), Rimu\_56 (B1), ScoobyDoobyDoo\_2 (C2), Scowl\_62 (A1), StrongArm\_59 (A1), VasuNzinga\_9 (S),

Start 37:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Juniper1\_79 (F1),

Start 38:

- Found in 31 of 98 ( 31.6% ) of genes in pham
- Manual Annotations of this start: 4 of 86
- Called 16.1% of time when present
- Phage (with cluster) where this start called: Cosmolli16\_53 (B1), Giraffe\_53 (B1), Grand2040\_52 (B1), LeiMonet\_54 (B1), Maru\_52 (B1),

Start 39:

- Found in 8 of 98 ( 8.2% ) of genes in pham
- Manual Annotations of this start: 6 of 86
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AFIS\_57 (A1), BuzzLyseyear\_87 (F1), GageAP\_62 (A1), NEHalo\_58 (A1), Pollywog\_86 (F1), Sandaddy\_57 (A1), Sorpresa\_56 (A1), SpikeBT\_59 (A1),

Start 46:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 86
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Che8\_83 (F1),

**Summary by clusters:**

There are 13 clusters represented in this pham: F1, F2, E, J, O, A1, S, B1, W, B3, C2, C1, D1,

Info for manual annotations of cluster A1:

- Start number 36 was manually annotated 13 times for cluster A1.
- Start number 39 was manually annotated 4 times for cluster A1.

Info for manual annotations of cluster B1:

- Start number 22 was manually annotated 10 times for cluster B1.
- Start number 36 was manually annotated 2 times for cluster B1.
- Start number 38 was manually annotated 4 times for cluster B1.

Info for manual annotations of cluster B3:

- Start number 22 was manually annotated 8 times for cluster B3.

Info for manual annotations of cluster C1:

- Start number 26 was manually annotated 1 time for cluster C1.

Info for manual annotations of cluster C2:

- Start number 36 was manually annotated 1 time for cluster C2.

Info for manual annotations of cluster D1:

- Start number 9 was manually annotated 1 time for cluster D1.

Info for manual annotations of cluster E:

- Start number 22 was manually annotated 7 times for cluster E.

Info for manual annotations of cluster F1:

- Start number 30 was manually annotated 5 times for cluster F1.
- Start number 35 was manually annotated 1 time for cluster F1.
- Start number 36 was manually annotated 1 time for cluster F1.
- Start number 39 was manually annotated 2 times for cluster F1.
- Start number 46 was manually annotated 1 time for cluster F1.

Info for manual annotations of cluster F2:

- Start number 36 was manually annotated 1 time for cluster F2.

Info for manual annotations of cluster J:

- Start number 22 was manually annotated 16 times for cluster J.
- Start number 30 was manually annotated 1 time for cluster J.
- Start number 36 was manually annotated 1 time for cluster J.

Info for manual annotations of cluster O:

- Start number 30 was manually annotated 1 time for cluster O.

Info for manual annotations of cluster S:

- Start number 36 was manually annotated 3 times for cluster S.

Info for manual annotations of cluster W:

- Start number 29 was manually annotated 2 times for cluster W.

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

Gene: AFIS\_57 Start: 39716, Stop: 39357, Start Num: 39

Candidate Starts for AFIS\_57:

(5, 39917), (25, 39773), (27, 39770), (Start: 39 @39716 has 6 MA's), (45, 39704), (62, 39569), (64, 39533), (65, 39527), (75, 39395),

Gene: Bagrid\_72 Start: 50124, Stop: 49711, Start Num: 30

Candidate Starts for Bagrid\_72:

(Start: 30 @50124 has 7 MA's), (33, 50112), (52, 50028), (55, 50010), (62, 49932), (64, 49896), (65, 49890), (75, 49758),

Gene: Beatrix\_60 Start: 41870, Stop: 41490, Start Num: 36

Candidate Starts for Beatrix\_60:

(2, 42071), (20, 41927), (21, 41924), (Start: 36 @41870 has 22 MA's), (Start: 38 @41858 has 4 MA's), (62, 41702), (64, 41666), (65, 41660), (75, 41528),

Gene: Beem\_73 Start: 50984, Stop: 50568, Start Num: 22

Candidate Starts for Beem\_73:

(Start: 22 @50984 has 41 MA's), (Start: 26 @50972 has 1 MA's), (51, 50888), (55, 50870), (62, 50792), (63, 50762), (66, 50723), (67, 50720),

Gene: Ben11\_50 Start: 45429, Stop: 44986, Start Num: 22

Candidate Starts for Ben11\_50:

(Start: 22 @45429 has 41 MA's), (Start: 26 @45417 has 1 MA's), (53, 45297), (57, 45267), (62, 45207), (64, 45171), (65, 45165), (75, 45033),

Gene: Bexan\_58 Start: 41649, Stop: 41269, Start Num: 36

Candidate Starts for Bexan\_58:

(20, 41706), (21, 41703), (Start: 36 @41649 has 22 MA's), (Start: 38 @41637 has 4 MA's), (62, 41481), (64, 41445), (65, 41439), (75, 41307),

Gene: Bones\_60 Start: 41965, Stop: 41585, Start Num: 36

Candidate Starts for Bones\_60:

(1, 42175), (2, 42166), (20, 42022), (21, 42019), (Start: 36 @41965 has 22 MA's), (Start: 38 @41953 has 4 MA's), (62, 41797), (64, 41761), (65, 41755), (75, 41623),

Gene: Brilliant\_54 Start: 47338, Stop: 46895, Start Num: 22

Candidate Starts for Brilliant\_54:

(Start: 22 @47338 has 41 MA's), (Start: 26 @47326 has 1 MA's), (53, 47206), (57, 47176), (62, 47116), (64, 47080), (65, 47074), (75, 46942),

Gene: Buck\_43 Start: 35755, Stop: 35318, Start Num: 22

Candidate Starts for Buck\_43:

(10, 35827), (Start: 22 @35755 has 41 MA's), (Start: 26 @35743 has 1 MA's), (57, 35593), (62, 35533), (64, 35497), (65, 35491), (75, 35359),

Gene: BuzzLyseyear\_87 Start: 51492, Stop: 51857, Start Num: 39

Candidate Starts for BuzzLyseyear\_87:

(Start: 39 @51492 has 6 MA's), (45, 51507), (62, 51642), (64, 51678), (65, 51684), (75, 51816),

Gene: Caprice\_8 Start: 2539, Stop: 2922, Start Num: 34

Candidate Starts for Caprice\_8:

(34, 2539), (Start: 38 @2554 has 4 MA's), (62, 2710), (64, 2746), (65, 2752), (75, 2884),

Gene: Casbah\_50 Start: 45459, Stop: 45016, Start Num: 22

Candidate Starts for Casbah\_50:

(Start: 22 @45459 has 41 MA's), (Start: 26 @45447 has 1 MA's), (53, 45327), (57, 45297), (62, 45237), (64, 45201), (65, 45195), (75, 45063),

Gene: Che8\_83 Start: 48984, Stop: 49319, Start Num: 46

Candidate Starts for Che8\_83:

(Start: 46 @48984 has 1 MA's), (54, 49020), (64, 49134), (65, 49140), (75, 49272), (76, 49290),

Gene: Childish\_52 Start: 47365, Stop: 46922, Start Num: 22

Candidate Starts for Childish\_52:

(Start: 22 @47365 has 41 MA's), (Start: 26 @47353 has 1 MA's), (53, 47233), (57, 47203), (62, 47143), (64, 47107), (65, 47101), (75, 46969),

Gene: Constella\_64 Start: 46367, Stop: 45930, Start Num: 22

Candidate Starts for Constella\_64:

(Start: 22 @46367 has 41 MA's), (57, 46205), (59, 46202), (62, 46145), (64, 46109), (65, 46103), (75, 45971),

Gene: Cosmolli16\_53 Start: 47545, Stop: 47198, Start Num: 38

Candidate Starts for Cosmolli16\_53:

(Start: 38 @47545 has 4 MA's), (40, 47533), (62, 47413), (64, 47377), (65, 47371), (75, 47239), (76, 47221),

Gene: Courthouse\_75 Start: 48166, Stop: 47780, Start Num: 36

Candidate Starts for Courthouse\_75:

(Start: 36 @48166 has 22 MA's), (Start: 38 @48154 has 4 MA's), (62, 47998), (64, 47962), (65, 47956), (75, 47824),

Gene: Craff\_55 Start: 47790, Stop: 47347, Start Num: 22

Candidate Starts for Craff\_55:

(Start: 22 @47790 has 41 MA's), (Start: 26 @47778 has 1 MA's), (53, 47658), (57, 47628), (62, 47568), (64, 47532), (65, 47526), (75, 47394),

Gene: Cueyllyss\_61 Start: 42165, Stop: 41785, Start Num: 36

Candidate Starts for Cueyllyss\_61:

(2, 42366), (20, 42222), (21, 42219), (Start: 36 @42165 has 22 MA's), (Start: 38 @42153 has 4 MA's), (62, 41997), (64, 41961), (65, 41955), (75, 41823),

Gene: DaddyDaniels\_54 Start: 47322, Stop: 46879, Start Num: 22

Candidate Starts for DaddyDaniels\_54:

(Start: 22 @47322 has 41 MA's), (Start: 26 @47310 has 1 MA's), (53, 47190), (57, 47160), (62, 47100), (64, 47064), (65, 47058), (75, 46926),

Gene: Dallas\_72 Start: 49905, Stop: 49489, Start Num: 22

Candidate Starts for Dallas\_72:

(Start: 22 @49905 has 41 MA's), (Start: 26 @49893 has 1 MA's), (51, 49809), (55, 49791), (62, 49713), (63, 49683), (66, 49644), (67, 49641),

Gene: Delton\_83 Start: 59993, Stop: 60511, Start Num: 9

Candidate Starts for Delton\_83:

(Start: 9 @59993 has 1 MA's), (32, 60116), (49, 60191), (60, 60263), (62, 60296), (64, 60332), (65, 60338), (75, 60470), (76, 60488),

Gene: Demsculpinboyz\_94 Start: 48157, Stop: 48546, Start Num: 36

Candidate Starts for Demsculpinboyz\_94:

(11, 48034), (28, 48127), (31, 48136), (Start: 36 @48157 has 22 MA's), (62, 48325), (64, 48361), (65, 48367), (75, 48499),

Gene: DmpstrDiver\_73 Start: 50332, Stop: 49916, Start Num: 22

Candidate Starts for DmpstrDiver\_73:

(Start: 22 @50332 has 41 MA's), (Start: 26 @50320 has 1 MA's), (51, 50236), (55, 50218), (62, 50140), (63, 50110), (66, 50071), (67, 50068),

Gene: Dreamboat\_62 Start: 40065, Stop: 39685, Start Num: 36

Candidate Starts for Dreamboat\_62:

(2, 40266), (20, 40122), (21, 40119), (Start: 36 @40065 has 22 MA's), (Start: 38 @40053 has 4 MA's), (62, 39897), (64, 39861), (65, 39855), (75, 39723),

Gene: EricMillard\_72 Start: 50977, Stop: 50564, Start Num: 30

Candidate Starts for EricMillard\_72:

(Start: 30 @50977 has 7 MA's), (33, 50965), (52, 50881), (55, 50863), (62, 50785), (64, 50749), (65, 50743), (75, 50611),



Gene: Fringe\_56 Start: 48267, Stop: 47878, Start Num: 36

Candidate Starts for Fringe\_56:

(Start: 36 @48267 has 22 MA's), (Start: 38 @48255 has 4 MA's), (62, 48099), (64, 48063), (65, 48057), (75, 47925),

Gene: GageAP\_62 Start: 41383, Stop: 41024, Start Num: 39

Candidate Starts for GageAP\_62:

(5, 41584), (25, 41440), (27, 41437), (Start: 39 @41383 has 6 MA's), (45, 41371), (62, 41236), (64, 41200), (65, 41194), (75, 41062),

Gene: Gervas\_51 Start: 45588, Stop: 45145, Start Num: 22

Candidate Starts for Gervas\_51:

(Start: 22 @45588 has 41 MA's), (Start: 26 @45576 has 1 MA's), (53, 45456), (57, 45426), (62, 45366), (64, 45330), (65, 45324), (75, 45192),

Gene: Giraffe\_53 Start: 47326, Stop: 46979, Start Num: 38

Candidate Starts for Giraffe\_53:

(Start: 38 @47326 has 4 MA's), (40, 47314), (62, 47194), (64, 47158), (65, 47152), (75, 47020), (76, 47002),

Gene: GodPhather\_63 Start: 48617, Stop: 49021, Start Num: 29

Candidate Starts for GodPhather\_63:

(12, 48539), (16, 48548), (17, 48566), (20, 48587), (23, 48593), (25, 48602), (Start: 29 @48617 has 2 MA's), (41, 48668), (43, 48674), (45, 48677), (47, 48695), (48, 48698), (49, 48701), (50, 48704), (53, 48725), (61, 48800), (64, 48842), (65, 48848), (75, 48980),

Gene: Graduation\_65 Start: 42237, Stop: 41857, Start Num: 36

Candidate Starts for Graduation\_65:

(2, 42438), (20, 42294), (21, 42291), (Start: 36 @42237 has 22 MA's), (Start: 38 @42225 has 4 MA's), (62, 42069), (64, 42033), (65, 42027), (75, 41895),

Gene: Grand2040\_52 Start: 47320, Stop: 46973, Start Num: 38

Candidate Starts for Grand2040\_52:

(Start: 38 @47320 has 4 MA's), (40, 47308), (62, 47188), (64, 47152), (65, 47146), (75, 47014), (76, 46996),

Gene: Gwilliam\_54 Start: 47683, Stop: 47303, Start Num: 36

Candidate Starts for Gwilliam\_54:

(Start: 36 @47683 has 22 MA's), (Start: 38 @47671 has 4 MA's), (62, 47515), (64, 47479), (65, 47473), (75, 47341),

Gene: Halley\_75 Start: 50984, Stop: 50568, Start Num: 22

Candidate Starts for Halley\_75:

(Start: 22 @50984 has 41 MA's), (Start: 26 @50972 has 1 MA's), (51, 50888), (55, 50870), (62, 50792), (63, 50762), (66, 50723), (67, 50720),

Gene: HenryJackson\_52 Start: 47354, Stop: 46911, Start Num: 22

Candidate Starts for HenryJackson\_52:

(Start: 22 @47354 has 41 MA's), (Start: 26 @47342 has 1 MA's), (53, 47222), (57, 47192), (62, 47132), (64, 47096), (65, 47090), (75, 46958),

Gene: HighStump\_54 Start: 47890, Stop: 47447, Start Num: 22

Candidate Starts for HighStump\_54:

(10, 47962), (13, 47941), (14, 47935), (Start: 22 @47890 has 41 MA's), (Start: 26 @47878 has 1 MA's), (53, 47758), (57, 47728), (62, 47668), (64, 47632), (65, 47626), (75, 47494),

Gene: HokkenD\_66 Start: 49253, Stop: 48837, Start Num: 22

Candidate Starts for HokkenD\_66:

(Start: 22 @49253 has 41 MA's), (Start: 26 @49241 has 1 MA's), (51, 49157), (55, 49139), (62, 49061), (63, 49031), (66, 48992), (67, 48989),

Gene: Jasper\_61 Start: 39951, Stop: 39571, Start Num: 36

Candidate Starts for Jasper\_61:

(2, 40152), (20, 40008), (21, 40005), (Start: 36 @39951 has 22 MA's), (Start: 38 @39939 has 4 MA's), (62, 39783), (64, 39747), (65, 39741), (75, 39609),

Gene: Jeon\_62 Start: 48308, Stop: 48712, Start Num: 29

Candidate Starts for Jeon\_62:

(12, 48230), (16, 48239), (17, 48257), (20, 48278), (23, 48284), (25, 48293), (Start: 29 @48308 has 2 MA's), (41, 48359), (43, 48365), (45, 48368), (47, 48386), (48, 48389), (49, 48392), (50, 48395), (53, 48416), (61, 48491), (64, 48533), (65, 48539), (75, 48671),

Gene: JuicyJay\_72 Start: 52118, Stop: 51702, Start Num: 22

Candidate Starts for JuicyJay\_72:

(Start: 22 @52118 has 41 MA's), (Start: 26 @52106 has 1 MA's), (51, 52022), (55, 52004), (62, 51926), (63, 51896), (66, 51857), (67, 51854),

Gene: Juniper1\_79 Start: 47775, Stop: 48149, Start Num: 37

Candidate Starts for Juniper1\_79:

(37, 47775), (45, 47799), (62, 47934), (64, 47970), (65, 47976), (75, 48108), (76, 48126),

Gene: Kahve\_52 Start: 47351, Stop: 46908, Start Num: 22

Candidate Starts for Kahve\_52:

(Start: 22 @47351 has 41 MA's), (Start: 26 @47339 has 1 MA's), (53, 47219), (57, 47189), (62, 47129), (64, 47093), (65, 47087), (75, 46955),

Gene: Kalah2\_68 Start: 50277, Stop: 49861, Start Num: 22

Candidate Starts for Kalah2\_68:

(Start: 22 @50277 has 41 MA's), (Start: 26 @50265 has 1 MA's), (51, 50181), (55, 50163), (62, 50085), (63, 50055), (66, 50016), (67, 50013),

Gene: Kersh\_88 Start: 52115, Stop: 52522, Start Num: 30

Candidate Starts for Kersh\_88:

(3, 51941), (4, 51950), (6, 51974), (21, 52085), (24, 52094), (Start: 30 @52115 has 7 MA's), (45, 52172), (52, 52211), (62, 52307), (64, 52343), (65, 52349), (75, 52481),

Gene: Kronus\_50 Start: 46191, Stop: 45748, Start Num: 22

Candidate Starts for Kronus\_50:

(Start: 22 @46191 has 41 MA's), (Start: 26 @46179 has 1 MA's), (53, 46059), (57, 46029), (62, 45969), (64, 45933), (65, 45927), (75, 45795),

Gene: Latretium\_78 Start: 47174, Stop: 47560, Start Num: 36

Candidate Starts for Latretium\_78:

(Start: 36 @47174 has 22 MA's), (Start: 38 @47186 has 4 MA's), (62, 47342), (64, 47378), (65, 47384), (75, 47516),

Gene: Legolas\_54 Start: 47787, Stop: 47344, Start Num: 22

Candidate Starts for Legolas\_54:

(10, 47859), (13, 47838), (14, 47832), (Start: 22 @47787 has 41 MA's), (Start: 26 @47775 has 1 MA's), (53, 47655), (57, 47625), (62, 47565), (64, 47529), (65, 47523), (75, 47391),

Gene: LeiMonet\_54 Start: 47306, Stop: 46959, Start Num: 38

Candidate Starts for LeiMonet\_54:

(Start: 38 @47306 has 4 MA's), (40, 47294), (62, 47174), (64, 47138), (65, 47132), (75, 47000), (76, 46982),

Gene: Longacauda\_53 Start: 47750, Stop: 47307, Start Num: 22

Candidate Starts for Longacauda\_53:

(10, 47822), (13, 47801), (14, 47795), (Start: 22 @47750 has 41 MA's), (Start: 26 @47738 has 1 MA's), (53, 47618), (57, 47588), (62, 47528), (64, 47492), (65, 47486), (75, 47354),

Gene: Lumine\_53 Start: 47538, Stop: 47155, Start Num: 36

Candidate Starts for Lumine\_53:

(Start: 36 @47538 has 22 MA's), (Start: 38 @47526 has 4 MA's), (62, 47370), (64, 47334), (65, 47328), (75, 47196),

Gene: MISSy\_42 Start: 35034, Stop: 34591, Start Num: 22

Candidate Starts for MISSy\_42:

(10, 35106), (Start: 22 @35034 has 41 MA's), (Start: 26 @35022 has 1 MA's), (57, 34872), (62, 34812), (64, 34776), (65, 34770), (75, 34638),

Gene: MPhalcon\_42 Start: 35027, Stop: 34584, Start Num: 22

Candidate Starts for MPhalcon\_42:

(10, 35099), (Start: 22 @35027 has 41 MA's), (Start: 26 @35015 has 1 MA's), (57, 34865), (62, 34805), (64, 34769), (65, 34763), (75, 34631),

Gene: MadKillah\_102 Start: 61818, Stop: 61405, Start Num: 30

Candidate Starts for MadKillah\_102:

(7, 61950), (15, 61890), (18, 61869), (Start: 30 @61818 has 7 MA's), (45, 61761), (52, 61722), (62, 61626), (64, 61590), (65, 61584), (75, 61452),

Gene: Makemake\_63 Start: 42339, Stop: 41959, Start Num: 36

Candidate Starts for Makemake\_63:

(2, 42540), (20, 42396), (21, 42393), (Start: 36 @42339 has 22 MA's), (Start: 38 @42327 has 4 MA's), (62, 42171), (64, 42135), (65, 42129), (75, 41997),

Gene: Marsha\_82 Start: 50494, Stop: 50108, Start Num: 36

Candidate Starts for Marsha\_82:

(Start: 36 @50494 has 22 MA's), (Start: 38 @50482 has 4 MA's), (62, 50326), (64, 50290), (65, 50284), (75, 50152),

Gene: Maru\_52 Start: 47257, Stop: 46910, Start Num: 38

Candidate Starts for Maru\_52:

(Start: 38 @47257 has 4 MA's), (40, 47245), (62, 47125), (64, 47089), (65, 47083), (75, 46951), (76, 46933),

Gene: Marvin\_10 Start: 3597, Stop: 3977, Start Num: 36

Candidate Starts for Marvin\_10:

(15, 3501), (19, 3525), (Start: 36 @3597 has 22 MA's), (Start: 38 @3609 has 4 MA's), (62, 3765), (64, 3801), (65, 3807), (75, 3939),

Gene: MiaZeal\_74 Start: 47379, Stop: 46963, Start Num: 22

Candidate Starts for MiaZeal\_74:

(Start: 22 @47379 has 41 MA's), (Start: 26 @47367 has 1 MA's), (51, 47283), (55, 47265), (62, 47187), (63, 47157), (66, 47118), (67, 47115),

Gene: MmasiCarm\_51 Start: 45638, Stop: 45195, Start Num: 22

Candidate Starts for MmasiCarm\_51:

(Start: 22 @45638 has 41 MA's), (Start: 26 @45626 has 1 MA's), (53, 45506), (57, 45476), (62, 45416), (64, 45380), (65, 45374), (75, 45242),

Gene: Moonbeam\_87 Start: 50558, Stop: 50971, Start Num: 30

Candidate Starts for Moonbeam\_87:

(8, 50435), (21, 50528), (24, 50537), (Start: 30 @50558 has 7 MA's), (45, 50615), (52, 50654), (62, 50750), (64, 50786), (65, 50792), (75, 50924),

Gene: Mortcellus\_50 Start: 46245, Stop: 45802, Start Num: 22

Candidate Starts for Mortcellus\_50:

(Start: 22 @46245 has 41 MA's), (Start: 26 @46233 has 1 MA's), (53, 46113), (57, 46083), (62, 46023), (64, 45987), (65, 45981), (75, 45849),

Gene: MrPhizzler\_53 Start: 47284, Stop: 46895, Start Num: 36

Candidate Starts for MrPhizzler\_53:

(Start: 36 @47284 has 22 MA's), (Start: 38 @47272 has 4 MA's), (62, 47116), (64, 47080), (65, 47074), (75, 46942),

Gene: NEHalo\_58 Start: 40784, Stop: 40425, Start Num: 39

Candidate Starts for NEHalo\_58:

(5, 40985), (25, 40841), (27, 40838), (Start: 39 @40784 has 6 MA's), (45, 40772), (62, 40637), (64, 40601), (65, 40595), (75, 40463),

Gene: Nala\_43 Start: 35539, Stop: 35096, Start Num: 22

Candidate Starts for Nala\_43:

(10, 35611), (Start: 22 @35539 has 41 MA's), (Start: 26 @35527 has 1 MA's), (57, 35377), (62, 35317), (64, 35281), (65, 35275), (75, 35143),

Gene: NihilNomen\_74 Start: 51071, Stop: 50655, Start Num: 22

Candidate Starts for NihilNomen\_74:

(Start: 22 @51071 has 41 MA's), (Start: 26 @51059 has 1 MA's), (51, 50975), (55, 50957), (62, 50879), (63, 50849), (66, 50810), (67, 50807),

Gene: Obutu\_51 Start: 45593, Stop: 45150, Start Num: 22

Candidate Starts for Obutu\_51:

(Start: 22 @45593 has 41 MA's), (Start: 26 @45581 has 1 MA's), (53, 45461), (57, 45431), (62, 45371), (64, 45335), (65, 45329), (75, 45197),

Gene: Odette\_72 Start: 50114, Stop: 49698, Start Num: 22

Candidate Starts for Odette\_72:

(Start: 22 @50114 has 41 MA's), (Start: 26 @50102 has 1 MA's), (51, 50018), (55, 50000), (62, 49922), (63, 49892), (66, 49853), (67, 49850),

Gene: Ohno789\_61 Start: 41528, Stop: 41148, Start Num: 36

Candidate Starts for Ohno789\_61:

(2, 41729), (20, 41585), (21, 41582), (Start: 36 @41528 has 22 MA's), (Start: 38 @41516 has 4 MA's), (62, 41360), (64, 41324), (65, 41318), (75, 41186),

Gene: Phayeta\_52 Start: 45475, Stop: 45032, Start Num: 22

Candidate Starts for Phayeta\_52:

(Start: 22 @45475 has 41 MA's), (Start: 26 @45463 has 1 MA's), (53, 45343), (57, 45313), (62, 45253), (64, 45217), (65, 45211), (75, 45079),

Gene: PherrisBueller\_60 Start: 39602, Stop: 39222, Start Num: 36

Candidate Starts for PherrisBueller\_60:

(2, 39803), (20, 39659), (21, 39656), (Start: 36 @39602 has 22 MA's), (Start: 38 @39590 has 4 MA's), (62, 39434), (64, 39398), (65, 39392), (75, 39260),

Gene: Phoebus\_76 Start: 52253, Stop: 51837, Start Num: 22

Candidate Starts for Phoebus\_76:

(Start: 22 @52253 has 41 MA's), (Start: 26 @52241 has 1 MA's), (51, 52157), (55, 52139), (62, 52061), (63, 52031), (66, 51992), (67, 51989),

Gene: Pollywog\_86 Start: 51074, Stop: 51427, Start Num: 39

Candidate Starts for Pollywog\_86:

(5, 50873), (25, 51017), (27, 51020), (Start: 39 @51074 has 6 MA's), (45, 51086), (62, 51206), (64, 51242), (65, 51248), (75, 51380),

Gene: Porcelain\_73 Start: 47379, Stop: 46963, Start Num: 22

Candidate Starts for Porcelain\_73:

(Start: 22 @47379 has 41 MA's), (Start: 26 @47367 has 1 MA's), (51, 47283), (55, 47265), (62, 47187), (63, 47157), (66, 47118), (67, 47115),

Gene: Quallification\_43 Start: 35661, Stop: 35215, Start Num: 22

Candidate Starts for Quallification\_43:

(10, 35733), (Start: 22 @35661 has 41 MA's), (Start: 26 @35649 has 1 MA's), (56, 35499), (62, 35439), (63, 35409), (66, 35370), (67, 35367),

Gene: RedRaider77\_10 Start: 3149, Stop: 3538, Start Num: 36

Candidate Starts for RedRaider77\_10:

(Start: 36 @3149 has 22 MA's), (Start: 38 @3161 has 4 MA's), (62, 3317), (64, 3353), (65, 3359), (75, 3491),

Gene: Redno2\_70 Start: 47867, Stop: 47451, Start Num: 22

Candidate Starts for Redno2\_70:

(Start: 22 @47867 has 41 MA's), (Start: 26 @47855 has 1 MA's), (51, 47771), (55, 47753), (62, 47675), (63, 47645), (66, 47606), (67, 47603),

Gene: Rialto\_90 Start: 50654, Stop: 51067, Start Num: 30

Candidate Starts for Rialto\_90:

(8, 50531), (21, 50624), (24, 50633), (Start: 30 @50654 has 7 MA's), (45, 50711), (52, 50750), (62, 50846), (64, 50882), (65, 50888), (75, 51020),

Gene: Rimmer\_43 Start: 35365, Stop: 34928, Start Num: 22

Candidate Starts for Rimmer\_43:

(10, 35437), (Start: 22 @35365 has 41 MA's), (Start: 26 @35353 has 1 MA's), (57, 35203), (62, 35143), (64, 35107), (65, 35101), (75, 34969),

Gene: Rimu\_56 Start: 47304, Stop: 46915, Start Num: 36

Candidate Starts for Rimu\_56:

(Start: 36 @47304 has 22 MA's), (Start: 38 @47292 has 4 MA's), (62, 47136), (64, 47100), (65, 47094), (75, 46962),

Gene: Rita1961\_51 Start: 45594, Stop: 45151, Start Num: 22

Candidate Starts for Rita1961\_51:

(Start: 22 @45594 has 41 MA's), (Start: 26 @45582 has 1 MA's), (53, 45462), (57, 45432), (62, 45372), (64, 45336), (65, 45330), (75, 45198),

Gene: RoMag\_5 Start: 2623, Stop: 3003, Start Num: 26

Candidate Starts for RoMag\_5:

(Start: 22 @2611 has 41 MA's), (Start: 26 @2623 has 1 MA's), (42, 2671), (44, 2677), (58, 2740), (62, 2794), (68, 2872), (71, 2884), (72, 2887),

Gene: Sabbb\_88 Start: 48209, Stop: 48622, Start Num: 30

Candidate Starts for Sabbb\_88:

(3, 48035), (4, 48044), (6, 48068), (8, 48086), (21, 48179), (24, 48188), (Start: 30 @48209 has 7 MA's), (45, 48266), (52, 48305), (62, 48401), (64, 48437), (65, 48443), (75, 48575),

Gene: Sandaddy\_57 Start: 40445, Stop: 40086, Start Num: 39

Candidate Starts for Sandaddy\_57:

(5, 40646), (25, 40502), (27, 40499), (Start: 39 @40445 has 6 MA's), (45, 40433), (62, 40298), (64, 40262), (65, 40256), (75, 40124),

Gene: ScoobyDoobyDoo\_2 Start: 227, Stop: 613, Start Num: 36

Candidate Starts for ScoobyDoobyDoo\_2:

(Start: 36 @227 has 22 MA's), (Start: 38 @239 has 4 MA's), (62, 395), (64, 431), (65, 437), (74, 515), (75, 569),

Gene: Scowl\_62 Start: 40833, Stop: 40453, Start Num: 36

Candidate Starts for Scowl\_62:

(20, 40890), (21, 40887), (Start: 36 @40833 has 22 MA's), (Start: 38 @40821 has 4 MA's), (62, 40665), (64, 40629), (65, 40623), (75, 40491),

Gene: ShroomBoi\_80 Start: 48740, Stop: 49138, Start Num: 35

Candidate Starts for ShroomBoi\_80:

(Start: 35 @48740 has 1 MA's), (Start: 38 @48755 has 4 MA's), (62, 48911), (69, 48998), (70, 49004), (73, 49028),

Gene: SlippinJimmy\_52 Start: 46376, Stop: 45933, Start Num: 22

Candidate Starts for SlippinJimmy\_52:

(Start: 22 @46376 has 41 MA's), (Start: 26 @46364 has 1 MA's), (53, 46244), (57, 46214), (62, 46154), (64, 46118), (65, 46112), (75, 45980),

Gene: Soile\_53 Start: 47351, Stop: 46908, Start Num: 22

Candidate Starts for Soile\_53:

(Start: 22 @47351 has 41 MA's), (Start: 26 @47339 has 1 MA's), (53, 47219), (57, 47189), (62, 47129), (64, 47093), (65, 47087), (75, 46955),

Gene: Sorpresa\_56 Start: 40447, Stop: 40088, Start Num: 39

Candidate Starts for Sorpresa\_56:

(5, 40648), (25, 40504), (27, 40501), (Start: 39 @40447 has 6 MA's), (45, 40435), (62, 40300), (64, 40264), (65, 40258), (75, 40126),

Gene: SpikeBT\_59 Start: 40641, Stop: 40282, Start Num: 39

Candidate Starts for SpikeBT\_59:

(5, 40842), (25, 40698), (27, 40695), (Start: 39 @40641 has 6 MA's), (45, 40629), (62, 40494), (64, 40458), (65, 40452), (75, 40320),

Gene: Squint\_74 Start: 47498, Stop: 47082, Start Num: 22

Candidate Starts for Squint\_74:

(Start: 22 @47498 has 41 MA's), (Start: 26 @47486 has 1 MA's), (51, 47402), (55, 47384), (62, 47306), (63, 47276), (66, 47237), (67, 47234),

Gene: StrongArm\_59 Start: 41777, Stop: 41397, Start Num: 36

Candidate Starts for StrongArm\_59:

(20, 41834), (21, 41831), (Start: 36 @41777 has 22 MA's), (Start: 38 @41765 has 4 MA's), (62, 41609), (64, 41573), (65, 41567), (75, 41435),

Gene: Superphikiman\_71 Start: 46589, Stop: 46173, Start Num: 22

Candidate Starts for Superphikiman\_71:

(Start: 22 @46589 has 41 MA's), (Start: 26 @46577 has 1 MA's), (51, 46493), (55, 46475), (62, 46397), (63, 46367), (66, 46328), (67, 46325),

Gene: TDanisky\_93 Start: 48927, Stop: 49307, Start Num: 30

Candidate Starts for TDanisky\_93:

(Start: 30 @48927 has 7 MA's), (62, 49092), (64, 49128), (65, 49134), (75, 49266),

Gene: Thibault\_65 Start: 47312, Stop: 46869, Start Num: 22

Candidate Starts for Thibault\_65:

(Start: 22 @47312 has 41 MA's), (57, 47150), (59, 47147), (62, 47090), (64, 47054), (65, 47048), (75, 46916),

Gene: VasuNzinga\_9 Start: 2804, Stop: 3184, Start Num: 36

Candidate Starts for VasuNzinga\_9:

(Start: 36 @2804 has 22 MA's), (Start: 38 @2816 has 4 MA's), (62, 2972), (64, 3008), (65, 3014), (75, 3146),

Gene: Youngblood\_44 Start: 35976, Stop: 35539, Start Num: 22

Candidate Starts for Youngblood\_44:

(10, 36048), (Start: 22 @35976 has 41 MA's), (Start: 26 @35964 has 1 MA's), (57, 35814), (62, 35754), (64, 35718), (65, 35712), (75, 35580),