



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 303291 Report

This analysis was run 06/08/26 on database version 649.

Pham number 303291 has 82 members, 1 are drafts.

Phages represented in each track:

- Track 1 : Minnie\_38, Cerasum\_32, BigPhil\_32, Sarma624\_32, VRedHorse\_36, Modragons\_36, DaddyRickover\_36, Quico\_37, Velveteen\_31, Girafales\_37
- Track 2 : SiSi\_36, LittleShirley\_39, Veteran\_36, Sabbb\_37, Kersh\_35, Krakatau\_37, PhilipPhlop\_37, Starcevich\_40, Plumbus\_38
- Track 3 : Boomer\_38
- Track 4 : OwlsT2W\_37, Dante\_36, Daenerys\_36, Inventum\_36, JoeyJr\_36, OlympiaSaint\_36, Deb65\_36, Ruby\_38, Spoonbill\_36, Leozinho\_38, Nimbo\_36, Girr\_38, Stap\_37, BlueCrab\_36, Empress\_37, PHappiness\_36, Job42\_40
- Track 5 : BuzzLyseyear\_39, QuickMath\_37, Firehouse51\_37, Kimberlium\_38
- Track 6 : Ovechkin\_37
- Track 7 : Royals2015\_36
- Track 8 : Brocalys\_31, Clifton\_30, ShroomBoi\_33, Guppsters\_38, Dorothy\_36, Leperchaun\_36
- Track 9 : Pacc40\_36
- Track 10 : Llij\_36, RitaG\_37, Lucia\_37, PMC\_36
- Track 11 : DotProduct\_36, GigiOuiOui\_36, GUmbie\_36, Mutaforma13\_36
- Track 12 : OldBen\_36, Scottish\_37, Geralt\_36, Karhdo\_36, MisterCuddles\_38, Polka14\_37, KingMidas\_38
- Track 13 : Cheesepuff\_39, SimranZ1\_39
- Track 14 : RockyHorror\_37, Zerg\_36
- Track 15 : Emmaloid\_38, Totinger\_37, Slim\_38
- Track 16 : Tchotchke\_36
- Track 17 : Nitzel\_37, Che8\_38, lbhubesi\_36
- Track 18 : Cornucopia\_37
- Track 19 : ArcusAngelus\_36
- Track 20 : Wee\_37
- Track 21 : Mozy\_38
- Track 22 : Vivum\_37
- Track 23 : Taj\_36

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

The start number called the most often in the published annotations is 2, it was called in 49 of the 81 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ArcusAngelus\_36, BigPhil\_32, BlueCrab\_36, Boomer\_38, BuzzLyseyear\_39, Cerasum\_32, Che8\_38, Cornucopia\_37, DaddyRickover\_36, Daenerys\_36, Dante\_36, Deb65\_36, DotProduct\_36, Empress\_37, Firehouse51\_37, GUmbie\_36, GigiOuiOui\_36, Girafales\_37, Girr\_38, Ibhubesi\_36, Inventum\_36, Job42\_40, JoeyJr\_36, Kimberlium\_38, Leozinho\_38, Llij\_36, Lucia\_37, Minnie\_38, Modragons\_36, Mozy\_38, Mutaforma13\_36, Nimbo\_36, Nitzel\_37, OlympiaSaint\_36, Ovechkin\_37, OwlsT2W\_37, PHappiness\_36, PMC\_36, Pacc40\_36, QuickMath\_37, Quico\_37, RitaG\_37, Ruby\_38, Sarma624\_32, Spoonbill\_36, Stap\_37, VRedHorse\_36, Velveteen\_31, Wee\_37,

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

- Brocalys\_31, CheesePuff\_39, Clifton\_30, Dorothy\_36, Emmaloid\_38, Geralt\_36, Guppsters\_38, Karhdo\_36, Kersh\_35, KingMidas\_38, Krakatau\_37, Leperchaun\_36, LittleShirley\_39, MisterCuddles\_38, OldBen\_36, PhilipPhlop\_37, Plumbus\_38, Polka14\_37, RockyHorror\_37, Royals2015\_36, Sabbb\_37, Scottish\_37, ShroomBoi\_33, SiSi\_36, SimranZ1\_39, Slim\_38, Starcevich\_40, Taj\_36, Tchochke\_36, Totinger\_37, Veteran\_36, Vivum\_37, Zerg\_36,

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

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### Summary by start number:

Start 1:

- Found in 28 of 82 ( 34.1% ) of genes in pham
- Manual Annotations of this start: 22 of 81
- Called 78.6% of time when present
- Phage (with cluster) where this start called: Brocalys\_31 (F1), Clifton\_30 (F1), Dorothy\_36 (F1), Emmaloid\_38 (F1), Guppsters\_38 (F1), Kersh\_35 (F1), Krakatau\_37 (F1), Leperchaun\_36 (F1), LittleShirley\_39 (F1), PhilipPhlop\_37 (F1), Plumbus\_38 (F1), RockyHorror\_37 (F1), Royals2015\_36 (F1), Sabbb\_37 (F1), ShroomBoi\_33 (F1), SiSi\_36 (F1), Slim\_38 (F1), Starcevich\_40 (F1), Taj\_36 (F1), Totinger\_37 (F1), Veteran\_36 (F1), Zerg\_36 (F1),

Start 2:

- Found in 82 of 82 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 49 of 81
- Called 59.8% of time when present
- Phage (with cluster) where this start called: ArcusAngelus\_36 (F1), BigPhil\_32 (F1), BlueCrab\_36 (F1), Boomer\_38 (F1), BuzzLyseyear\_39 (F1), Cerasum\_32 (F1), Che8\_38 (F1), Cornucopia\_37 (F1), DaddyRickover\_36 (F1), Daenerys\_36 (F1), Dante\_36 (F1), Deb65\_36 (F1), DotProduct\_36 (F1), Empress\_37 (F1), Firehouse51\_37 (F1), GUmbie\_36 (F1), GigiOuiOui\_36 (F1), Girafales\_37 (F1), Girr\_38 (F1), Ibhubesi\_36 (F1), Inventum\_36 (F1), Job42\_40 (F1), JoeyJr\_36 (F1), Kimberlium\_38 (F1), Leozinho\_38 (F1), Llij\_36 (F1), Lucia\_37 (F1), Minnie\_38 (F1), Modragons\_36 (F1), Mozy\_38 (F1), Mutaforma13\_36 (F1), Nimbo\_36 (F1), Nitzel\_37 (F1), OlympiaSaint\_36 (F1), Ovechkin\_37 (F1), OwlsT2W\_37 (F1), PHappiness\_36 (F1), PMC\_36 (F1), Pacc40\_36 (F1), QuickMath\_37 (F1), Quico\_37 (F1), RitaG\_37 (F1), Ruby\_38 (F1), Sarma624\_32 (F1), Spoonbill\_36 (F1), Stap\_37 (F1), VRedHorse\_36 (F1), Velveteen\_31 (F1), Wee\_37 (F1),

### Start 3:

- Found in 82 of 82 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 10 of 81
- Called 13.4% of time when present
- Phage (with cluster) where this start called: CheesePuff\_39 (F1), Geralt\_36 (F1), Karhdo\_36 (F1), KingMidas\_38 (F1), MisterCuddles\_38 (F1), OldBen\_36 (F1), Polka14\_37 (F1), Scottish\_37 (F1), SimranZ1\_39 (F1), Tchotchke\_36 (F1), Vivum\_37 (F1),

### Summary by clusters:

There is one cluster represented in this pham: F1

### Info for manual annotations of cluster F1:

- Start number 1 was manually annotated 22 times for cluster F1.
- Start number 2 was manually annotated 49 times for cluster F1.
- Start number 3 was manually annotated 10 times for cluster F1.

### Gene Information:

Gene: ArcusAngelus\_36 Start: 30765, Stop: 31055, Start Num: 2

Candidate Starts for ArcusAngelus\_36:

(Start: 2 @30765 has 49 MA's), (Start: 3 @30804 has 10 MA's), (4, 30822), (5, 30834), (6, 30876), (7, 30915), (10, 30954), (14, 31020),

Gene: BigPhil\_32 Start: 26427, Stop: 26717, Start Num: 2

Candidate Starts for BigPhil\_32:

(Start: 2 @26427 has 49 MA's), (Start: 3 @26466 has 10 MA's), (4, 26484), (5, 26496), (6, 26538), (8, 26580), (9, 26592), (10, 26616), (14, 26682),

Gene: BlueCrab\_36 Start: 30388, Stop: 30678, Start Num: 2

Candidate Starts for BlueCrab\_36:

(Start: 2 @30388 has 49 MA's), (Start: 3 @30427 has 10 MA's), (4, 30445), (5, 30457), (6, 30499), (7, 30538), (10, 30577), (11, 30583), (14, 30643),

Gene: Boomer\_38 Start: 30281, Stop: 30571, Start Num: 2

Candidate Starts for Boomer\_38:

(Start: 2 @30281 has 49 MA's), (Start: 3 @30320 has 10 MA's), (4, 30338), (5, 30350), (6, 30392), (8, 30434), (9, 30446), (10, 30470), (12, 30491), (13, 30533), (14, 30536),

Gene: Brocalys\_31 Start: 25986, Stop: 26297, Start Num: 1

Candidate Starts for Brocalys\_31:

(Start: 1 @25986 has 22 MA's), (Start: 2 @26007 has 49 MA's), (Start: 3 @26046 has 10 MA's), (4, 26064), (5, 26076), (6, 26118), (7, 26157), (10, 26196), (11, 26202), (12, 26217), (13, 26259), (14, 26262),

Gene: BuzzLyseyear\_39 Start: 31008, Stop: 31298, Start Num: 2

Candidate Starts for BuzzLyseyear\_39:

(Start: 2 @31008 has 49 MA's), (Start: 3 @31047 has 10 MA's), (4, 31065), (5, 31077), (6, 31119), (7, 31158), (10, 31197), (11, 31203), (12, 31218), (13, 31260), (14, 31263),

Gene: Cerasum\_32 Start: 26427, Stop: 26717, Start Num: 2

Candidate Starts for Cerasum\_32:

(Start: 2 @26427 has 49 MA's), (Start: 3 @26466 has 10 MA's), (4, 26484), (5, 26496), (6, 26538), (8, 26580), (9, 26592), (10, 26616), (14, 26682),

Gene: Che8\_38 Start: 30659, Stop: 30949, Start Num: 2

Candidate Starts for Che8\_38:

(Start: 2 @30659 has 49 MA's), (Start: 3 @30698 has 10 MA's), (4, 30716), (5, 30728), (6, 30770), (8, 30812), (9, 30824), (10, 30848), (11, 30854), (14, 30914),

Gene: Cheese puff\_39 Start: 31517, Stop: 31768, Start Num: 3

Candidate Starts for Cheese puff\_39:

(Start: 2 @31478 has 49 MA's), (Start: 3 @31517 has 10 MA's), (4, 31535), (5, 31547), (6, 31589), (8, 31631), (9, 31643), (10, 31667), (14, 31733),

Gene: Clifton\_30 Start: 26337, Stop: 26648, Start Num: 1

Candidate Starts for Clifton\_30:

(Start: 1 @26337 has 22 MA's), (Start: 2 @26358 has 49 MA's), (Start: 3 @26397 has 10 MA's), (4, 26415), (5, 26427), (6, 26469), (7, 26508), (10, 26547), (11, 26553), (12, 26568), (13, 26610), (14, 26613),

Gene: Cornucopia\_37 Start: 30234, Stop: 30524, Start Num: 2

Candidate Starts for Cornucopia\_37:

(Start: 2 @30234 has 49 MA's), (Start: 3 @30273 has 10 MA's), (4, 30291), (5, 30303), (6, 30345), (8, 30387), (9, 30399), (10, 30423), (12, 30444), (13, 30486), (14, 30489),

Gene: DaddyRickover\_36 Start: 30400, Stop: 30690, Start Num: 2

Candidate Starts for DaddyRickover\_36:

(Start: 2 @30400 has 49 MA's), (Start: 3 @30439 has 10 MA's), (4, 30457), (5, 30469), (6, 30511), (8, 30553), (9, 30565), (10, 30589), (14, 30655),

Gene: Daenerys\_36 Start: 30222, Stop: 30512, Start Num: 2

Candidate Starts for Daenerys\_36:

(Start: 2 @30222 has 49 MA's), (Start: 3 @30261 has 10 MA's), (4, 30279), (5, 30291), (6, 30333), (7, 30372), (10, 30411), (11, 30417), (14, 30477),

Gene: Dante\_36 Start: 30339, Stop: 30629, Start Num: 2

Candidate Starts for Dante\_36:

(Start: 2 @30339 has 49 MA's), (Start: 3 @30378 has 10 MA's), (4, 30396), (5, 30408), (6, 30450), (7, 30489), (10, 30528), (11, 30534), (14, 30594),

Gene: Deb65\_36 Start: 30222, Stop: 30512, Start Num: 2

Candidate Starts for Deb65\_36:

(Start: 2 @30222 has 49 MA's), (Start: 3 @30261 has 10 MA's), (4, 30279), (5, 30291), (6, 30333), (7, 30372), (10, 30411), (11, 30417), (14, 30477),

Gene: Dorothy\_36 Start: 30166, Stop: 30477, Start Num: 1

Candidate Starts for Dorothy\_36:

(Start: 1 @30166 has 22 MA's), (Start: 2 @30187 has 49 MA's), (Start: 3 @30226 has 10 MA's), (4, 30244), (5, 30256), (6, 30298), (7, 30337), (10, 30376), (11, 30382), (12, 30397), (13, 30439), (14, 30442),

Gene: DotProduct\_36 Start: 30211, Stop: 30501, Start Num: 2

Candidate Starts for DotProduct\_36:

(Start: 1 @30190 has 22 MA's), (Start: 2 @30211 has 49 MA's), (Start: 3 @30250 has 10 MA's), (4, 30268), (5, 30280), (8, 30364), (9, 30376), (10, 30400), (11, 30406), (14, 30466),

Gene: Emmaloid\_38 Start: 31581, Stop: 31892, Start Num: 1

Candidate Starts for Emmaloid\_38:

(Start: 1 @31581 has 22 MA's), (Start: 2 @31602 has 49 MA's), (Start: 3 @31641 has 10 MA's), (4, 31659), (5, 31671), (6, 31713), (8, 31755), (9, 31767), (10, 31791), (14, 31857),

Gene: Empress\_37 Start: 31635, Stop: 31925, Start Num: 2

Candidate Starts for Empress\_37:

(Start: 2 @31635 has 49 MA's), (Start: 3 @31674 has 10 MA's), (4, 31692), (5, 31704), (6, 31746), (7, 31785), (10, 31824), (11, 31830), (14, 31890),

Gene: Firehouse51\_37 Start: 31010, Stop: 31300, Start Num: 2

Candidate Starts for Firehouse51\_37:

(Start: 2 @31010 has 49 MA's), (Start: 3 @31049 has 10 MA's), (4, 31067), (5, 31079), (6, 31121), (7, 31160), (10, 31199), (11, 31205), (12, 31220), (13, 31262), (14, 31265),

Gene: GUmble\_36 Start: 30241, Stop: 30531, Start Num: 2

Candidate Starts for GUmble\_36:

(Start: 1 @30220 has 22 MA's), (Start: 2 @30241 has 49 MA's), (Start: 3 @30280 has 10 MA's), (4, 30298), (5, 30310), (8, 30394), (9, 30406), (10, 30430), (11, 30436), (14, 30496),

Gene: Geralt\_36 Start: 30260, Stop: 30511, Start Num: 3

Candidate Starts for Geralt\_36:

(Start: 2 @30221 has 49 MA's), (Start: 3 @30260 has 10 MA's), (4, 30278), (5, 30290), (6, 30332), (7, 30371), (10, 30410), (11, 30416), (14, 30476),

Gene: GigiOuiOui\_36 Start: 30353, Stop: 30643, Start Num: 2

Candidate Starts for GigiOuiOui\_36:

(Start: 1 @30332 has 22 MA's), (Start: 2 @30353 has 49 MA's), (Start: 3 @30392 has 10 MA's), (4, 30410), (5, 30422), (8, 30506), (9, 30518), (10, 30542), (11, 30548), (14, 30608),

Gene: Girafales\_37 Start: 30028, Stop: 30318, Start Num: 2

Candidate Starts for Girafales\_37:

(Start: 2 @30028 has 49 MA's), (Start: 3 @30067 has 10 MA's), (4, 30085), (5, 30097), (6, 30139), (8, 30181), (9, 30193), (10, 30217), (14, 30283),

Gene: Girr\_38 Start: 31257, Stop: 31547, Start Num: 2

Candidate Starts for Girr\_38:

(Start: 2 @31257 has 49 MA's), (Start: 3 @31296 has 10 MA's), (4, 31314), (5, 31326), (6, 31368), (7, 31407), (10, 31446), (11, 31452), (14, 31512),

Gene: Guppsters\_38 Start: 30718, Stop: 31029, Start Num: 1

Candidate Starts for Guppsters\_38:

(Start: 1 @30718 has 22 MA's), (Start: 2 @30739 has 49 MA's), (Start: 3 @30778 has 10 MA's), (4, 30796), (5, 30808), (6, 30850), (7, 30889), (10, 30928), (11, 30934), (12, 30949), (13, 30991), (14, 30994),

Gene: Ibhubesi\_36 Start: 30164, Stop: 30454, Start Num: 2

Candidate Starts for Ibhubesi\_36:

(Start: 2 @30164 has 49 MA's), (Start: 3 @30203 has 10 MA's), (4, 30221), (5, 30233), (6, 30275), (8, 30317), (9, 30329), (10, 30353), (11, 30359), (14, 30419),

Gene: Inventum\_36 Start: 30902, Stop: 31192, Start Num: 2

Candidate Starts for Inventum\_36:

(Start: 2 @30902 has 49 MA's), (Start: 3 @30941 has 10 MA's), (4, 30959), (5, 30971), (6, 31013), (7, 31052), (10, 31091), (11, 31097), (14, 31157),

Gene: Job42\_40 Start: 32218, Stop: 32508, Start Num: 2

Candidate Starts for Job42\_40:

(Start: 2 @32218 has 49 MA's), (Start: 3 @32257 has 10 MA's), (4, 32275), (5, 32287), (6, 32329), (7, 32368), (10, 32407), (11, 32413), (14, 32473),

Gene: JoeyJr\_36 Start: 30390, Stop: 30680, Start Num: 2

Candidate Starts for JoeyJr\_36:

(Start: 2 @30390 has 49 MA's), (Start: 3 @30429 has 10 MA's), (4, 30447), (5, 30459), (6, 30501), (7, 30540), (10, 30579), (11, 30585), (14, 30645),

Gene: Karhdo\_36 Start: 30393, Stop: 30644, Start Num: 3

Candidate Starts for Karhdo\_36:

(Start: 2 @30354 has 49 MA's), (Start: 3 @30393 has 10 MA's), (4, 30411), (5, 30423), (6, 30465), (7, 30504), (10, 30543), (11, 30549), (14, 30609),

Gene: Kersh\_35 Start: 31408, Stop: 31719, Start Num: 1

Candidate Starts for Kersh\_35:

(Start: 1 @31408 has 22 MA's), (Start: 2 @31429 has 49 MA's), (Start: 3 @31468 has 10 MA's), (4, 31486), (5, 31498), (8, 31582), (9, 31594), (10, 31618), (11, 31624), (14, 31684),

Gene: Kimberlium\_38 Start: 31345, Stop: 31635, Start Num: 2

Candidate Starts for Kimberlium\_38:

(Start: 2 @31345 has 49 MA's), (Start: 3 @31384 has 10 MA's), (4, 31402), (5, 31414), (6, 31456), (7, 31495), (10, 31534), (11, 31540), (12, 31555), (13, 31597), (14, 31600),

Gene: KingMidas\_38 Start: 32123, Stop: 32374, Start Num: 3

Candidate Starts for KingMidas\_38:

(Start: 2 @32084 has 49 MA's), (Start: 3 @32123 has 10 MA's), (4, 32141), (5, 32153), (6, 32195), (7, 32234), (10, 32273), (11, 32279), (14, 32339),

Gene: Krakatau\_37 Start: 30895, Stop: 31206, Start Num: 1

Candidate Starts for Krakatau\_37:

(Start: 1 @30895 has 22 MA's), (Start: 2 @30916 has 49 MA's), (Start: 3 @30955 has 10 MA's), (4, 30973), (5, 30985), (8, 31069), (9, 31081), (10, 31105), (11, 31111), (14, 31171),

Gene: Leozinho\_38 Start: 30643, Stop: 30933, Start Num: 2

Candidate Starts for Leozinho\_38:

(Start: 2 @30643 has 49 MA's), (Start: 3 @30682 has 10 MA's), (4, 30700), (5, 30712), (6, 30754), (7, 30793), (10, 30832), (11, 30838), (14, 30898),

Gene: Leperchaun\_36 Start: 30275, Stop: 30586, Start Num: 1

Candidate Starts for Leperchaun\_36:

(Start: 1 @30275 has 22 MA's), (Start: 2 @30296 has 49 MA's), (Start: 3 @30335 has 10 MA's), (4, 30353), (5, 30365), (6, 30407), (7, 30446), (10, 30485), (11, 30491), (12, 30506), (13, 30548), (14, 30551),

Gene: LittleShirley\_39 Start: 31841, Stop: 32152, Start Num: 1

Candidate Starts for LittleShirley\_39:

(Start: 1 @31841 has 22 MA's), (Start: 2 @31862 has 49 MA's), (Start: 3 @31901 has 10 MA's), (4, 31919), (5, 31931), (8, 32015), (9, 32027), (10, 32051), (11, 32057), (14, 32117),

Gene: Llij\_36 Start: 30202, Stop: 30492, Start Num: 2

Candidate Starts for Llij\_36:

(Start: 2 @30202 has 49 MA's), (Start: 3 @30241 has 10 MA's), (4, 30259), (5, 30271), (6, 30313), (7, 30352), (10, 30391), (11, 30397), (12, 30412), (13, 30454), (14, 30457),

Gene: Lucia\_37 Start: 30333, Stop: 30623, Start Num: 2

Candidate Starts for Lucia\_37:

(Start: 2 @30333 has 49 MA's), (Start: 3 @30372 has 10 MA's), (4, 30390), (5, 30402), (6, 30444), (7, 30483), (10, 30522), (11, 30528), (12, 30543), (13, 30585), (14, 30588),

Gene: Minnie\_38 Start: 31204, Stop: 31494, Start Num: 2

Candidate Starts for Minnie\_38:

(Start: 2 @31204 has 49 MA's), (Start: 3 @31243 has 10 MA's), (4, 31261), (5, 31273), (6, 31315), (8, 31357), (9, 31369), (10, 31393), (14, 31459),

Gene: MisterCuddles\_38 Start: 31296, Stop: 31547, Start Num: 3

Candidate Starts for MisterCuddles\_38:

(Start: 2 @31257 has 49 MA's), (Start: 3 @31296 has 10 MA's), (4, 31314), (5, 31326), (6, 31368), (7, 31407), (10, 31446), (11, 31452), (14, 31512),

Gene: Modragons\_36 Start: 30273, Stop: 30563, Start Num: 2

Candidate Starts for Modragons\_36:

(Start: 2 @30273 has 49 MA's), (Start: 3 @30312 has 10 MA's), (4, 30330), (5, 30342), (6, 30384), (8, 30426), (9, 30438), (10, 30462), (14, 30528),

Gene: Mozy\_38 Start: 31099, Stop: 31389, Start Num: 2

Candidate Starts for Mozy\_38:

(Start: 2 @31099 has 49 MA's), (Start: 3 @31138 has 10 MA's), (4, 31156), (5, 31168), (6, 31210), (8, 31252), (9, 31264), (10, 31288), (11, 31294), (12, 31309), (13, 31351), (14, 31354),

Gene: Mutaforma13\_36 Start: 30479, Stop: 30769, Start Num: 2

Candidate Starts for Mutaforma13\_36:

(Start: 1 @30458 has 22 MA's), (Start: 2 @30479 has 49 MA's), (Start: 3 @30518 has 10 MA's), (4, 30536), (5, 30548), (8, 30632), (9, 30644), (10, 30668), (11, 30674), (14, 30734),

Gene: Nimbo\_36 Start: 30225, Stop: 30515, Start Num: 2

Candidate Starts for Nimbo\_36:

(Start: 2 @30225 has 49 MA's), (Start: 3 @30264 has 10 MA's), (4, 30282), (5, 30294), (6, 30336), (7, 30375), (10, 30414), (11, 30420), (14, 30480),

Gene: Nitzel\_37 Start: 30941, Stop: 31231, Start Num: 2

Candidate Starts for Nitzel\_37:

(Start: 2 @30941 has 49 MA's), (Start: 3 @30980 has 10 MA's), (4, 30998), (5, 31010), (6, 31052), (8, 31094), (9, 31106), (10, 31130), (11, 31136), (14, 31196),

Gene: OldBen\_36 Start: 30295, Stop: 30546, Start Num: 3

Candidate Starts for OldBen\_36:

(Start: 2 @30256 has 49 MA's), (Start: 3 @30295 has 10 MA's), (4, 30313), (5, 30325), (6, 30367), (7, 30406), (10, 30445), (11, 30451), (14, 30511),

Gene: OlympiaSaint\_36 Start: 30671, Stop: 30961, Start Num: 2

Candidate Starts for OlympiaSaint\_36:

(Start: 2 @30671 has 49 MA's), (Start: 3 @30710 has 10 MA's), (4, 30728), (5, 30740), (6, 30782), (7, 30821), (10, 30860), (11, 30866), (14, 30926),

Gene: Ovechkin\_37 Start: 31231, Stop: 31521, Start Num: 2

Candidate Starts for Ovechkin\_37:

(Start: 2 @31231 has 49 MA's), (Start: 3 @31270 has 10 MA's), (4, 31288), (5, 31300), (6, 31342), (7, 31381), (10, 31420), (14, 31486),

Gene: OwlsT2W\_37 Start: 30646, Stop: 30936, Start Num: 2

Candidate Starts for OwlsT2W\_37:

(Start: 2 @30646 has 49 MA's), (Start: 3 @30685 has 10 MA's), (4, 30703), (5, 30715), (6, 30757), (7, 30796), (10, 30835), (11, 30841), (14, 30901),

Gene: PHappiness\_36 Start: 30198, Stop: 30488, Start Num: 2

Candidate Starts for PHappiness\_36:

(Start: 2 @30198 has 49 MA's), (Start: 3 @30237 has 10 MA's), (4, 30255), (5, 30267), (6, 30309), (7, 30348), (10, 30387), (11, 30393), (14, 30453),

Gene: PMC\_36 Start: 30202, Stop: 30492, Start Num: 2

Candidate Starts for PMC\_36:

(Start: 2 @30202 has 49 MA's), (Start: 3 @30241 has 10 MA's), (4, 30259), (5, 30271), (6, 30313), (7, 30352), (10, 30391), (11, 30397), (12, 30412), (13, 30454), (14, 30457),

Gene: Pacc40\_36 Start: 30392, Stop: 30682, Start Num: 2

Candidate Starts for Pacc40\_36:

(Start: 1 @30371 has 22 MA's), (Start: 2 @30392 has 49 MA's), (Start: 3 @30431 has 10 MA's), (4, 30449), (5, 30461), (6, 30503), (7, 30542), (10, 30581), (11, 30587), (12, 30602), (13, 30644), (14, 30647),

Gene: PhlipPhlop\_37 Start: 31813, Stop: 32124, Start Num: 1

Candidate Starts for PhlipPhlop\_37:

(Start: 1 @31813 has 22 MA's), (Start: 2 @31834 has 49 MA's), (Start: 3 @31873 has 10 MA's), (4, 31891), (5, 31903), (8, 31987), (9, 31999), (10, 32023), (11, 32029), (14, 32089),

Gene: Plumbus\_38 Start: 30277, Stop: 30588, Start Num: 1

Candidate Starts for Plumbus\_38:

(Start: 1 @30277 has 22 MA's), (Start: 2 @30298 has 49 MA's), (Start: 3 @30337 has 10 MA's), (4, 30355), (5, 30367), (8, 30451), (9, 30463), (10, 30487), (11, 30493), (14, 30553),

Gene: Polka14\_37 Start: 30882, Stop: 31133, Start Num: 3

Candidate Starts for Polka14\_37:

(Start: 2 @30843 has 49 MA's), (Start: 3 @30882 has 10 MA's), (4, 30900), (5, 30912), (6, 30954), (7, 30993), (10, 31032), (11, 31038), (14, 31098),

Gene: QuickMath\_37 Start: 31568, Stop: 31858, Start Num: 2

Candidate Starts for QuickMath\_37:

(Start: 2 @31568 has 49 MA's), (Start: 3 @31607 has 10 MA's), (4, 31625), (5, 31637), (6, 31679), (7, 31718), (10, 31757), (11, 31763), (12, 31778), (13, 31820), (14, 31823),

Gene: Quico\_37 Start: 30028, Stop: 30318, Start Num: 2

Candidate Starts for Quico\_37:

(Start: 2 @30028 has 49 MA's), (Start: 3 @30067 has 10 MA's), (4, 30085), (5, 30097), (6, 30139), (8, 30181), (9, 30193), (10, 30217), (14, 30283),

Gene: RitaG\_37 Start: 30665, Stop: 30955, Start Num: 2

Candidate Starts for RitaG\_37:

(Start: 2 @30665 has 49 MA's), (Start: 3 @30704 has 10 MA's), (4, 30722), (5, 30734), (6, 30776), (7, 30815), (10, 30854), (11, 30860), (12, 30875), (13, 30917), (14, 30920),

Gene: RockyHorror\_37 Start: 30124, Stop: 30435, Start Num: 1

Candidate Starts for RockyHorror\_37:

(Start: 1 @30124 has 22 MA's), (Start: 2 @30145 has 49 MA's), (Start: 3 @30184 has 10 MA's), (4, 30202), (5, 30214), (6, 30256), (7, 30295), (10, 30334), (11, 30340), (14, 30400),

Gene: Royals2015\_36 Start: 30297, Stop: 30608, Start Num: 1

Candidate Starts for Royals2015\_36:

(Start: 1 @30297 has 22 MA's), (Start: 2 @30318 has 49 MA's), (Start: 3 @30357 has 10 MA's), (4, 30375), (5, 30387), (6, 30429), (8, 30471), (9, 30483), (10, 30507), (11, 30513), (14, 30573),

Gene: Ruby\_38 Start: 31257, Stop: 31547, Start Num: 2

Candidate Starts for Ruby\_38:

(Start: 2 @31257 has 49 MA's), (Start: 3 @31296 has 10 MA's), (4, 31314), (5, 31326), (6, 31368), (7, 31407), (10, 31446), (11, 31452), (14, 31512),

Gene: Sabbb\_37 Start: 30597, Stop: 30908, Start Num: 1

Candidate Starts for Sabbb\_37:

(Start: 1 @30597 has 22 MA's), (Start: 2 @30618 has 49 MA's), (Start: 3 @30657 has 10 MA's), (4, 30675), (5, 30687), (8, 30771), (9, 30783), (10, 30807), (11, 30813), (14, 30873),

Gene: Sarma624\_32 Start: 26427, Stop: 26717, Start Num: 2

Candidate Starts for Sarma624\_32:

(Start: 2 @26427 has 49 MA's), (Start: 3 @26466 has 10 MA's), (4, 26484), (5, 26496), (6, 26538), (8, 26580), (9, 26592), (10, 26616), (14, 26682),

Gene: Scottish\_37 Start: 31562, Stop: 31813, Start Num: 3

Candidate Starts for Scottish\_37:

(Start: 2 @31523 has 49 MA's), (Start: 3 @31562 has 10 MA's), (4, 31580), (5, 31592), (6, 31634), (7, 31673), (10, 31712), (11, 31718), (14, 31778),

Gene: ShroomBoi\_33 Start: 29273, Stop: 29584, Start Num: 1

Candidate Starts for ShroomBoi\_33:

(Start: 1 @29273 has 22 MA's), (Start: 2 @29294 has 49 MA's), (Start: 3 @29333 has 10 MA's), (4, 29351), (5, 29363), (6, 29405), (7, 29444), (10, 29483), (11, 29489), (12, 29504), (13, 29546), (14, 29549),

Gene: SiSi\_36 Start: 30181, Stop: 30492, Start Num: 1

Candidate Starts for SiSi\_36:

(Start: 1 @30181 has 22 MA's), (Start: 2 @30202 has 49 MA's), (Start: 3 @30241 has 10 MA's), (4, 30259), (5, 30271), (8, 30355), (9, 30367), (10, 30391), (11, 30397), (14, 30457),

Gene: SimranZ1\_39 Start: 30558, Stop: 30809, Start Num: 3

Candidate Starts for SimranZ1\_39:

(Start: 2 @30519 has 49 MA's), (Start: 3 @30558 has 10 MA's), (4, 30576), (5, 30588), (6, 30630), (8, 30672), (9, 30684), (10, 30708), (14, 30774),

Gene: Slim\_38 Start: 31572, Stop: 31883, Start Num: 1

Candidate Starts for Slim\_38:

(Start: 1 @31572 has 22 MA's), (Start: 2 @31593 has 49 MA's), (Start: 3 @31632 has 10 MA's), (4, 31650), (5, 31662), (6, 31704), (8, 31746), (9, 31758), (10, 31782), (14, 31848),

Gene: Spoonbill\_36 Start: 30482, Stop: 30772, Start Num: 2

Candidate Starts for Spoonbill\_36:

(Start: 2 @30482 has 49 MA's), (Start: 3 @30521 has 10 MA's), (4, 30539), (5, 30551), (6, 30593), (7, 30632), (10, 30671), (11, 30677), (14, 30737),

Gene: Stap\_37 Start: 30373, Stop: 30663, Start Num: 2

Candidate Starts for Stap\_37:

(Start: 2 @30373 has 49 MA's), (Start: 3 @30412 has 10 MA's), (4, 30430), (5, 30442), (6, 30484), (7, 30523), (10, 30562), (11, 30568), (14, 30628),

Gene: Starcevich\_40 Start: 31076, Stop: 31387, Start Num: 1

Candidate Starts for Starcevich\_40:

(Start: 1 @31076 has 22 MA's), (Start: 2 @31097 has 49 MA's), (Start: 3 @31136 has 10 MA's), (4, 31154), (5, 31166), (8, 31250), (9, 31262), (10, 31286), (11, 31292), (14, 31352),

Gene: Taj\_36 Start: 30359, Stop: 30670, Start Num: 1

Candidate Starts for Taj\_36:

(Start: 1 @30359 has 22 MA's), (Start: 2 @30380 has 49 MA's), (Start: 3 @30419 has 10 MA's), (4, 30437), (5, 30449), (6, 30491), (7, 30530), (8, 30533), (10, 30569), (12, 30590), (13, 30632), (14, 30635),

Gene: Tchotchke\_36 Start: 29861, Stop: 30112, Start Num: 3

Candidate Starts for Tchotchke\_36:

(Start: 2 @29822 has 49 MA's), (Start: 3 @29861 has 10 MA's), (4, 29879), (5, 29891), (6, 29933), (8, 29975), (9, 29987), (10, 30011), (14, 30077),

Gene: Totinger\_37 Start: 30183, Stop: 30494, Start Num: 1

Candidate Starts for Totinger\_37:

(Start: 1 @30183 has 22 MA's), (Start: 2 @30204 has 49 MA's), (Start: 3 @30243 has 10 MA's), (4, 30261), (5, 30273), (6, 30315), (8, 30357), (9, 30369), (10, 30393), (14, 30459),

Gene: VRedHorse\_36 Start: 30390, Stop: 30680, Start Num: 2

Candidate Starts for VRedHorse\_36:

(Start: 2 @30390 has 49 MA's), (Start: 3 @30429 has 10 MA's), (4, 30447), (5, 30459), (6, 30501), (8, 30543), (9, 30555), (10, 30579), (14, 30645),

Gene: Velveteen\_31 Start: 26427, Stop: 26717, Start Num: 2

Candidate Starts for Velveteen\_31:

(Start: 2 @26427 has 49 MA's), (Start: 3 @26466 has 10 MA's), (4, 26484), (5, 26496), (6, 26538), (8, 26580), (9, 26592), (10, 26616), (14, 26682),

Gene: Veteran\_36 Start: 30220, Stop: 30531, Start Num: 1

Candidate Starts for Veteran\_36:

(Start: 1 @30220 has 22 MA's), (Start: 2 @30241 has 49 MA's), (Start: 3 @30280 has 10 MA's), (4, 30298), (5, 30310), (8, 30394), (9, 30406), (10, 30430), (11, 30436), (14, 30496),

Gene: Vivum\_37 Start: 30258, Stop: 30509, Start Num: 3

Candidate Starts for Vivum\_37:

(Start: 2 @30219 has 49 MA's), (Start: 3 @30258 has 10 MA's), (4, 30276), (5, 30288), (6, 30330), (7, 30369), (10, 30408), (11, 30414), (12, 30429), (13, 30471), (14, 30474),

Gene: Wee\_37 Start: 30918, Stop: 31208, Start Num: 2

Candidate Starts for Wee\_37:

(Start: 1 @30897 has 22 MA's), (Start: 2 @30918 has 49 MA's), (Start: 3 @30957 has 10 MA's), (4, 30975), (5, 30987), (6, 31029), (7, 31068), (8, 31071), (10, 31107), (12, 31128), (13, 31170), (14, 31173),

Gene: Zerg\_36 Start: 30233, Stop: 30544, Start Num: 1

Candidate Starts for Zerg\_36:

(Start: 1 @30233 has 22 MA's), (Start: 2 @30254 has 49 MA's), (Start: 3 @30293 has 10 MA's), (4, 30311), (5, 30323), (6, 30365), (7, 30404), (10, 30443), (11, 30449), (14, 30509),