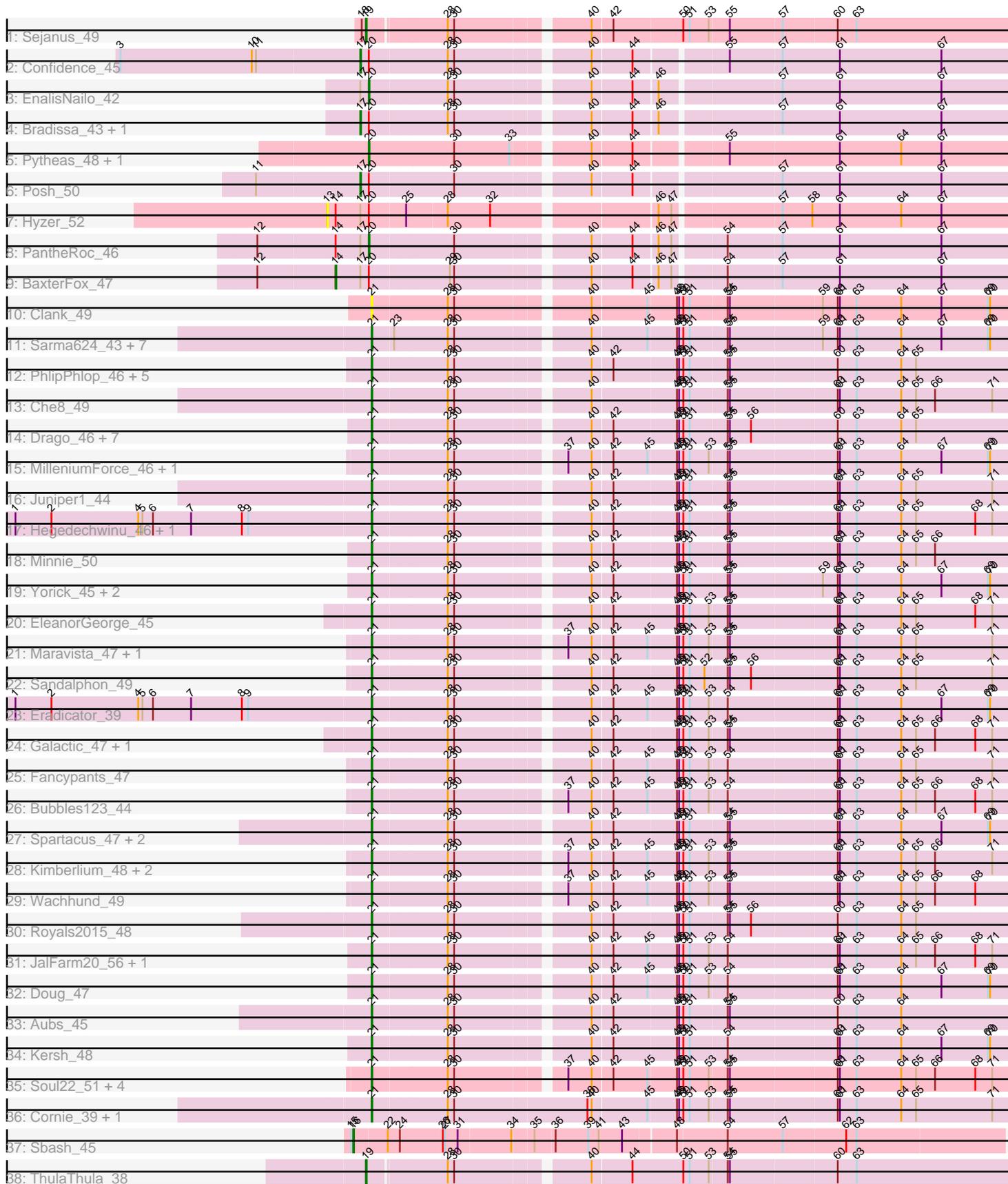


Pham 283745



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 283745 Report

This analysis was run 02/23/26 on database version 636.

Pham number 283745 has 75 members, 8 are drafts.

Phages represented in each track:

- Track 1 : Sejanus\_49
- Track 2 : Confidence\_45
- Track 3 : EnalisNailo\_42
- Track 4 : Bradissa\_43, Lilas\_45
- Track 5 : Pytheas\_48, Jablanski\_48
- Track 6 : Posh\_50
- Track 7 : Hyzer\_52
- Track 8 : PantheRoc\_46
- Track 9 : BaxterFox\_47
- Track 10 : Clank\_49
- Track 11 : Sarma624\_43, BigPhil\_42, Coco12\_44, Brookers\_43, Cerasum\_42, Rialto\_51, Velveteen\_41, Kingsley\_42
- Track 12 : PhlipPhlop\_46, TDanisky\_50, Sparkdehlily\_50, OwlsT2W\_45, Gandalph\_47, EmiMonkey\_44
- Track 13 : Che8\_49
- Track 14 : Drago\_46, Lij\_44, DirtMcgirt\_46, Leozinho\_47, OlympiaSaint\_47, Lucia\_47, UncleRicky\_47, Tootsieroll\_49
- Track 15 : MilleniumForce\_46, Violac\_49
- Track 16 : Juniper1\_44
- Track 17 : Hegedechwinu\_46, Juice456\_49
- Track 18 : Minnie\_50
- Track 19 : Yorick\_45, Plumbus\_47, Phatniss\_45
- Track 20 : EleanorGeorge\_45
- Track 21 : Maravista\_47, Mutaforma13\_49
- Track 22 : Sandalphon\_49
- Track 23 : Eradicator\_39
- Track 24 : Galactic\_47, LunaBlu\_50
- Track 25 : Fancypants\_47
- Track 26 : Bubbles123\_44
- Track 27 : Spartacus\_47, WillSterrel\_47, IrishSherpFalk\_47
- Track 28 : Kimberlium\_48, MulchExplorer\_51, QuickMath\_47
- Track 29 : Wachhund\_49
- Track 30 : Royals2015\_48
- Track 31 : JalFarm20\_56, Blarby\_58
- Track 32 : Doug\_47
- Track 33 : Aubs\_45
- Track 34 : Kersh\_48

- Track 35 : Soul22\_51, Polo2Bam\_54, NewHope4\_49, Enzomatic\_54, Whatsapiecost\_45
- Track 36 : Cornie\_39, Mahavrat\_44
- Track 37 : Sbash\_45
- Track 38 : ThulaThula\_38

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

The start number called the most often in the published annotations is 21, it was called in 55 of the 67 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aubs\_45, BigPhil\_42, Blarby\_58, Brookers\_43, Bubbles123\_44, Cerasum\_42, Che8\_49, Clank\_49, Coco12\_44, Cornie\_39, DirtMcgirt\_46, Doug\_47, Drago\_46, EleanorGeorge\_45, EmiMonkey\_44, Enzomatic\_54, Eradicator\_39, Fancypants\_47, Galactic\_47, Gandolph\_47, Hegedechwinu\_46, IrishSherpFalk\_47, JalFarm20\_56, Juice456\_49, Juniper1\_44, Kersh\_48, Kimberlium\_48, Kingsley\_42, Leozinho\_47, Llij\_44, Lucia\_47, LunaBlu\_50, Mahavrat\_44, Maravista\_47, MilleniumForce\_46, Minnie\_50, MulchExplorer\_51, Mutaforma13\_49, NewHope4\_49, OlympiaSaint\_47, OwlsT2W\_45, Phatniss\_45, PhilipPhlop\_46, Plumbus\_47, Polo2Bam\_54, QuickMath\_47, Rialto\_51, Royals2015\_48, Sandalphon\_49, Sarma624\_43, Soul22\_51, Sparkdehlily\_50, Spartacus\_47, TDanisky\_50, Tootsieroll\_49, UncleRicky\_47, Velveteen\_41, Violac\_49, Wachhund\_49, Whatsapiecost\_45, WillSterrel\_47, Yorick\_45,

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

- 

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

- BaxterFox\_47, Bradissa\_43, Confidence\_45, EnalisNailo\_42, Hyzer\_52, Jablanski\_48, Lilas\_45, PantheRoc\_46, Posh\_50, Pytheas\_48, Sbash\_45, Sejanus\_49, ThulaThula\_38,

**Summary by start number:**

Start 13:

- Found in 1 of 75 ( 1.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hyzer\_52 (CZ1),

Start 14:

- Found in 3 of 75 ( 4.0% ) of genes in pham
- Manual Annotations of this start: 1 of 67
- Called 33.3% of time when present
- Phage (with cluster) where this start called: BaxterFox\_47 (CZ3),

Start 16:

- Found in 1 of 75 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 1 of 67

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sbash\_45 (I2),

Start 17:

- Found in 8 of 75 ( 10.7% ) of genes in pham
- Manual Annotations of this start: 4 of 67
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Bradissa\_43 (CY1), Confidence\_45 (CY1), Lilas\_45 (CY1), Posh\_50 (CY4),

Start 19:

- Found in 2 of 75 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sejanus\_49 (AD), ThulaThula\_38 (P5),

Start 20:

- Found in 10 of 75 ( 13.3% ) of genes in pham
- Manual Annotations of this start: 4 of 67
- Called 40.0% of time when present
- Phage (with cluster) where this start called: EnalisNailo\_42 (CY1), Jablanski\_48 (CY3), PantheRoc\_46 (CZ3), Pytheas\_48 (CY3),

Start 21:

- Found in 62 of 75 ( 82.7% ) of genes in pham
- Manual Annotations of this start: 55 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aubs\_45 (F1), BigPhil\_42 (F1), Blarby\_58 (F), Brookers\_43 (F1), Bubbles123\_44 (F1), Cerasum\_42 (F1), Che8\_49 (F1), Clank\_49 (F), Coco12\_44 (F1), Cornie\_39 (F5), DirtMcgirt\_46 (F1), Doug\_47 (F1), Drago\_46 (F1), EleanorGeorge\_45 (F1), EmiMonkey\_44 (F1), Enzomatic\_54 (F1), Eradicator\_39 (F1), Fancypants\_47 (F1), Galactic\_47 (F1), Gandolph\_47 (F1), Hegedechwinu\_46 (F1), IrishSherpFalk\_47 (F1), JalFarm20\_56 (F1), Juice456\_49 (F1), Juniper1\_44 (F1), Kersh\_48 (F1), Kimberlium\_48 (F1), Kingsley\_42 (F1), Leozinho\_47 (F1), Llij\_44 (F1), Lucia\_47 (F1), LunaBlu\_50 (F1), Mahavrat\_44 (F1), Maravista\_47 (F1), MilleniumForce\_46 (F1), Minnie\_50 (F1), MulchExplorer\_51 (F1), Mutaforma13\_49 (F1), NewHope4\_49 (F1), OlympiaSaint\_47 (F1), OwlsT2W\_45 (F1), Phatniss\_45 (F1), PhilipPhlop\_46 (F1), Plumbus\_47 (F1), Polo2Bam\_54 (F1), QuickMath\_47 (F1), Rialto\_51 (F1), Royals2015\_48 (F1), Sandalphon\_49 (F1), Sarma624\_43 (F1), Soul22\_51 (F2), Sparkdehlily\_50 (F1), Spartacus\_47 (F1), TDanisky\_50 (F1), Tootsieroll\_49 (F1), UncleRicky\_47 (F1), Velveteen\_41 (F1), Violac\_49 (F1), Wachhund\_49 (F1), Whatsapiecost\_45 (F1), WillSterrel\_47 (F1), Yorick\_45 (F1),

### Summary by clusters:

There are 12 clusters represented in this pham: CY3, F1, CY1, I2, F5, F, CZ3, CZ1, F2, CY4, P5, AD,

Info for manual annotations of cluster AD:

- Start number 19 was manually annotated 1 time for cluster AD.

Info for manual annotations of cluster CY1:

- Start number 17 was manually annotated 3 times for cluster CY1.
- Start number 20 was manually annotated 1 time for cluster CY1.

Info for manual annotations of cluster CY3:

- Start number 20 was manually annotated 2 times for cluster CY3.

Info for manual annotations of cluster CY4:

- Start number 17 was manually annotated 1 time for cluster CY4.

Info for manual annotations of cluster CZ3:

- Start number 14 was manually annotated 1 time for cluster CZ3.
- Start number 20 was manually annotated 1 time for cluster CZ3.

Info for manual annotations of cluster F1:

- Start number 21 was manually annotated 53 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 21 was manually annotated 1 time for cluster F2.

Info for manual annotations of cluster F5:

- Start number 21 was manually annotated 1 time for cluster F5.

Info for manual annotations of cluster I2:

- Start number 16 was manually annotated 1 time for cluster I2.

Info for manual annotations of cluster P5:

- Start number 19 was manually annotated 1 time for cluster P5.

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

Gene: Aubs\_45 Start: 34886, Stop: 35752, Start Num: 21

Candidate Starts for Aubs\_45:

(Start: 21 @34886 has 55 MA's), (28, 34985), (30, 34994), (40, 35165), (42, 35192), (48, 35279), (49, 35282), (50, 35288), (51, 35297), (54, 35348), (55, 35351), (60, 35498), (63, 35525), (64, 35588),

Gene: BaxterFox\_47 Start: 36495, Stop: 37400, Start Num: 14

Candidate Starts for BaxterFox\_47:

(12, 36387), (Start: 14 @36495 has 1 MA's), (Start: 17 @36528 has 4 MA's), (Start: 20 @36540 has 4 MA's), (29, 36648), (30, 36654), (40, 36825), (44, 36879), (46, 36909), (47, 36927), (54, 36993), (57, 37068), (61, 37149), (67, 37293),

Gene: BigPhil\_42 Start: 30882, Stop: 31748, Start Num: 21

Candidate Starts for BigPhil\_42:

(Start: 21 @30882 has 55 MA's), (23, 30909), (28, 30981), (30, 30990), (40, 31161), (45, 31236), (48, 31275), (49, 31278), (50, 31284), (51, 31293), (54, 31344), (55, 31347), (59, 31473), (60, 31494), (61, 31497), (63, 31521), (64, 31584), (67, 31641), (69, 31707), (70, 31710),

Gene: Blarby\_58 Start: 35815, Stop: 36681, Start Num: 21

Candidate Starts for Blarby\_58:

(Start: 21 @35815 has 55 MA's), (28, 35914), (30, 35923), (40, 36094), (42, 36121), (45, 36169), (48, 36208), (49, 36211), (50, 36217), (51, 36226), (53, 36253), (54, 36277), (60, 36427), (61, 36430), (63, 36454), (64, 36517), (65, 36538), (66, 36565), (68, 36622), (71, 36646),

Gene: Bradissa\_43 Start: 35472, Stop: 36344, Start Num: 17

Candidate Starts for Bradissa\_43:

(Start: 17 @35472 has 4 MA's), (Start: 20 @35484 has 4 MA's), (28, 35589), (30, 35598), (40, 35769), (44, 35823), (46, 35853), (57, 36012), (61, 36093), (67, 36237),

Gene: Brookers\_43 Start: 33833, Stop: 34699, Start Num: 21

Candidate Starts for Brookers\_43:

(Start: 21 @33833 has 55 MA's), (23, 33860), (28, 33932), (30, 33941), (40, 34112), (45, 34187), (48, 34226), (49, 34229), (50, 34235), (51, 34244), (54, 34295), (55, 34298), (59, 34424), (60, 34445), (61, 34448), (63, 34472), (64, 34535), (67, 34592), (69, 34658), (70, 34661),

Gene: Bubbles123\_44 Start: 35595, Stop: 36461, Start Num: 21

Candidate Starts for Bubbles123\_44:

(Start: 21 @35595 has 55 MA's), (28, 35694), (30, 35703), (37, 35841), (40, 35874), (42, 35901), (45, 35949), (48, 35988), (49, 35991), (50, 35997), (51, 36006), (53, 36033), (54, 36057), (60, 36207), (61, 36210), (63, 36234), (64, 36297), (65, 36318), (66, 36345), (68, 36402), (71, 36426),

Gene: Cerasum\_42 Start: 30900, Stop: 31766, Start Num: 21

Candidate Starts for Cerasum\_42:

(Start: 21 @30900 has 55 MA's), (23, 30927), (28, 30999), (30, 31008), (40, 31179), (45, 31254), (48, 31293), (49, 31296), (50, 31302), (51, 31311), (54, 31362), (55, 31365), (59, 31491), (60, 31512), (61, 31515), (63, 31539), (64, 31602), (67, 31659), (69, 31725), (70, 31728),

Gene: Che8\_49 Start: 36144, Stop: 37010, Start Num: 21

Candidate Starts for Che8\_49:

(Start: 21 @36144 has 55 MA's), (28, 36243), (30, 36252), (40, 36423), (48, 36537), (49, 36540), (50, 36546), (51, 36555), (54, 36606), (55, 36609), (60, 36756), (61, 36759), (63, 36783), (64, 36846), (65, 36867), (66, 36894), (71, 36975),

Gene: Clank\_49 Start: 35152, Stop: 36018, Start Num: 21

Candidate Starts for Clank\_49:

(Start: 21 @35152 has 55 MA's), (28, 35251), (30, 35260), (40, 35431), (45, 35506), (48, 35545), (49, 35548), (50, 35554), (51, 35563), (54, 35614), (55, 35617), (59, 35743), (60, 35764), (61, 35767), (63, 35791), (64, 35854), (67, 35911), (69, 35977), (70, 35980),

Gene: Coco12\_44 Start: 34957, Stop: 35823, Start Num: 21

Candidate Starts for Coco12\_44:

(Start: 21 @34957 has 55 MA's), (23, 34984), (28, 35056), (30, 35065), (40, 35236), (45, 35311), (48, 35350), (49, 35353), (50, 35359), (51, 35368), (54, 35419), (55, 35422), (59, 35548), (60, 35569), (61, 35572), (63, 35596), (64, 35659), (67, 35716), (69, 35782), (70, 35785),

Gene: Confidence\_45 Start: 33363, Stop: 34235, Start Num: 17

Candidate Starts for Confidence\_45:

(3, 33027), (10, 33213), (11, 33219), (Start: 17 @33363 has 4 MA's), (Start: 20 @33375 has 4 MA's), (28, 33480), (30, 33489), (40, 33660), (44, 33714), (55, 33831), (57, 33903), (61, 33984), (67, 34128),

Gene: Cornie\_39 Start: 33017, Stop: 33901, Start Num: 21

Candidate Starts for Cornie\_39:

(Start: 21 @33017 has 55 MA's), (28, 33116), (30, 33125), (38, 33308), (40, 33314), (45, 33389), (48, 33428), (49, 33431), (50, 33437), (51, 33446), (53, 33473), (54, 33497), (55, 33500), (60, 33647), (61, 33650), (63, 33674), (64, 33737), (65, 33758), (71, 33866),

Gene: DirtMcgirt\_46 Start: 34376, Stop: 35242, Start Num: 21

Candidate Starts for DirtMcgirt\_46:

(Start: 21 @34376 has 55 MA's), (28, 34475), (30, 34484), (40, 34655), (42, 34682), (48, 34769), (49, 34772), (50, 34778), (51, 34787), (54, 34838), (55, 34841), (56, 34871), (60, 34988), (63, 35015), (64, 35078), (65, 35099),

Gene: Doug\_47 Start: 35453, Stop: 36319, Start Num: 21

Candidate Starts for Doug\_47:

(Start: 21 @35453 has 55 MA's), (28, 35552), (30, 35561), (40, 35732), (42, 35759), (45, 35807), (48, 35846), (49, 35849), (50, 35855), (51, 35864), (53, 35891), (54, 35915), (60, 36065), (61, 36068), (63, 36092), (64, 36155), (67, 36212), (69, 36278), (70, 36281),

Gene: Drago\_46 Start: 34379, Stop: 35245, Start Num: 21

Candidate Starts for Drago\_46:

(Start: 21 @34379 has 55 MA's), (28, 34478), (30, 34487), (40, 34658), (42, 34685), (48, 34772), (49, 34775), (50, 34781), (51, 34790), (54, 34841), (55, 34844), (56, 34874), (60, 34991), (63, 35018), (64, 35081), (65, 35102),

Gene: EleanorGeorge\_45 Start: 34568, Stop: 35434, Start Num: 21

Candidate Starts for EleanorGeorge\_45:

(Start: 21 @34568 has 55 MA's), (28, 34667), (30, 34676), (40, 34847), (42, 34874), (48, 34961), (49, 34964), (50, 34970), (51, 34979), (53, 35006), (54, 35030), (55, 35033), (60, 35180), (61, 35183), (63, 35207), (64, 35270), (65, 35291), (68, 35375), (71, 35399),

Gene: EmiMonkey\_44 Start: 36187, Stop: 37053, Start Num: 21

Candidate Starts for EmiMonkey\_44:

(Start: 21 @36187 has 55 MA's), (28, 36286), (30, 36295), (40, 36466), (42, 36493), (48, 36580), (49, 36583), (50, 36589), (51, 36598), (54, 36649), (55, 36652), (60, 36799), (63, 36826), (64, 36889), (65, 36910),

Gene: EnalisNailo\_42 Start: 35018, Stop: 35878, Start Num: 20

Candidate Starts for EnalisNailo\_42:

(Start: 17 @35006 has 4 MA's), (Start: 20 @35018 has 4 MA's), (28, 35123), (30, 35132), (40, 35303), (44, 35357), (46, 35387), (57, 35546), (61, 35627), (67, 35771),

Gene: Enzomatic\_54 Start: 35595, Stop: 36461, Start Num: 21

Candidate Starts for Enzomatic\_54:

(Start: 21 @35595 has 55 MA's), (28, 35694), (30, 35703), (37, 35841), (40, 35874), (42, 35901), (45, 35949), (48, 35988), (49, 35991), (50, 35997), (51, 36006), (53, 36033), (54, 36057), (55, 36060), (60, 36207), (61, 36210), (63, 36234), (64, 36297), (65, 36318), (66, 36345), (68, 36402), (71, 36426),

Gene: Eradicator\_39 Start: 33017, Stop: 33883, Start Num: 21

Candidate Starts for Eradicator\_39:

(1, 32519), (2, 32570), (4, 32693), (5, 32699), (6, 32714), (7, 32768), (8, 32840), (9, 32849), (Start: 21 @33017 has 55 MA's), (28, 33116), (30, 33125), (40, 33296), (42, 33323), (45, 33371), (48, 33410), (49, 33413), (50, 33419), (51, 33428), (53, 33455), (54, 33479), (60, 33629), (61, 33632), (63, 33656), (64, 33719), (67, 33776), (69, 33842), (70, 33845),

Gene: Fancypants\_47 Start: 35868, Stop: 36734, Start Num: 21

Candidate Starts for Fancypants\_47:

(Start: 21 @35868 has 55 MA's), (28, 35967), (30, 35976), (40, 36147), (42, 36174), (45, 36222), (48, 36261), (49, 36264), (50, 36270), (51, 36279), (53, 36306), (54, 36330), (60, 36480), (61, 36483), (63, 36507), (64, 36570), (65, 36591), (71, 36699),

Gene: Galactic\_47 Start: 35708, Stop: 36574, Start Num: 21

Candidate Starts for Galactic\_47:

(Start: 21 @35708 has 55 MA's), (28, 35807), (30, 35816), (40, 35987), (42, 36014), (48, 36101), (49, 36104), (50, 36110), (51, 36119), (53, 36146), (54, 36170), (55, 36173), (60, 36320), (61, 36323), (63, 36347), (64, 36410), (65, 36431), (66, 36458), (68, 36515), (71, 36539),

Gene: Gandolph\_47 Start: 34842, Stop: 35708, Start Num: 21

Candidate Starts for Gandolph\_47:

(Start: 21 @34842 has 55 MA's), (28, 34941), (30, 34950), (40, 35121), (42, 35148), (48, 35235), (49, 35238), (50, 35244), (51, 35253), (54, 35304), (55, 35307), (60, 35454), (63, 35481), (64, 35544), (65, 35565),

Gene: Hegedechwinu\_46 Start: 33868, Stop: 34734, Start Num: 21

Candidate Starts for Hegedechwinu\_46:

(1, 33370), (2, 33421), (4, 33544), (5, 33550), (6, 33565), (7, 33619), (8, 33691), (9, 33700), (Start: 21 @33868 has 55 MA's), (28, 33967), (30, 33976), (40, 34147), (42, 34174), (48, 34261), (49, 34264), (50, 34270), (51, 34279), (54, 34330), (55, 34333), (60, 34480), (61, 34483), (63, 34507), (64, 34570), (65, 34591), (68, 34675), (71, 34699),

Gene: Hyzer\_52 Start: 37874, Stop: 38794, Start Num: 13

Candidate Starts for Hyzer\_52:

(13, 37874), (Start: 14 @37886 has 1 MA's), (Start: 17 @37919 has 4 MA's), (Start: 20 @37931 has 4 MA's), (25, 37979), (28, 38033), (32, 38093), (46, 38303), (47, 38321), (57, 38462), (58, 38504), (61, 38543), (64, 38630), (67, 38687),

Gene: IrishSherpFalk\_47 Start: 36049, Stop: 36915, Start Num: 21

Candidate Starts for IrishSherpFalk\_47:

(Start: 21 @36049 has 55 MA's), (28, 36148), (30, 36157), (40, 36328), (42, 36355), (48, 36442), (49, 36445), (50, 36451), (51, 36460), (54, 36511), (55, 36514), (60, 36661), (61, 36664), (63, 36688), (64, 36751), (67, 36808), (69, 36874), (70, 36877),

Gene: Jablanski\_48 Start: 37976, Stop: 38839, Start Num: 20

Candidate Starts for Jablanski\_48:

(Start: 20 @37976 has 4 MA's), (30, 38093), (33, 38171), (40, 38264), (44, 38318), (55, 38435), (61, 38588), (64, 38675), (67, 38732),

Gene: JalFarm20\_56 Start: 37874, Stop: 38740, Start Num: 21

Candidate Starts for JalFarm20\_56:

(Start: 21 @37874 has 55 MA's), (28, 37973), (30, 37982), (40, 38153), (42, 38180), (45, 38228), (48, 38267), (49, 38270), (50, 38276), (51, 38285), (53, 38312), (54, 38336), (60, 38486), (61, 38489), (63, 38513), (64, 38576), (65, 38597), (66, 38624), (68, 38681), (71, 38705),

Gene: Juice456\_49 Start: 36470, Stop: 37336, Start Num: 21

Candidate Starts for Juice456\_49:

(1, 35972), (2, 36023), (4, 36146), (5, 36152), (6, 36167), (7, 36221), (8, 36293), (9, 36302), (Start: 21 @36470 has 55 MA's), (28, 36569), (30, 36578), (40, 36749), (42, 36776), (48, 36863), (49, 36866), (50, 36872), (51, 36881), (54, 36932), (55, 36935), (60, 37082), (61, 37085), (63, 37109), (64, 37172), (65, 37193), (68, 37277), (71, 37301),

Gene: Juniper1\_44 Start: 34680, Stop: 35546, Start Num: 21

Candidate Starts for Juniper1\_44:

(Start: 21 @34680 has 55 MA's), (28, 34779), (30, 34788), (40, 34959), (42, 34986), (48, 35073), (49, 35076), (50, 35082), (51, 35091), (54, 35142), (55, 35145), (60, 35292), (61, 35295), (63, 35319), (64, 35382), (65, 35403), (71, 35511),

Gene: Kersh\_48 Start: 36769, Stop: 37635, Start Num: 21

Candidate Starts for Kersh\_48:

(Start: 21 @36769 has 55 MA's), (28, 36868), (30, 36877), (40, 37048), (42, 37075), (48, 37162), (49, 37165), (50, 37171), (51, 37180), (54, 37231), (60, 37381), (61, 37384), (63, 37408), (64, 37471), (67, 37528), (69, 37594), (70, 37597),

Gene: Kimberlium\_48 Start: 36118, Stop: 36984, Start Num: 21

Candidate Starts for Kimberlium\_48:

(Start: 21 @36118 has 55 MA's), (28, 36217), (30, 36226), (37, 36364), (40, 36397), (42, 36424), (45, 36472), (48, 36511), (49, 36514), (50, 36520), (51, 36529), (53, 36556), (54, 36580), (55, 36583), (60, 36730), (61, 36733), (63, 36757), (64, 36820), (65, 36841), (66, 36868), (71, 36949),

Gene: Kingsley\_42 Start: 33690, Stop: 34556, Start Num: 21

Candidate Starts for Kingsley\_42:

(Start: 21 @33690 has 55 MA's), (23, 33717), (28, 33789), (30, 33798), (40, 33969), (45, 34044), (48, 34083), (49, 34086), (50, 34092), (51, 34101), (54, 34152), (55, 34155), (59, 34281), (60, 34302), (61, 34305), (63, 34329), (64, 34392), (67, 34449), (69, 34515), (70, 34518),

Gene: Leozinho\_47 Start: 35147, Stop: 36013, Start Num: 21

Candidate Starts for Leozinho\_47:

(Start: 21 @35147 has 55 MA's), (28, 35246), (30, 35255), (40, 35426), (42, 35453), (48, 35540), (49, 35543), (50, 35549), (51, 35558), (54, 35609), (55, 35612), (56, 35642), (60, 35759), (63, 35786), (64, 35849), (65, 35870),

Gene: Lilas\_45 Start: 36717, Stop: 37589, Start Num: 17

Candidate Starts for Lilas\_45:

(Start: 17 @36717 has 4 MA's), (Start: 20 @36729 has 4 MA's), (28, 36834), (30, 36843), (40, 37014), (44, 37068), (46, 37098), (57, 37257), (61, 37338), (67, 37482),

Gene: Llij\_44 Start: 34533, Stop: 35399, Start Num: 21

Candidate Starts for Llij\_44:

(Start: 21 @34533 has 55 MA's), (28, 34632), (30, 34641), (40, 34812), (42, 34839), (48, 34926), (49, 34929), (50, 34935), (51, 34944), (54, 34995), (55, 34998), (56, 35028), (60, 35145), (63, 35172), (64, 35235), (65, 35256),

Gene: Lucia\_47 Start: 34677, Stop: 35543, Start Num: 21

Candidate Starts for Lucia\_47:

(Start: 21 @34677 has 55 MA's), (28, 34776), (30, 34785), (40, 34956), (42, 34983), (48, 35070), (49, 35073), (50, 35079), (51, 35088), (54, 35139), (55, 35142), (56, 35172), (60, 35289), (63, 35316), (64, 35379), (65, 35400),

Gene: LunaBlu\_50 Start: 36367, Stop: 37233, Start Num: 21

Candidate Starts for LunaBlu\_50:

(Start: 21 @36367 has 55 MA's), (28, 36466), (30, 36475), (40, 36646), (42, 36673), (48, 36760), (49, 36763), (50, 36769), (51, 36778), (53, 36805), (54, 36829), (55, 36832), (60, 36979), (61, 36982), (63, 37006), (64, 37069), (65, 37090), (66, 37117), (68, 37174), (71, 37198),

Gene: Mahavrat\_44 Start: 34476, Stop: 35360, Start Num: 21

Candidate Starts for Mahavrat\_44:

(Start: 21 @34476 has 55 MA's), (28, 34575), (30, 34584), (38, 34767), (40, 34773), (45, 34848), (48, 34887), (49, 34890), (50, 34896), (51, 34905), (53, 34932), (54, 34956), (55, 34959), (60, 35106), (61, 35109), (63, 35133), (64, 35196), (65, 35217), (71, 35325),

Gene: Maravista\_47 Start: 35877, Stop: 36743, Start Num: 21

Candidate Starts for Maravista\_47:

(Start: 21 @35877 has 55 MA's), (28, 35976), (30, 35985), (37, 36123), (40, 36156), (42, 36183), (45, 36231), (48, 36270), (49, 36273), (50, 36279), (51, 36288), (53, 36315), (54, 36339), (55, 36342), (60, 36489), (61, 36492), (63, 36516), (64, 36579), (65, 36600), (71, 36708),

Gene: MilleniumForce\_46 Start: 35851, Stop: 36717, Start Num: 21

Candidate Starts for MilleniumForce\_46:

(Start: 21 @35851 has 55 MA's), (28, 35950), (30, 35959), (37, 36097), (40, 36130), (42, 36157), (45, 36205), (48, 36244), (49, 36247), (50, 36253), (51, 36262), (53, 36289), (54, 36313), (55, 36316), (60, 36463), (61, 36466), (63, 36490), (64, 36553), (67, 36610), (69, 36676), (70, 36679),

Gene: Minnie\_50 Start: 36205, Stop: 37071, Start Num: 21

Candidate Starts for Minnie\_50:

(Start: 21 @36205 has 55 MA's), (28, 36304), (30, 36313), (40, 36484), (42, 36511), (48, 36598), (49, 36601), (50, 36607), (51, 36616), (54, 36667), (55, 36670), (60, 36817), (61, 36820), (63, 36844), (64, 36907), (65, 36928), (66, 36955),

Gene: MulchExplorer\_51 Start: 36117, Stop: 36983, Start Num: 21

Candidate Starts for MulchExplorer\_51:

(Start: 21 @36117 has 55 MA's), (28, 36216), (30, 36225), (37, 36363), (40, 36396), (42, 36423), (45, 36471), (48, 36510), (49, 36513), (50, 36519), (51, 36528), (53, 36555), (54, 36579), (55, 36582), (60, 36729), (61, 36732), (63, 36756), (64, 36819), (65, 36840), (66, 36867), (71, 36948),

Gene: Mutaforma13\_49 Start: 36153, Stop: 37019, Start Num: 21

Candidate Starts for Mutaforma13\_49:

(Start: 21 @36153 has 55 MA's), (28, 36252), (30, 36261), (37, 36399), (40, 36432), (42, 36459), (45, 36507), (48, 36546), (49, 36549), (50, 36555), (51, 36564), (53, 36591), (54, 36615), (55, 36618), (60, 36765), (61, 36768), (63, 36792), (64, 36855), (65, 36876), (71, 36984),

Gene: NewHope4\_49 Start: 35741, Stop: 36607, Start Num: 21

Candidate Starts for NewHope4\_49:

(Start: 21 @35741 has 55 MA's), (28, 35840), (30, 35849), (37, 35987), (40, 36020), (42, 36047), (45, 36095), (48, 36134), (49, 36137), (50, 36143), (51, 36152), (53, 36179), (54, 36203), (55, 36206), (60, 36353), (61, 36356), (63, 36380), (64, 36443), (65, 36464), (66, 36491), (68, 36548), (71, 36572),

Gene: OlympiaSaint\_47 Start: 35172, Stop: 36038, Start Num: 21

Candidate Starts for OlympiaSaint\_47:

(Start: 21 @35172 has 55 MA's), (28, 35271), (30, 35280), (40, 35451), (42, 35478), (48, 35565), (49, 35568), (50, 35574), (51, 35583), (54, 35634), (55, 35637), (56, 35667), (60, 35784), (63, 35811), (64, 35874), (65, 35895),

Gene: OwlsT2W\_45 Start: 35172, Stop: 36038, Start Num: 21

Candidate Starts for OwlsT2W\_45:

(Start: 21 @35172 has 55 MA's), (28, 35271), (30, 35280), (40, 35451), (42, 35478), (48, 35565), (49, 35568), (50, 35574), (51, 35583), (54, 35634), (55, 35637), (60, 35784), (63, 35811), (64, 35874), (65,

35895),

Gene: PantheRoc\_46 Start: 35515, Stop: 36375, Start Num: 20

Candidate Starts for PantheRoc\_46:

(12, 35362), (Start: 14 @35470 has 1 MA's), (Start: 17 @35503 has 4 MA's), (Start: 20 @35515 has 4 MA's), (30, 35629), (40, 35800), (44, 35854), (46, 35884), (47, 35902), (54, 35968), (57, 36043), (61, 36124), (67, 36268),

Gene: Phatniss\_45 Start: 35050, Stop: 35916, Start Num: 21

Candidate Starts for Phatniss\_45:

(Start: 21 @35050 has 55 MA's), (28, 35149), (30, 35158), (40, 35329), (42, 35356), (48, 35443), (49, 35446), (50, 35452), (51, 35461), (54, 35512), (55, 35515), (59, 35641), (60, 35662), (61, 35665), (63, 35689), (64, 35752), (67, 35809), (69, 35875), (70, 35878),

Gene: PhlipPhlop\_46 Start: 36187, Stop: 37053, Start Num: 21

Candidate Starts for PhlipPhlop\_46:

(Start: 21 @36187 has 55 MA's), (28, 36286), (30, 36295), (40, 36466), (42, 36493), (48, 36580), (49, 36583), (50, 36589), (51, 36598), (54, 36649), (55, 36652), (60, 36799), (63, 36826), (64, 36889), (65, 36910),

Gene: Plumbus\_47 Start: 34797, Stop: 35663, Start Num: 21

Candidate Starts for Plumbus\_47:

(Start: 21 @34797 has 55 MA's), (28, 34896), (30, 34905), (40, 35076), (42, 35103), (48, 35190), (49, 35193), (50, 35199), (51, 35208), (54, 35259), (55, 35262), (59, 35388), (60, 35409), (61, 35412), (63, 35436), (64, 35499), (67, 35556), (69, 35622), (70, 35625),

Gene: Polo2Bam\_54 Start: 35595, Stop: 36461, Start Num: 21

Candidate Starts for Polo2Bam\_54:

(Start: 21 @35595 has 55 MA's), (28, 35694), (30, 35703), (37, 35841), (40, 35874), (42, 35901), (45, 35949), (48, 35988), (49, 35991), (50, 35997), (51, 36006), (53, 36033), (54, 36057), (55, 36060), (60, 36207), (61, 36210), (63, 36234), (64, 36297), (65, 36318), (66, 36345), (68, 36402), (71, 36426),

Gene: Posh\_50 Start: 37122, Stop: 37994, Start Num: 17

Candidate Starts for Posh\_50:

(11, 36978), (Start: 17 @37122 has 4 MA's), (Start: 20 @37134 has 4 MA's), (30, 37248), (40, 37419), (44, 37473), (57, 37662), (61, 37743), (67, 37887),

Gene: Pytheas\_48 Start: 37975, Stop: 38838, Start Num: 20

Candidate Starts for Pytheas\_48:

(Start: 20 @37975 has 4 MA's), (30, 38092), (33, 38170), (40, 38263), (44, 38317), (55, 38434), (61, 38587), (64, 38674), (67, 38731),

Gene: QuickMath\_47 Start: 36341, Stop: 37207, Start Num: 21

Candidate Starts for QuickMath\_47:

(Start: 21 @36341 has 55 MA's), (28, 36440), (30, 36449), (37, 36587), (40, 36620), (42, 36647), (45, 36695), (48, 36734), (49, 36737), (50, 36743), (51, 36752), (53, 36779), (54, 36803), (55, 36806), (60, 36953), (61, 36956), (63, 36980), (64, 37043), (65, 37064), (66, 37091), (71, 37172),

Gene: Rialto\_51 Start: 37369, Stop: 38235, Start Num: 21

Candidate Starts for Rialto\_51:

(Start: 21 @37369 has 55 MA's), (23, 37396), (28, 37468), (30, 37477), (40, 37648), (45, 37723), (48, 37762), (49, 37765), (50, 37771), (51, 37780), (54, 37831), (55, 37834), (59, 37960), (60, 37981), (61, 37984), (63, 38008), (64, 38071), (67, 38128), (69, 38194), (70, 38197),

Gene: Royals2015\_48 Start: 35193, Stop: 36059, Start Num: 21

Candidate Starts for Royals2015\_48:

(Start: 21 @35193 has 55 MA's), (28, 35292), (30, 35301), (40, 35472), (42, 35499), (48, 35586), (49, 35589), (50, 35595), (51, 35604), (54, 35655), (55, 35658), (56, 35688), (60, 35805), (63, 35832), (64, 35895), (65, 35916),

Gene: Sandalphon\_49 Start: 36106, Stop: 36972, Start Num: 21

Candidate Starts for Sandalphon\_49:

(Start: 21 @36106 has 55 MA's), (28, 36205), (30, 36214), (40, 36385), (42, 36412), (48, 36499), (49, 36502), (50, 36508), (51, 36517), (52, 36538), (54, 36568), (55, 36571), (56, 36601), (60, 36718), (61, 36721), (63, 36745), (64, 36808), (65, 36829), (71, 36937),

Gene: Sarma624\_43 Start: 30882, Stop: 31748, Start Num: 21

Candidate Starts for Sarma624\_43:

(Start: 21 @30882 has 55 MA's), (23, 30909), (28, 30981), (30, 30990), (40, 31161), (45, 31236), (48, 31275), (49, 31278), (50, 31284), (51, 31293), (54, 31344), (55, 31347), (59, 31473), (60, 31494), (61, 31497), (63, 31521), (64, 31584), (67, 31641), (69, 31707), (70, 31710),

Gene: Sbash\_45 Start: 36382, Stop: 37266, Start Num: 16

Candidate Starts for Sbash\_45:

(15, 36379), (Start: 16 @36382 has 1 MA's), (22, 36427), (24, 36442), (26, 36502), (27, 36505), (31, 36523), (34, 36595), (35, 36622), (36, 36649), (39, 36694), (41, 36709), (43, 36742), (48, 36811), (54, 36880), (57, 36958), (62, 37045), (63, 37060),

Gene: Sejanus\_49 Start: 44587, Stop: 45456, Start Num: 19

Candidate Starts for Sejanus\_49:

(18, 44581), (Start: 19 @44587 has 2 MA's), (28, 44689), (30, 44698), (40, 44869), (42, 44896), (50, 44992), (51, 45001), (53, 45028), (55, 45055), (57, 45127), (60, 45202), (63, 45229),

Gene: Soul22\_51 Start: 35297, Stop: 36163, Start Num: 21

Candidate Starts for Soul22\_51:

(Start: 21 @35297 has 55 MA's), (28, 35396), (30, 35405), (37, 35543), (40, 35576), (42, 35603), (45, 35651), (48, 35690), (49, 35693), (50, 35699), (51, 35708), (53, 35735), (54, 35759), (55, 35762), (60, 35909), (61, 35912), (63, 35936), (64, 35999), (65, 36020), (66, 36047), (68, 36104), (71, 36128),

Gene: Sparkdehlily\_50 Start: 35945, Stop: 36811, Start Num: 21

Candidate Starts for Sparkdehlily\_50:

(Start: 21 @35945 has 55 MA's), (28, 36044), (30, 36053), (40, 36224), (42, 36251), (48, 36338), (49, 36341), (50, 36347), (51, 36356), (54, 36407), (55, 36410), (60, 36557), (63, 36584), (64, 36647), (65, 36668),

Gene: Spartacus\_47 Start: 34966, Stop: 35832, Start Num: 21

Candidate Starts for Spartacus\_47:

(Start: 21 @34966 has 55 MA's), (28, 35065), (30, 35074), (40, 35245), (42, 35272), (48, 35359), (49, 35362), (50, 35368), (51, 35377), (54, 35428), (55, 35431), (60, 35578), (61, 35581), (63, 35605), (64, 35668), (67, 35725), (69, 35791), (70, 35794),

Gene: TDanisky\_50 Start: 35945, Stop: 36811, Start Num: 21

Candidate Starts for TDanisky\_50:

(Start: 21 @35945 has 55 MA's), (28, 36044), (30, 36053), (40, 36224), (42, 36251), (48, 36338), (49, 36341), (50, 36347), (51, 36356), (54, 36407), (55, 36410), (60, 36557), (63, 36584), (64, 36647), (65, 36668),

Gene: ThulaThula\_38 Start: 31478, Stop: 32350, Start Num: 19

Candidate Starts for ThulaThula\_38:

(Start: 19 @31478 has 2 MA's), (28, 31580), (30, 31589), (40, 31760), (44, 31814), (50, 31886), (51, 31895), (53, 31922), (54, 31946), (55, 31949), (60, 32096), (63, 32123),

Gene: Tootsieroll\_49 Start: 35136, Stop: 36002, Start Num: 21

Candidate Starts for Tootsieroll\_49:

(Start: 21 @35136 has 55 MA's), (28, 35235), (30, 35244), (40, 35415), (42, 35442), (48, 35529), (49, 35532), (50, 35538), (51, 35547), (54, 35598), (55, 35601), (56, 35631), (60, 35748), (63, 35775), (64, 35838), (65, 35859),

Gene: UncleRicky\_47 Start: 35876, Stop: 36742, Start Num: 21

Candidate Starts for UncleRicky\_47:

(Start: 21 @35876 has 55 MA's), (28, 35975), (30, 35984), (40, 36155), (42, 36182), (48, 36269), (49, 36272), (50, 36278), (51, 36287), (54, 36338), (55, 36341), (56, 36371), (60, 36488), (63, 36515), (64, 36578), (65, 36599),

Gene: Velveteen\_41 Start: 30882, Stop: 31748, Start Num: 21

Candidate Starts for Velveteen\_41:

(Start: 21 @30882 has 55 MA's), (23, 30909), (28, 30981), (30, 30990), (40, 31161), (45, 31236), (48, 31275), (49, 31278), (50, 31284), (51, 31293), (54, 31344), (55, 31347), (59, 31473), (60, 31494), (61, 31497), (63, 31521), (64, 31584), (67, 31641), (69, 31707), (70, 31710),

Gene: Violac\_49 Start: 36179, Stop: 37045, Start Num: 21

Candidate Starts for Violac\_49:

(Start: 21 @36179 has 55 MA's), (28, 36278), (30, 36287), (37, 36425), (40, 36458), (42, 36485), (45, 36533), (48, 36572), (49, 36575), (50, 36581), (51, 36590), (53, 36617), (54, 36641), (55, 36644), (60, 36791), (61, 36794), (63, 36818), (64, 36881), (67, 36938), (69, 37004), (70, 37007),

Gene: Wachhund\_49 Start: 35066, Stop: 35932, Start Num: 21

Candidate Starts for Wachhund\_49:

(Start: 21 @35066 has 55 MA's), (28, 35165), (30, 35174), (37, 35312), (40, 35345), (42, 35372), (45, 35420), (48, 35459), (49, 35462), (50, 35468), (51, 35477), (53, 35504), (54, 35528), (55, 35531), (60, 35678), (61, 35681), (63, 35705), (64, 35768), (65, 35789), (66, 35816), (68, 35873),

Gene: Whatsapiecost\_45 Start: 34328, Stop: 35194, Start Num: 21

Candidate Starts for Whatsapiecost\_45:

(Start: 21 @34328 has 55 MA's), (28, 34427), (30, 34436), (37, 34574), (40, 34607), (42, 34634), (45, 34682), (48, 34721), (49, 34724), (50, 34730), (51, 34739), (53, 34766), (54, 34790), (55, 34793), (60, 34940), (61, 34943), (63, 34967), (64, 35030), (65, 35051), (66, 35078), (68, 35135), (71, 35159),

Gene: WillSterrel\_47 Start: 36082, Stop: 36948, Start Num: 21

Candidate Starts for WillSterrel\_47:

(Start: 21 @36082 has 55 MA's), (28, 36181), (30, 36190), (40, 36361), (42, 36388), (48, 36475), (49, 36478), (50, 36484), (51, 36493), (54, 36544), (55, 36547), (60, 36694), (61, 36697), (63, 36721), (64, 36784), (67, 36841), (69, 36907), (70, 36910),

Gene: Yorick\_45 Start: 35055, Stop: 35921, Start Num: 21

Candidate Starts for Yorick\_45:

(Start: 21 @35055 has 55 MA's), (28, 35154), (30, 35163), (40, 35334), (42, 35361), (48, 35448), (49, 35451), (50, 35457), (51, 35466), (54, 35517), (55, 35520), (59, 35646), (60, 35667), (61, 35670), (63, 35694), (64, 35757), (67, 35814), (69, 35880), (70, 35883),

