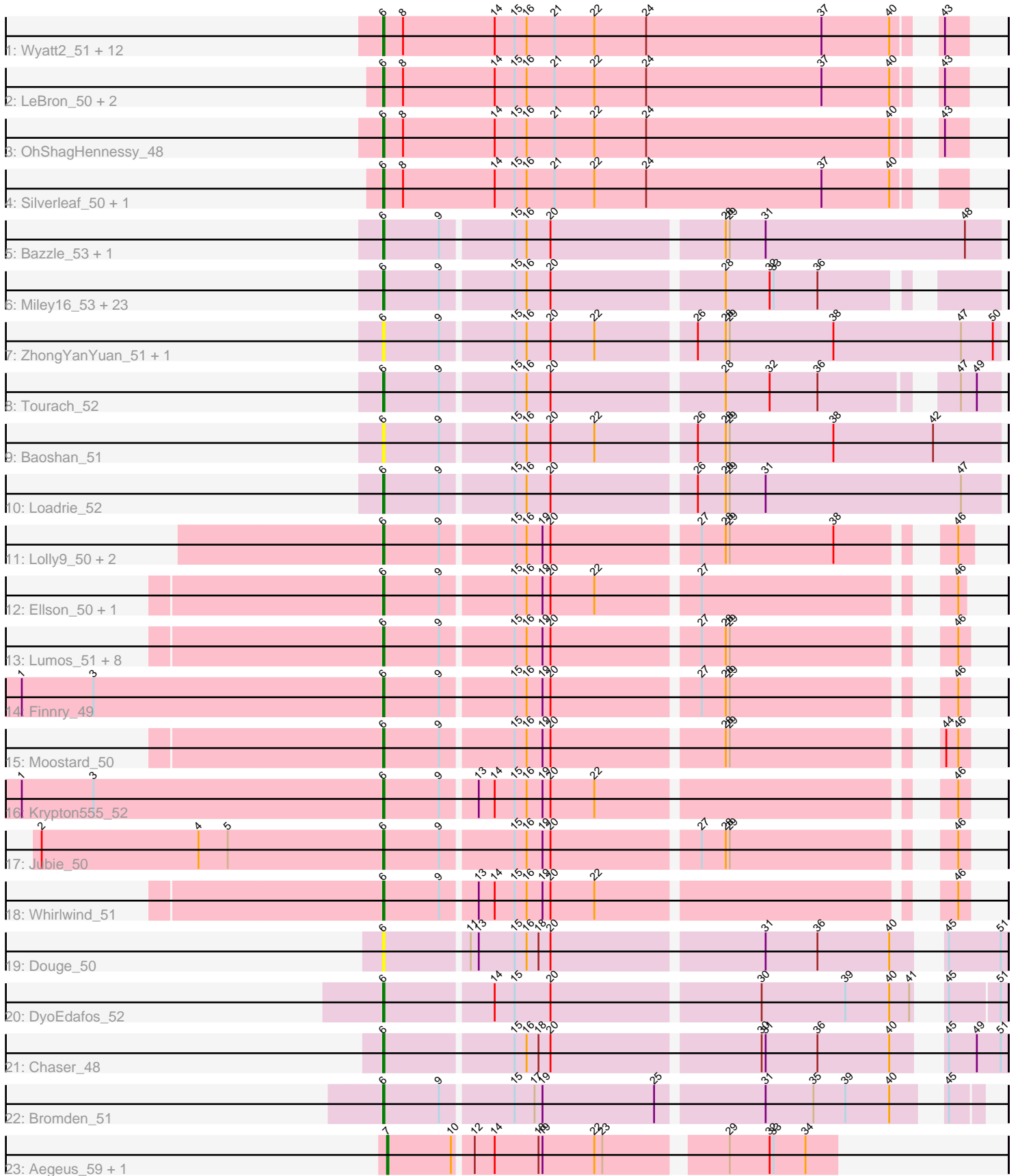


# Pham 171420



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 171420 Report

This analysis was run 07/10/24 on database version 566.

Pham number 171420 has 75 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Wyatt2\_51, Acquire49\_51, Wamburgrxpress\_50, Halena\_49, Tyson\_50, Calm\_51, UPIE\_50, DirkDirk\_49, Rose5\_50, MAckerman\_49, Zaria\_51, Enceladus\_49, CicholasNage\_50
- Track 2 : LeBron\_50, JoeDirt\_49, Appletree2\_49
- Track 3 : OhShagHennessy\_48
- Track 4 : Silverleaf\_50, AvadaKedavra\_50
- Track 5 : Bazzle\_53, Archie\_53
- Track 6 : Miley16\_53, BobsGarage\_53, Kahlid\_53, Rumpelstiltskin\_52, Zakai\_53, LilDestine\_53, Itos\_52, DrSeegs\_53, Winky\_53, Hafay\_54, Netyap\_54, Wigglewiggles\_53, Crossroads\_53, Breezons\_53, Finemlucis\_53, BigCheese\_53, Lewan\_54, Nicholasp3\_53, Vetric\_53, GuuelaD\_52, Gardann\_53, Faith1\_53, Wilder\_53, MkaliMitinis3\_54
- Track 7 : ZhongYanYuan\_51, Claus\_53
- Track 8 : Tourach\_52
- Track 9 : Baoshan\_51
- Track 10 : Loadie\_52
- Track 11 : Lolly9\_50, MiniMac\_52, MiniLon\_52
- Track 12 : Ellson\_50, DuncansLeg\_50
- Track 13 : Lumos\_51, Samty\_50, Snenia\_50, Clautastrophe\_50, MsGreen\_50, Kingsolomon\_50, Jobypre\_51, Nicholas\_50, Bellis\_50
- Track 14 : Finnry\_49
- Track 15 : Moostard\_50
- Track 16 : Krypton555\_52
- Track 17 : Jubie\_50
- Track 18 : Whirlwind\_51
- Track 19 : Douge\_50
- Track 20 : DyoEdafos\_52
- Track 21 : Chaser\_48
- Track 22 : Bromden\_51
- Track 23 : Aegeus\_59, Baudelaire\_59

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

The start number called the most often in the published annotations is 6, it was called in 64 of the 66 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acquire49\_51, Appletree2\_49, Archie\_53, AvadaKedavra\_50, Baoshan\_51, Bazzle\_53, Bellis\_50, BigCheese\_53, BobsGarage\_53, Breezona\_53, Bromden\_51, Calm\_51, Chaser\_48, CicholasNage\_50, Claus\_53, Clautastrophe\_50, Crossroads\_53, DirkDirk\_49, Douge\_50, DrSeegs\_53, DuncansLeg\_50, DyoEdafos\_52, Ellson\_50, Enceladus\_49, Faith1\_53, Finemlucis\_53, Finnry\_49, Gardann\_53, GuuelaD\_52, Hafay\_54, Halena\_49, Itos\_52, Jobypre\_51, JoeDirt\_49, Jubie\_50, Kahlid\_53, Kingsolomon\_50, Krypton555\_52, LeBron\_50, Lewan\_54, LilDestine\_53, Loadrie\_52, Lolly9\_50, Lumos\_51, MAckerman\_49, Miley16\_53, MiniLon\_52, MiniMac\_52, MkaliMitinis3\_54, Moostard\_50, MsGreen\_50, Netyap\_54, Nicholas\_50, Nicholasp3\_53, OhShagHennessey\_48, Rose5\_50, Rumpelstiltskin\_52, Samty\_50, Silverleaf\_50, Snenia\_50, Tourach\_52, Tyson\_50, UPIE\_50, Vetrix\_53, Wamburgrxpress\_50, Whirlwind\_51, Wigglewiggle\_53, Wilder\_53, Winky\_53, Wyatt2\_51, Zakai\_53, Zaria\_51, ZhongYanYuan\_51,

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

- 

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

- Aegeus\_59, Baudelaire\_59,

### Summary by start number:

Start 6:

- Found in 73 of 75 ( 97.3% ) of genes in pham
- Manual Annotations of this start: 64 of 66
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acquire49\_51 (L1), Appletree2\_49 (L1), Archie\_53 (L2), AvadaKedavra\_50 (L1), Baoshan\_51 (L2), Bazzle\_53 (L2), Bellis\_50 (L3), BigCheese\_53 (L2), BobsGarage\_53 (L2), Breezona\_53 (L2), Bromden\_51 (L4), Calm\_51 (L1), Chaser\_48 (L4), CicholasNage\_50 (L1), Claus\_53 (L2), Clautastrophe\_50 (L3), Crossroads\_53 (L2), DirkDirk\_49 (L1), Douge\_50 (L4), DrSeegs\_53 (L2), DuncansLeg\_50 (L3), DyoEdafos\_52 (L4), Ellson\_50 (L3), Enceladus\_49 (L1), Faith1\_53 (L2), Finemlucis\_53 (L2), Finnry\_49 (L3), Gardann\_53 (L2), GuuelaD\_52 (L2), Hafay\_54 (L2), Halena\_49 (L1), Itos\_52 (L2), Jobypre\_51 (L3), JoeDirt\_49 (L1), Jubie\_50 (L3), Kahlid\_53 (L2), Kingsolomon\_50 (L3), Krypton555\_52 (L3), LeBron\_50 (L1), Lewan\_54 (L2), LilDestine\_53 (L2), Loadrie\_52 (L2), Lolly9\_50 (L3), Lumos\_51 (L3), MAckerman\_49 (L1), Miley16\_53 (L2), MiniLon\_52 (L3), MiniMac\_52 (L3), MkaliMitinis3\_54 (L2), Moostard\_50 (L3), MsGreen\_50 (L3), Netyap\_54 (L2), Nicholas\_50 (L3), Nicholasp3\_53 (L2), OhShagHennessey\_48 (L1), Rose5\_50 (L1), Rumpelstiltskin\_52 (L2), Samty\_50 (L3), Silverleaf\_50 (L1), Snenia\_50 (L3), Tourach\_52 (L2), Tyson\_50 (L1), UPIE\_50 (L1), Vetrix\_53 (L2), Wamburgrxpress\_50 (L1), Whirlwind\_51 (L3), Wigglewiggle\_53 (L2), Wilder\_53 (L2), Winky\_53 (L2), Wyatt2\_51 (L1), Zakai\_53 (L2), Zaria\_51 (L1), ZhongYanYuan\_51 (L2),

Start 7:

- Found in 2 of 75 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 66
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Aegeus\_59 (L5), Baudelaire\_59 (L5),

### **Summary by clusters:**

There are 5 clusters represented in this pham: L4, L5, L2, L3, L1,

Info for manual annotations of cluster L1:

- Start number 6 was manually annotated 18 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 6 was manually annotated 27 times for cluster L2.

Info for manual annotations of cluster L3:

- Start number 6 was manually annotated 16 times for cluster L3.

Info for manual annotations of cluster L4:

- Start number 6 was manually annotated 3 times for cluster L4.

Info for manual annotations of cluster L5:

- Start number 7 was manually annotated 2 times for cluster L5.

### **Gene Information:**

Gene: Acquire49\_51 Start: 38005, Stop: 38421, Start Num: 6

Candidate Starts for Acquire49\_51:

(Start: 6 @38005 has 64 MA's), (8, 38020), (14, 38089), (15, 38104), (16, 38113), (21, 38134), (22, 38164), (24, 38203), (37, 38335), (40, 38386), (43, 38404),

Gene: Aegeus\_59 Start: 41204, Stop: 41521, Start Num: 7

Candidate Starts for Aegeus\_59:

(Start: 7 @41204 has 2 MA's), (10, 41252), (12, 41264), (14, 41279), (18, 41312), (19, 41315), (22, 41354), (23, 41360), (29, 41441), (32, 41471), (33, 41474), (34, 41498),

Gene: Appletree2\_49 Start: 37838, Stop: 38254, Start Num: 6

Candidate Starts for Appletree2\_49:

(Start: 6 @37838 has 64 MA's), (8, 37853), (14, 37922), (15, 37937), (16, 37946), (21, 37967), (22, 37997), (24, 38036), (37, 38168), (40, 38219), (43, 38237),

Gene: Archie\_53 Start: 39956, Stop: 40405, Start Num: 6

Candidate Starts for Archie\_53:

(Start: 6 @39956 has 64 MA's), (9, 39998), (15, 40049), (16, 40058), (20, 40076), (28, 40199), (29, 40202), (31, 40229), (48, 40379),

Gene: AvadaKedavra\_50 Start: 37907, Stop: 38323, Start Num: 6

Candidate Starts for AvadaKedavra\_50:

(Start: 6 @37907 has 64 MA's), (8, 37922), (14, 37991), (15, 38006), (16, 38015), (21, 38036), (22, 38066), (24, 38105), (37, 38237), (40, 38288),

Gene: Baoshan\_51 Start: 39640, Stop: 40089, Start Num: 6

Candidate Starts for Baoshan\_51:

(Start: 6 @39640 has 64 MA's), (9, 39682), (15, 39733), (16, 39742), (20, 39760), (22, 39793), (26, 39862), (28, 39883), (29, 39886), (38, 39964), (42, 40039),

Gene: Baudelaire\_59 Start: 41204, Stop: 41521, Start Num: 7

Candidate Starts for Baudelaire\_59:

(Start: 7 @41204 has 2 MA's), (10, 41252), (12, 41264), (14, 41279), (18, 41312), (19, 41315), (22, 41354), (23, 41360), (29, 41441), (32, 41471), (33, 41474), (34, 41498),

Gene: Bazzle\_53 Start: 40026, Stop: 40475, Start Num: 6

Candidate Starts for Bazzle\_53:

(Start: 6 @40026 has 64 MA's), (9, 40068), (15, 40119), (16, 40128), (20, 40146), (28, 40269), (29, 40272), (31, 40299), (48, 40449),

Gene: Bellis\_50 Start: 39683, Stop: 40078, Start Num: 6

Candidate Starts for Bellis\_50:

(Start: 6 @39683 has 64 MA's), (9, 39725), (15, 39776), (16, 39785), (19, 39797), (20, 39803), (27, 39908), (28, 39926), (29, 39929), (46, 40070),

Gene: BigCheese\_53 Start: 39745, Stop: 40164, Start Num: 6

Candidate Starts for BigCheese\_53:

(Start: 6 @39745 has 64 MA's), (9, 39787), (15, 39838), (16, 39847), (20, 39865), (28, 39988), (32, 40021), (33, 40024), (36, 40057),

Gene: BobsGarage\_53 Start: 39745, Stop: 40164, Start Num: 6

Candidate Starts for BobsGarage\_53:

(Start: 6 @39745 has 64 MA's), (9, 39787), (15, 39838), (16, 39847), (20, 39865), (28, 39988), (32, 40021), (33, 40024), (36, 40057),

Gene: Breezona\_53 Start: 39745, Stop: 40164, Start Num: 6

Candidate Starts for Breezona\_53:

(Start: 6 @39745 has 64 MA's), (9, 39787), (15, 39838), (16, 39847), (20, 39865), (28, 39988), (32, 40021), (33, 40024), (36, 40057),

Gene: Bromden\_51 Start: 39185, Stop: 39598, Start Num: 6

Candidate Starts for Bromden\_51:

(Start: 6 @39185 has 64 MA's), (9, 39227), (15, 39278), (17, 39293), (19, 39299), (25, 39383), (31, 39458), (35, 39494), (39, 39518), (40, 39551), (45, 39575),

Gene: Calm\_51 Start: 38020, Stop: 38436, Start Num: 6

Candidate Starts for Calm\_51:

(Start: 6 @38020 has 64 MA's), (8, 38035), (14, 38104), (15, 38119), (16, 38128), (21, 38149), (22, 38179), (24, 38218), (37, 38350), (40, 38401), (43, 38419),

Gene: Chaser\_48 Start: 38128, Stop: 38559, Start Num: 6

Candidate Starts for Chaser\_48:

(Start: 6 @38128 has 64 MA's), (15, 38221), (16, 38230), (18, 38239), (20, 38248), (30, 38398), (31, 38401), (36, 38440), (40, 38494), (45, 38515), (49, 38536), (51, 38554),

Gene: CicholasNage\_50 Start: 38041, Stop: 38457, Start Num: 6

Candidate Starts for CicholasNage\_50:

(Start: 6 @38041 has 64 MA's), (8, 38056), (14, 38125), (15, 38140), (16, 38149), (21, 38170), (22, 38200), (24, 38239), (37, 38371), (40, 38422), (43, 38440),

Gene: Claus\_53 Start: 39792, Stop: 40241, Start Num: 6

Candidate Starts for Claus\_53:

(Start: 6 @39792 has 64 MA's), (9, 39834), (15, 39885), (16, 39894), (20, 39912), (22, 39945), (26, 40014), (28, 40035), (29, 40038), (38, 40116), (47, 40212), (50, 40236),

Gene: Clautastrophe\_50 Start: 39680, Stop: 40075, Start Num: 6

Candidate Starts for Clautastrophe\_50:

(Start: 6 @39680 has 64 MA's), (9, 39722), (15, 39773), (16, 39782), (19, 39794), (20, 39800), (27, 39905), (28, 39923), (29, 39926), (46, 40067),

Gene: Crossroads\_53 Start: 39815, Stop: 40234, Start Num: 6

Candidate Starts for Crossroads\_53:

(Start: 6 @39815 has 64 MA's), (9, 39857), (15, 39908), (16, 39917), (20, 39935), (28, 40058), (32, 40091), (33, 40094), (36, 40127),

Gene: DirkDirk\_49 Start: 37884, Stop: 38300, Start Num: 6

Candidate Starts for DirkDirk\_49:

(Start: 6 @37884 has 64 MA's), (8, 37899), (14, 37968), (15, 37983), (16, 37992), (21, 38013), (22, 38043), (24, 38082), (37, 38214), (40, 38265), (43, 38283),

Gene: Douge\_50 Start: 38123, Stop: 38554, Start Num: 6

Candidate Starts for Douge\_50:

(Start: 6 @38123 has 64 MA's), (11, 38183), (13, 38189), (15, 38216), (16, 38225), (18, 38234), (20, 38243), (31, 38396), (36, 38435), (40, 38489), (45, 38510), (51, 38549),

Gene: DrSeegs\_53 Start: 39745, Stop: 40164, Start Num: 6

Candidate Starts for DrSeegs\_53:

(Start: 6 @39745 has 64 MA's), (9, 39787), (15, 39838), (16, 39847), (20, 39865), (28, 39988), (32, 40021), (33, 40024), (36, 40057),

Gene: DuncansLeg\_50 Start: 39706, Stop: 40098, Start Num: 6

Candidate Starts for DuncansLeg\_50:

(Start: 6 @39706 has 64 MA's), (9, 39748), (15, 39799), (16, 39808), (19, 39820), (20, 39826), (22, 39859), (27, 39931), (46, 40093),

Gene: DyoEdafos\_52 Start: 38404, Stop: 38832, Start Num: 6

Candidate Starts for DyoEdafos\_52:

(Start: 6 @38404 has 64 MA's), (14, 38482), (15, 38497), (20, 38524), (30, 38674), (39, 38737), (40, 38770), (41, 38785), (45, 38791), (51, 38827),

Gene: Ellson\_50 Start: 39736, Stop: 40128, Start Num: 6

Candidate Starts for Ellson\_50:

(Start: 6 @39736 has 64 MA's), (9, 39778), (15, 39829), (16, 39838), (19, 39850), (20, 39856), (22, 39889), (27, 39961), (46, 40123),

Gene: Enceladus\_49 Start: 37879, Stop: 38295, Start Num: 6

Candidate Starts for Enceladus\_49:

(Start: 6 @37879 has 64 MA's), (8, 37894), (14, 37963), (15, 37978), (16, 37987), (21, 38008), (22, 38038), (24, 38077), (37, 38209), (40, 38260), (43, 38278),

Gene: Faith1\_53 Start: 39745, Stop: 40164, Start Num: 6

Candidate Starts for Faith1\_53:

(Start: 6 @39745 has 64 MA's), (9, 39787), (15, 39838), (16, 39847), (20, 39865), (28, 39988), (32, 40021), (33, 40024), (36, 40057),

Gene: Finemlucis\_53 Start: 40066, Stop: 40485, Start Num: 6

Candidate Starts for Finemlucis\_53:

(Start: 6 @40066 has 64 MA's), (9, 40108), (15, 40159), (16, 40168), (20, 40186), (28, 40309), (32, 40342), (33, 40345), (36, 40378),

Gene: Finnry\_49 Start: 39945, Stop: 40340, Start Num: 6

Candidate Starts for Finnry\_49:

(1, 39675), (3, 39729), (Start: 6 @39945 has 64 MA's), (9, 39987), (15, 40038), (16, 40047), (19, 40059), (20, 40065), (27, 40170), (28, 40188), (29, 40191), (46, 40332),

Gene: Gardann\_53 Start: 39781, Stop: 40200, Start Num: 6

Candidate Starts for Gardann\_53:

(Start: 6 @39781 has 64 MA's), (9, 39823), (15, 39874), (16, 39883), (20, 39901), (28, 40024), (32, 40057), (33, 40060), (36, 40093),

Gene: GuuelaD\_52 Start: 39852, Stop: 40271, Start Num: 6

Candidate Starts for GuuelaD\_52:

(Start: 6 @39852 has 64 MA's), (9, 39894), (15, 39945), (16, 39954), (20, 39972), (28, 40095), (32, 40128), (33, 40131), (36, 40164),

Gene: Hafay\_54 Start: 39849, Stop: 40268, Start Num: 6

Candidate Starts for Hafay\_54:

(Start: 6 @39849 has 64 MA's), (9, 39891), (15, 39942), (16, 39951), (20, 39969), (28, 40092), (32, 40125), (33, 40128), (36, 40161),

Gene: Halena\_49 Start: 37921, Stop: 38337, Start Num: 6

Candidate Starts for Halena\_49:

(Start: 6 @37921 has 64 MA's), (8, 37936), (14, 38005), (15, 38020), (16, 38029), (21, 38050), (22, 38080), (24, 38119), (37, 38251), (40, 38302), (43, 38320),

Gene: Itos\_52 Start: 38651, Stop: 39070, Start Num: 6

Candidate Starts for Itos\_52:

(Start: 6 @38651 has 64 MA's), (9, 38693), (15, 38744), (16, 38753), (20, 38771), (28, 38894), (32, 38927), (33, 38930), (36, 38963),

Gene: Jobypre\_51 Start: 39680, Stop: 40075, Start Num: 6

Candidate Starts for Jobypre\_51:

(Start: 6 @39680 has 64 MA's), (9, 39722), (15, 39773), (16, 39782), (19, 39794), (20, 39800), (27, 39905), (28, 39923), (29, 39926), (46, 40067),

Gene: JoeDirt\_49 Start: 37878, Stop: 38294, Start Num: 6

Candidate Starts for JoeDirt\_49:

(Start: 6 @37878 has 64 MA's), (8, 37893), (14, 37962), (15, 37977), (16, 37986), (21, 38007), (22, 38037), (24, 38076), (37, 38208), (40, 38259), (43, 38277),

Gene: Jubie\_50 Start: 39815, Stop: 40210, Start Num: 6

Candidate Starts for Jubie\_50:

(2, 39560), (4, 39677), (5, 39698), (Start: 6 @39815 has 64 MA's), (9, 39857), (15, 39908), (16, 39917), (19, 39929), (20, 39935), (27, 40040), (28, 40058), (29, 40061), (46, 40202),

Gene: Kahlid\_53 Start: 39751, Stop: 40170, Start Num: 6

Candidate Starts for Kahlid\_53:

(Start: 6 @39751 has 64 MA's), (9, 39793), (15, 39844), (16, 39853), (20, 39871), (28, 39994), (32, 40027), (33, 40030), (36, 40063),

Gene: Kingsolomon\_50 Start: 39680, Stop: 40075, Start Num: 6

Candidate Starts for Kingsolomon\_50:

(Start: 6 @39680 has 64 MA's), (9, 39722), (15, 39773), (16, 39782), (19, 39794), (20, 39800), (27, 39905), (28, 39923), (29, 39926), (46, 40067),

Gene: Krypton555\_52 Start: 39917, Stop: 40312, Start Num: 6

Candidate Starts for Krypton555\_52:

(1, 39647), (3, 39701), (Start: 6 @39917 has 64 MA's), (9, 39959), (13, 39983), (14, 39995), (15, 40010), (16, 40019), (19, 40031), (20, 40037), (22, 40070), (46, 40304),

Gene: LeBron\_50 Start: 37922, Stop: 38338, Start Num: 6

Candidate Starts for LeBron\_50:

(Start: 6 @37922 has 64 MA's), (8, 37937), (14, 38006), (15, 38021), (16, 38030), (21, 38051), (22, 38081), (24, 38120), (37, 38252), (40, 38303), (43, 38321),

Gene: Lewan\_54 Start: 39804, Stop: 40223, Start Num: 6

Candidate Starts for Lewan\_54:

(Start: 6 @39804 has 64 MA's), (9, 39846), (15, 39897), (16, 39906), (20, 39924), (28, 40047), (32, 40080), (33, 40083), (36, 40116),

Gene: LilDestine\_53 Start: 39778, Stop: 40197, Start Num: 6

Candidate Starts for LilDestine\_53:

(Start: 6 @39778 has 64 MA's), (9, 39820), (15, 39871), (16, 39880), (20, 39898), (28, 40021), (32, 40054), (33, 40057), (36, 40090),

Gene: Loadrie\_52 Start: 39805, Stop: 40254, Start Num: 6

Candidate Starts for Loadrie\_52:

(Start: 6 @39805 has 64 MA's), (9, 39847), (15, 39898), (16, 39907), (20, 39925), (26, 40027), (28, 40048), (29, 40051), (31, 40078), (47, 40225),

Gene: Lolly9\_50 Start: 39499, Stop: 39897, Start Num: 6

Candidate Starts for Lolly9\_50:

(Start: 6 @39499 has 64 MA's), (9, 39541), (15, 39592), (16, 39601), (19, 39613), (20, 39619), (27, 39724), (28, 39742), (29, 39745), (38, 39823), (46, 39886),

Gene: Lumos\_51 Start: 39677, Stop: 40072, Start Num: 6

Candidate Starts for Lumos\_51:

(Start: 6 @39677 has 64 MA's), (9, 39719), (15, 39770), (16, 39779), (19, 39791), (20, 39797), (27, 39902), (28, 39920), (29, 39923), (46, 40064),

Gene: MAckerman\_49 Start: 37914, Stop: 38330, Start Num: 6

Candidate Starts for MAckerman\_49:

(Start: 6 @37914 has 64 MA's), (8, 37929), (14, 37998), (15, 38013), (16, 38022), (21, 38043), (22, 38073), (24, 38112), (37, 38244), (40, 38295), (43, 38313),

Gene: Miley16\_53 Start: 39745, Stop: 40164, Start Num: 6

Candidate Starts for Miley16\_53:



(Start: 6 @39745 has 64 MA's), (9, 39787), (15, 39838), (16, 39847), (20, 39865), (28, 39988), (32, 40021), (33, 40024), (36, 40057),

Gene: MiniLon\_52 Start: 39500, Stop: 39898, Start Num: 6

Candidate Starts for MiniLon\_52:

(Start: 6 @39500 has 64 MA's), (9, 39542), (15, 39593), (16, 39602), (19, 39614), (20, 39620), (27, 39725), (28, 39743), (29, 39746), (38, 39824), (46, 39887),

Gene: MiniMac\_52 Start: 39498, Stop: 39896, Start Num: 6

Candidate Starts for MiniMac\_52:

(Start: 6 @39498 has 64 MA's), (9, 39540), (15, 39591), (16, 39600), (19, 39612), (20, 39618), (27, 39723), (28, 39741), (29, 39744), (38, 39822), (46, 39885),

Gene: MkaliMitinis3\_54 Start: 39817, Stop: 40236, Start Num: 6

Candidate Starts for MkaliMitinis3\_54:

(Start: 6 @39817 has 64 MA's), (9, 39859), (15, 39910), (16, 39919), (20, 39937), (28, 40060), (32, 40093), (33, 40096), (36, 40129),

Gene: Moostard\_50 Start: 39683, Stop: 40078, Start Num: 6

Candidate Starts for Moostard\_50:

(Start: 6 @39683 has 64 MA's), (9, 39725), (15, 39776), (16, 39785), (19, 39797), (20, 39803), (28, 39926), (29, 39929), (44, 40061), (46, 40070),

Gene: MsGreen\_50 Start: 39680, Stop: 40075, Start Num: 6

Candidate Starts for MsGreen\_50:

(Start: 6 @39680 has 64 MA's), (9, 39722), (15, 39773), (16, 39782), (19, 39794), (20, 39800), (27, 39905), (28, 39923), (29, 39926), (46, 40067),

Gene: Netyap\_54 Start: 39746, Stop: 40165, Start Num: 6

Candidate Starts for Netyap\_54:

(Start: 6 @39746 has 64 MA's), (9, 39788), (15, 39839), (16, 39848), (20, 39866), (28, 39989), (32, 40022), (33, 40025), (36, 40058),

Gene: Nicholas\_50 Start: 39680, Stop: 40075, Start Num: 6

Candidate Starts for Nicholas\_50:

(Start: 6 @39680 has 64 MA's), (9, 39722), (15, 39773), (16, 39782), (19, 39794), (20, 39800), (27, 39905), (28, 39923), (29, 39926), (46, 40067),

Gene: Nicholasp3\_53 Start: 39781, Stop: 40200, Start Num: 6

Candidate Starts for Nicholasp3\_53:

(Start: 6 @39781 has 64 MA's), (9, 39823), (15, 39874), (16, 39883), (20, 39901), (28, 40024), (32, 40057), (33, 40060), (36, 40093),

Gene: OhShagHennessy\_48 Start: 36908, Stop: 37324, Start Num: 6

Candidate Starts for OhShagHennessy\_48:

(Start: 6 @36908 has 64 MA's), (8, 36923), (14, 36992), (15, 37007), (16, 37016), (21, 37037), (22, 37067), (24, 37106), (40, 37289), (43, 37307),

Gene: Rose5\_50 Start: 38005, Stop: 38421, Start Num: 6

Candidate Starts for Rose5\_50:

(Start: 6 @38005 has 64 MA's), (8, 38020), (14, 38089), (15, 38104), (16, 38113), (21, 38134), (22, 38164), (24, 38203), (37, 38335), (40, 38386), (43, 38404),

Gene: Rumpelstiltskin\_52 Start: 39174, Stop: 39593, Start Num: 6  
Candidate Starts for Rumpelstiltskin\_52:  
(Start: 6 @39174 has 64 MA's), (9, 39216), (15, 39267), (16, 39276), (20, 39294), (28, 39417), (32, 39450), (33, 39453), (36, 39486),

Gene: Samty\_50 Start: 39682, Stop: 40077, Start Num: 6  
Candidate Starts for Samty\_50:  
(Start: 6 @39682 has 64 MA's), (9, 39724), (15, 39775), (16, 39784), (19, 39796), (20, 39802), (27, 39907), (28, 39925), (29, 39928), (46, 40069),

Gene: Silverleaf\_50 Start: 37900, Stop: 38316, Start Num: 6  
Candidate Starts for Silverleaf\_50:  
(Start: 6 @37900 has 64 MA's), (8, 37915), (14, 37984), (15, 37999), (16, 38008), (21, 38029), (22, 38059), (24, 38098), (37, 38230), (40, 38281),

Gene: Snenia\_50 Start: 39681, Stop: 40076, Start Num: 6  
Candidate Starts for Snenia\_50:  
(Start: 6 @39681 has 64 MA's), (9, 39723), (15, 39774), (16, 39783), (19, 39795), (20, 39801), (27, 39906), (28, 39924), (29, 39927), (46, 40068),

Gene: Tourach\_52 Start: 39805, Stop: 40230, Start Num: 6  
Candidate Starts for Tourach\_52:  
(Start: 6 @39805 has 64 MA's), (9, 39847), (15, 39898), (16, 39907), (20, 39925), (28, 40048), (32, 40081), (36, 40117), (47, 40201), (49, 40213),

Gene: Tyson\_50 Start: 38007, Stop: 38423, Start Num: 6  
Candidate Starts for Tyson\_50:  
(Start: 6 @38007 has 64 MA's), (8, 38022), (14, 38091), (15, 38106), (16, 38115), (21, 38136), (22, 38166), (24, 38205), (37, 38337), (40, 38388), (43, 38406),

Gene: UPIE\_50 Start: 37893, Stop: 38309, Start Num: 6  
Candidate Starts for UPIE\_50:  
(Start: 6 @37893 has 64 MA's), (8, 37908), (14, 37977), (15, 37992), (16, 38001), (21, 38022), (22, 38052), (24, 38091), (37, 38223), (40, 38274), (43, 38292),

Gene: Vetrix\_53 Start: 39786, Stop: 40205, Start Num: 6  
Candidate Starts for Vetrix\_53:  
(Start: 6 @39786 has 64 MA's), (9, 39828), (15, 39879), (16, 39888), (20, 39906), (28, 40029), (32, 40062), (33, 40065), (36, 40098),

Gene: Wamburgrxpress\_50 Start: 37909, Stop: 38325, Start Num: 6  
Candidate Starts for Wamburgrxpress\_50:  
(Start: 6 @37909 has 64 MA's), (8, 37924), (14, 37993), (15, 38008), (16, 38017), (21, 38038), (22, 38068), (24, 38107), (37, 38239), (40, 38290), (43, 38308),

Gene: Whirlwind\_51 Start: 39496, Stop: 39891, Start Num: 6  
Candidate Starts for Whirlwind\_51:  
(Start: 6 @39496 has 64 MA's), (9, 39538), (13, 39562), (14, 39574), (15, 39589), (16, 39598), (19, 39610), (20, 39616), (22, 39649), (46, 39883),

Gene: Wigglewigggle\_53 Start: 39806, Stop: 40225, Start Num: 6  
Candidate Starts for Wigglewigggle\_53:

(Start: 6 @39806 has 64 MA's), (9, 39848), (15, 39899), (16, 39908), (20, 39926), (28, 40049), (32, 40082), (33, 40085), (36, 40118),

Gene: Wilder\_53 Start: 39751, Stop: 40170, Start Num: 6

Candidate Starts for Wilder\_53:

(Start: 6 @39751 has 64 MA's), (9, 39793), (15, 39844), (16, 39853), (20, 39871), (28, 39994), (32, 40027), (33, 40030), (36, 40063),

Gene: Winky\_53 Start: 39745, Stop: 40164, Start Num: 6

Candidate Starts for Winky\_53:

(Start: 6 @39745 has 64 MA's), (9, 39787), (15, 39838), (16, 39847), (20, 39865), (28, 39988), (32, 40021), (33, 40024), (36, 40057),

Gene: Wyatt2\_51 Start: 38005, Stop: 38421, Start Num: 6

Candidate Starts for Wyatt2\_51:

(Start: 6 @38005 has 64 MA's), (8, 38020), (14, 38089), (15, 38104), (16, 38113), (21, 38134), (22, 38164), (24, 38203), (37, 38335), (40, 38386), (43, 38404),

Gene: Zakai\_53 Start: 40071, Stop: 40490, Start Num: 6

Candidate Starts for Zakai\_53:

(Start: 6 @40071 has 64 MA's), (9, 40113), (15, 40164), (16, 40173), (20, 40191), (28, 40314), (32, 40347), (33, 40350), (36, 40383),

Gene: Zaria\_51 Start: 38020, Stop: 38436, Start Num: 6

Candidate Starts for Zaria\_51:

(Start: 6 @38020 has 64 MA's), (8, 38035), (14, 38104), (15, 38119), (16, 38128), (21, 38149), (22, 38179), (24, 38218), (37, 38350), (40, 38401), (43, 38419),

Gene: ZhongYanYuan\_51 Start: 39605, Stop: 40054, Start Num: 6

Candidate Starts for ZhongYanYuan\_51:

(Start: 6 @39605 has 64 MA's), (9, 39647), (15, 39698), (16, 39707), (20, 39725), (22, 39758), (26, 39827), (28, 39848), (29, 39851), (38, 39929), (47, 40025), (50, 40049),