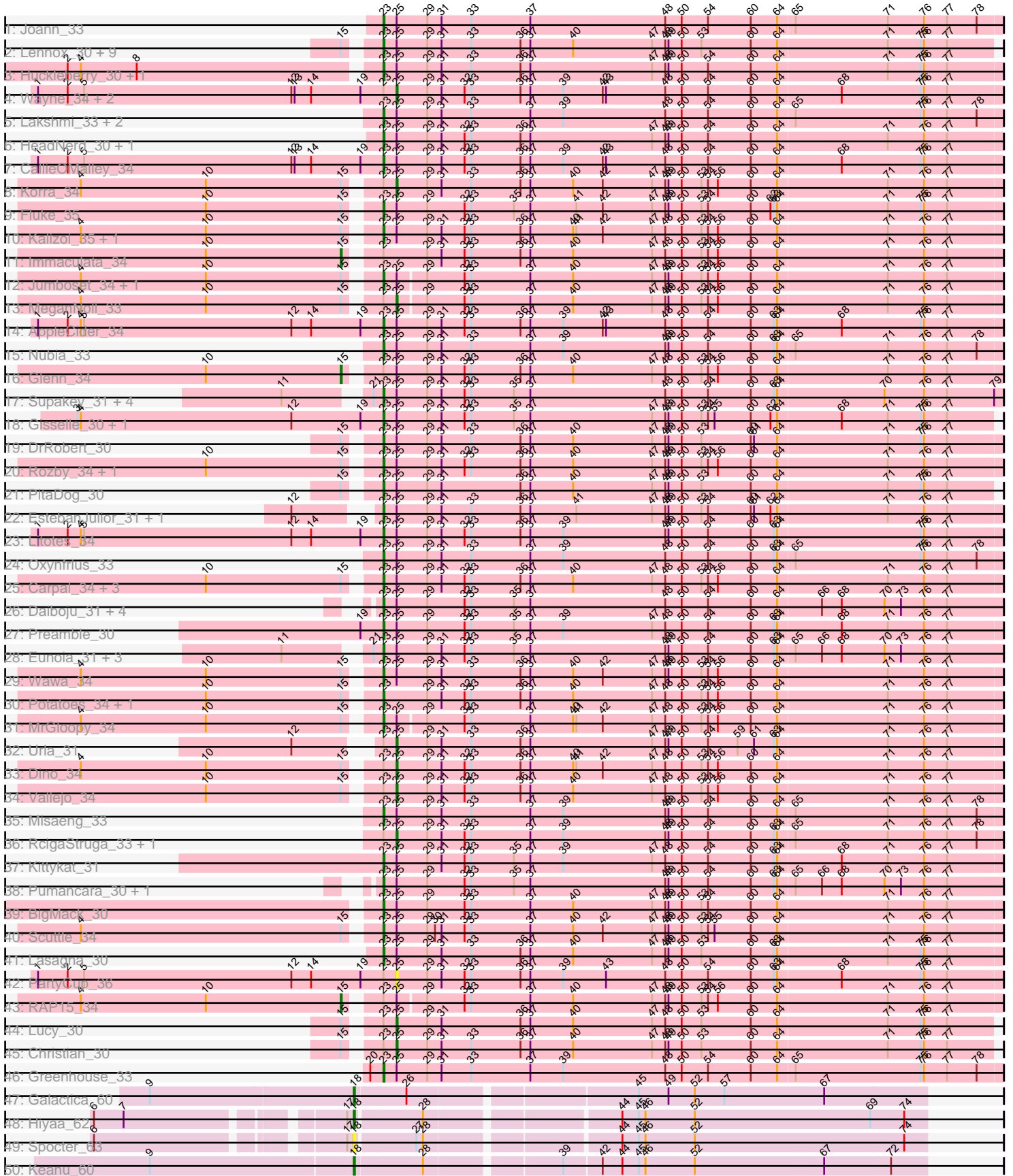


Pham 163515





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 163515 Report

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

Pham number 163515 has 90 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Joann\_33
- Track 2 : Lennox\_30, ChewChew\_30, WonderBoy\_29, Bodacious\_30, Pterodactyl\_30, Nancia\_30, Makoto\_30, CristinaYang\_30, LilStuart\_30, OurGirlNessie\_30
- Track 3 : Huckleberry\_30, Moki\_30
- Track 4 : Wayne\_34, Canowicakte\_34, Suppi\_34
- Track 5 : Lakshmi\_33, GreenHearts\_33, Albanese\_33
- Track 6 : HeadNerd\_30, Bennie\_30
- Track 7 : CallieOMalley\_34
- Track 8 : Korra\_34
- Track 9 : Fluke\_35
- Track 10 : Kalizoi\_35, Zorro\_34
- Track 11 : Immaculata\_34
- Track 12 : Jumboset\_34, Savage2526\_34
- Track 13 : MeganNoll\_33
- Track 14 : AppleCider\_34
- Track 15 : Nubia\_33
- Track 16 : Glenn\_34
- Track 17 : Supakev\_31, AustinPowers\_31, Vulture\_31, HunterDalle\_31, Chridison\_30
- Track 18 : Gisselle\_30, DreamTeam\_30
- Track 19 : DrRobert\_30
- Track 20 : Rozby\_34, BrotherBLo\_34
- Track 21 : PitaDog\_30
- Track 22 : EstebanJulior\_31, MamaPearl\_31
- Track 23 : Litotes\_34
- Track 24 : Oxynfrius\_33
- Track 25 : Carpal\_34, Riverdale\_34, Beethoven\_34, TattModd\_34
- Track 26 : Daiboju\_31, Temper16\_31, Herb\_31, Sergei\_31, KingBob\_31
- Track 27 : Preamble\_30
- Track 28 : Eunoia\_31, Riovina\_31, OMalley\_31, Aledel\_31
- Track 29 : Wawa\_34
- Track 30 : Potatoes\_34, Cholula\_34
- Track 31 : MrGloopy\_34
- Track 32 : Urla\_31
- Track 33 : Dino\_34
- Track 34 : Vallejo\_34

- Track 35 : Misaeng\_33
- Track 36 : RcigaStruga\_33, Huntingdon\_33
- Track 37 : Kittykat\_31
- Track 38 : Pumancara\_30, PinkFriday\_30
- Track 39 : BigMack\_30
- Track 40 : Scuttle\_34
- Track 41 : Lasagna\_30
- Track 42 : PartyCup\_36
- Track 43 : RAP15\_34
- Track 44 : Lucy\_30
- Track 45 : Christian\_30
- Track 46 : Greenhouse\_33
- Track 47 : Galactica\_60
- Track 48 : Hiyaa\_62
- Track 49 : Spocter\_63
- Track 50 : Keanu\_60
- Track 51 : Ghobes\_33
- Track 52 : Archimedes\_35
- Track 53 : Sapo\_32

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

The start number called the most often in the published annotations is 23, it was called in 64 of the 85 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Albanese\_33, Aledel\_31, AppleCider\_34, AustinPowers\_31, Beethoven\_34, Bennie\_30, BigMack\_30, Bodacious\_30, BrotherBLo\_34, CallieOMalley\_34, Carpal\_34, ChewChew\_30, Cholula\_34, Chridison\_30, CristinaYang\_30, Daiboju\_31, DrRobert\_30, DreamTeam\_30, EstebanJulior\_31, Eunoia\_31, Fluke\_35, Gisselle\_30, GreenHearts\_33, Greenhouse\_33, HeadNerd\_30, Herb\_31, Huckleberry\_30, HunterDalle\_31, Joann\_33, Jumboset\_34, Kalizoi\_35, KingBob\_31, Kittykat\_31, Lakshmi\_33, Lasagna\_30, Lennox\_30, LilStuart\_30, Litotes\_34, Makoto\_30, MamaPearl\_31, Misaeng\_33, Moki\_30, MrGloopy\_34, Nancia\_30, Nubia\_33, OMalley\_31, OurGirlNessie\_30, Oxyfrius\_33, PinkFriday\_30, PitaDog\_30, Potatoes\_34, Preamble\_30, Pterodactyl\_30, Pumancara\_30, Riovina\_31, Riverdale\_34, Rozby\_34, Savage2526\_34, Scuttle\_34, Sergei\_31, Supakev\_31, TattModd\_34, Temper16\_31, Vulture\_31, Wawa\_34, WonderBoy\_29, Zorro\_34,

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

- Canowicakte\_34, Christian\_30, Dino\_34, Glenn\_34, Huntingdon\_33, Immaculata\_34, Korra\_34, Lucy\_30, MeganNoll\_33, PartyCup\_36, RAP15\_34, RcigaStruga\_33, Suppi\_34, Urla\_31, Vallejo\_34, Wayne\_34,

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

- Archimedes\_35, Galactica\_60, Ghobes\_33, Hiyaa\_62, Keanu\_60, Sapo\_32, Spocter\_63,

**Summary by start number:**

Start 15:

- Found in 37 of 90 ( 41.1% ) of genes in pham
- Manual Annotations of this start: 3 of 85
- Called 8.1% of time when present
- Phage (with cluster) where this start called: Glenn\_34 (AK), Immaculata\_34 (AK), RAP15\_34 (AK),

Start 18:

- Found in 4 of 90 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 3 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Galactica\_60 (BQ), Hiyaa\_62 (BQ), Keanu\_60 (BQ), Spocter\_63 (BQ),

Start 23:

- Found in 83 of 90 ( 92.2% ) of genes in pham
- Manual Annotations of this start: 64 of 85
- Called 80.7% of time when present
- Phage (with cluster) where this start called: Albanese\_33 (AK), Aledel\_31 (AK), AppleCider\_34 (AK), AustinPowers\_31 (AK), Beethoven\_34 (AK), Bennie\_30 (AK), BigMack\_30 (AK), Bodacious\_30 (AK), BrotherBLo\_34 (AK), CallieOMalley\_34 (AK), Carpal\_34 (AK), ChewChew\_30 (AK), Cholula\_34 (AK), Chridison\_30 (AK), CristinaYang\_30 (AK), Daiboju\_31 (AK), DrRobert\_30 (AK), DreamTeam\_30 (AK), EstebanJulior\_31 (AK), Eunoia\_31 (AK), Fluke\_35 (AK), Gisselle\_30 (AK), GreenHearts\_33 (AK), Greenhouse\_33 (AK), HeadNerd\_30 (AK), Herb\_31 (AK), Huckleberry\_30 (AK), HunterDalle\_31 (AK), Joann\_33 (AK), Jumboset\_34 (AK), Kalizoi\_35 (AK), KingBob\_31 (AK), Kittykat\_31 (AK), Lakshmi\_33 (AK), Lasagna\_30 (AK), Lennox\_30 (AK), LilStuart\_30 (AK), Litotes\_34 (AK), Makoto\_30 (AK), MamaPearl\_31 (AK), Misaeng\_33 (AK), Moki\_30 (AK), MrGloopy\_34 (AK), Nancia\_30 (AK), Nubia\_33 (AK), OMalley\_31 (AK), OurGirlNessie\_30 (AK), Oxynfrius\_33 (AK), PinkFriday\_30 (AK), PitaDog\_30 (AK), Potatoes\_34 (AK), Preamble\_30 (AK), Pterodactyl\_30 (AK), Pumancara\_30 (AK), Rivovina\_31 (AK), Riverdale\_34 (AK), Rozby\_34 (AK), Savage2526\_34 (AK), Scuttle\_34 (AK), Sergei\_31 (AK), Supakev\_31 (AK), TattModd\_34 (AK), Temper16\_31 (AK), Vulture\_31 (AK), Wawa\_34 (AK), WonderBoy\_29 (AK), Zorro\_34 (AK),

Start 25:

- Found in 80 of 90 ( 88.9% ) of genes in pham
- Manual Annotations of this start: 12 of 85
- Called 16.2% of time when present
- Phage (with cluster) where this start called: Canowicakte\_34 (AK), Christian\_30 (AK), Dino\_34 (AK), Huntingdon\_33 (AK), Korra\_34 (AK), Lucy\_30 (AK), MeganNoll\_33 (AK), PartyCup\_36 (AK), RcigaStruga\_33 (AK), Suppi\_34 (AK), Urla\_31 (AK), Vallejo\_34 (AK), Wayne\_34 (AK),

Start 28:

- Found in 6 of 90 ( 6.7% ) of genes in pham
- Manual Annotations of this start: 3 of 85
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Archimedes\_35 (DA), Ghobes\_33 (DA), Sapo\_32 (DA),

**Summary by clusters:**

There are 3 clusters represented in this pham: AK, BQ, DA,

Info for manual annotations of cluster AK:

- Start number 15 was manually annotated 3 times for cluster AK.
- Start number 23 was manually annotated 64 times for cluster AK.
- Start number 25 was manually annotated 12 times for cluster AK.

Info for manual annotations of cluster BQ:

- Start number 18 was manually annotated 3 times for cluster BQ.

Info for manual annotations of cluster DA:

- Start number 28 was manually annotated 3 times for cluster DA.

### **Gene Information:**

Gene: Albanese\_33 Start: 25146, Stop: 25703, Start Num: 23

Candidate Starts for Albanese\_33:

(Start: 23 @25146 has 64 MA's), (Start: 25 @25158 has 12 MA's), (29, 25185), (31, 25197), (33, 25224), (37, 25278), (39, 25308), (48, 25401), (50, 25416), (54, 25440), (60, 25479), (64, 25503), (65, 25518), (75, 25632), (76, 25635), (77, 25656), (78, 25683),

Gene: Aledel\_31 Start: 24783, Stop: 25343, Start Num: 23

Candidate Starts for Aledel\_31:

(11, 24711), (21, 24774), (Start: 23 @24783 has 64 MA's), (Start: 25 @24795 has 12 MA's), (29, 24822), (31, 24834), (32, 24855), (33, 24861), (35, 24900), (37, 24915), (48, 25038), (49, 25041), (50, 25053), (54, 25077), (60, 25116), (63, 25137), (64, 25140), (65, 25155), (66, 25179), (68, 25197), (70, 25236), (73, 25251), (76, 25272), (77, 25293),

Gene: AppleCider\_34 Start: 25187, Stop: 25744, Start Num: 23

Candidate Starts for AppleCider\_34:

(1, 24872), (2, 24899), (4, 24911), (5, 24914), (12, 25103), (14, 25121), (19, 25166), (Start: 23 @25187 has 64 MA's), (Start: 25 @25199 has 12 MA's), (29, 25226), (31, 25238), (32, 25259), (33, 25265), (36, 25310), (37, 25319), (39, 25349), (42, 25385), (43, 25388), (48, 25442), (50, 25457), (54, 25481), (60, 25520), (63, 25541), (64, 25544), (68, 25601), (75, 25673), (76, 25676), (77, 25697),

Gene: Archimedes\_35 Start: 31428, Stop: 30985, Start Num: 28

Candidate Starts for Archimedes\_35:

(22, 31467), (24, 31458), (27, 31434), (Start: 28 @31428 has 3 MA's), (33, 31386), (38, 31326), (48, 31233), (52, 31206), (58, 31173), (59, 31167),

Gene: AustinPowers\_31 Start: 24781, Stop: 25341, Start Num: 23

Candidate Starts for AustinPowers\_31:

(11, 24709), (21, 24772), (Start: 23 @24781 has 64 MA's), (Start: 25 @24793 has 12 MA's), (29, 24820), (31, 24832), (32, 24853), (33, 24859), (35, 24898), (37, 24913), (48, 25036), (50, 25051), (54, 25075), (60, 25114), (63, 25135), (64, 25138), (70, 25234), (76, 25270), (77, 25291), (79, 25333),

Gene: Beethoven\_34 Start: 25166, Stop: 25723, Start Num: 23

Candidate Starts for Beethoven\_34:

(10, 25019), (Start: 15 @25142 has 3 MA's), (Start: 23 @25166 has 64 MA's), (Start: 25 @25178 has 12 MA's), (29, 25205), (31, 25217), (32, 25238), (33, 25244), (36, 25289), (37, 25298), (40, 25337),

(47, 25409), (48, 25421), (50, 25436), (53, 25454), (54, 25460), (56, 25469), (60, 25499), (64, 25523), (71, 25622), (76, 25655), (77, 25676),

Gene: Bennie\_30 Start: 23623, Stop: 24180, Start Num: 23

Candidate Starts for Bennie\_30:

(Start: 23 @23623 has 64 MA's), (Start: 25 @23635 has 12 MA's), (29, 23662), (31, 23674), (32, 23695), (33, 23701), (36, 23746), (37, 23755), (47, 23866), (48, 23878), (49, 23881), (50, 23893), (54, 23917), (60, 23956), (64, 23980), (71, 24079), (76, 24112), (77, 24133),

Gene: BigMack\_30 Start: 23645, Stop: 24202, Start Num: 23

Candidate Starts for BigMack\_30:

(Start: 23 @23645 has 64 MA's), (Start: 25 @23657 has 12 MA's), (29, 23684), (32, 23717), (33, 23723), (37, 23777), (40, 23816), (47, 23888), (48, 23900), (49, 23903), (50, 23915), (53, 23933), (54, 23939), (60, 23978), (64, 24002), (71, 24101), (76, 24134), (77, 24155),

Gene: Bodacious\_30 Start: 23631, Stop: 24182, Start Num: 23

Candidate Starts for Bodacious\_30:

(Start: 15 @23607 has 3 MA's), (Start: 23 @23631 has 64 MA's), (Start: 25 @23643 has 12 MA's), (29, 23670), (31, 23682), (33, 23709), (36, 23754), (37, 23763), (40, 23802), (47, 23874), (48, 23886), (49, 23889), (50, 23901), (53, 23919), (60, 23964), (64, 23988), (71, 24087), (75, 24117), (76, 24120), (77, 24141),

Gene: BrotherBLo\_34 Start: 25191, Stop: 25748, Start Num: 23

Candidate Starts for BrotherBLo\_34:

(10, 25044), (Start: 15 @25167 has 3 MA's), (Start: 23 @25191 has 64 MA's), (Start: 25 @25203 has 12 MA's), (29, 25230), (31, 25242), (32, 25263), (33, 25269), (36, 25314), (37, 25323), (40, 25362), (47, 25434), (48, 25446), (49, 25449), (50, 25461), (53, 25479), (54, 25485), (56, 25494), (60, 25524), (64, 25548), (71, 25647), (76, 25680), (77, 25701),

Gene: CallieOMalley\_34 Start: 25187, Stop: 25744, Start Num: 23

Candidate Starts for CallieOMalley\_34:

(1, 24872), (2, 24899), (5, 24914), (12, 25103), (13, 25106), (14, 25121), (19, 25166), (Start: 23 @25187 has 64 MA's), (Start: 25 @25199 has 12 MA's), (29, 25226), (31, 25238), (32, 25259), (33, 25265), (36, 25310), (37, 25319), (39, 25349), (42, 25385), (43, 25388), (48, 25442), (50, 25457), (54, 25481), (60, 25520), (64, 25544), (68, 25601), (75, 25673), (76, 25676), (77, 25697),

Gene: Canowicakte\_34 Start: 25234, Stop: 25779, Start Num: 25

Candidate Starts for Canowicakte\_34:

(1, 24907), (2, 24934), (5, 24949), (12, 25138), (13, 25141), (14, 25156), (19, 25201), (Start: 23 @25222 has 64 MA's), (Start: 25 @25234 has 12 MA's), (29, 25261), (31, 25273), (32, 25294), (33, 25300), (36, 25345), (37, 25354), (39, 25384), (42, 25420), (43, 25423), (48, 25477), (50, 25492), (54, 25516), (60, 25555), (64, 25579), (68, 25636), (75, 25708), (76, 25711), (77, 25732),

Gene: Carpal\_34 Start: 25173, Stop: 25730, Start Num: 23

Candidate Starts for Carpal\_34:

(10, 25026), (Start: 15 @25149 has 3 MA's), (Start: 23 @25173 has 64 MA's), (Start: 25 @25185 has 12 MA's), (29, 25212), (31, 25224), (32, 25245), (33, 25251), (36, 25296), (37, 25305), (40, 25344), (47, 25416), (48, 25428), (50, 25443), (53, 25461), (54, 25467), (56, 25476), (60, 25506), (64, 25530), (71, 25629), (76, 25662), (77, 25683),

Gene: ChewChew\_30 Start: 23626, Stop: 24177, Start Num: 23

Candidate Starts for ChewChew\_30:

(Start: 15 @23602 has 3 MA's), (Start: 23 @23626 has 64 MA's), (Start: 25 @23638 has 12 MA's), (29, 23665), (31, 23677), (33, 23704), (36, 23749), (37, 23758), (40, 23797), (47, 23869), (48, 23881), (49, 23884), (50, 23896), (53, 23914), (60, 23959), (64, 23983), (71, 24082), (75, 24112), (76, 24115), (77, 24136),

Gene: Cholula\_34 Start: 25219, Stop: 25776, Start Num: 23

Candidate Starts for Cholula\_34:

(10, 25072), (Start: 15 @25195 has 3 MA's), (Start: 23 @25219 has 64 MA's), (29, 25258), (31, 25270), (32, 25291), (33, 25297), (36, 25342), (37, 25351), (40, 25390), (47, 25462), (48, 25474), (50, 25489), (53, 25507), (54, 25513), (56, 25522), (60, 25552), (64, 25576), (71, 25675), (76, 25708), (77, 25729),

Gene: Chridison\_30 Start: 24781, Stop: 25341, Start Num: 23

Candidate Starts for Chridison\_30:

(11, 24709), (21, 24772), (Start: 23 @24781 has 64 MA's), (Start: 25 @24793 has 12 MA's), (29, 24820), (31, 24832), (32, 24853), (33, 24859), (35, 24898), (37, 24913), (48, 25036), (50, 25051), (54, 25075), (60, 25114), (63, 25135), (64, 25138), (70, 25234), (76, 25270), (77, 25291), (79, 25333),

Gene: Christian\_30 Start: 23639, Stop: 24178, Start Num: 25

Candidate Starts for Christian\_30:

(Start: 15 @23603 has 3 MA's), (Start: 23 @23627 has 64 MA's), (Start: 25 @23639 has 12 MA's), (29, 23666), (31, 23678), (33, 23705), (36, 23750), (37, 23759), (40, 23798), (47, 23870), (48, 23882), (49, 23885), (50, 23897), (53, 23915), (60, 23960), (64, 23984), (71, 24083), (75, 24113), (76, 24116), (77, 24137),

Gene: CristinaYang\_30 Start: 23631, Stop: 24182, Start Num: 23

Candidate Starts for CristinaYang\_30:

(Start: 15 @23607 has 3 MA's), (Start: 23 @23631 has 64 MA's), (Start: 25 @23643 has 12 MA's), (29, 23670), (31, 23682), (33, 23709), (36, 23754), (37, 23763), (40, 23802), (47, 23874), (48, 23886), (49, 23889), (50, 23901), (53, 23919), (60, 23964), (64, 23988), (71, 24087), (75, 24117), (76, 24120), (77, 24141),

Gene: Daiboju\_31 Start: 24770, Stop: 25330, Start Num: 23

Candidate Starts for Daiboju\_31:

(Start: 23 @24770 has 64 MA's), (Start: 25 @24782 has 12 MA's), (29, 24809), (32, 24842), (33, 24848), (35, 24887), (37, 24902), (48, 25025), (50, 25040), (54, 25064), (60, 25103), (64, 25127), (66, 25166), (68, 25184), (70, 25223), (73, 25238), (76, 25259), (77, 25280),

Gene: Dino\_34 Start: 25199, Stop: 25744, Start Num: 25

Candidate Starts for Dino\_34:

(4, 24926), (10, 25040), (Start: 15 @25163 has 3 MA's), (Start: 23 @25187 has 64 MA's), (Start: 25 @25199 has 12 MA's), (29, 25226), (31, 25238), (32, 25259), (33, 25265), (36, 25310), (37, 25319), (40, 25358), (41, 25361), (42, 25385), (47, 25430), (48, 25442), (50, 25457), (53, 25475), (54, 25481), (56, 25490), (60, 25520), (64, 25544), (71, 25643), (76, 25676), (77, 25697),

Gene: DrRobert\_30 Start: 23627, Stop: 24184, Start Num: 23

Candidate Starts for DrRobert\_30:

(Start: 15 @23603 has 3 MA's), (Start: 23 @23627 has 64 MA's), (Start: 25 @23639 has 12 MA's), (29, 23666), (31, 23678), (33, 23705), (36, 23750), (37, 23759), (40, 23798), (47, 23870), (48, 23882), (49, 23885), (50, 23897), (53, 23915), (60, 23960), (61, 23963), (64, 23984), (71, 24083), (75, 24113), (76, 24116), (77, 24137),

Gene: DreamTeam\_30 Start: 23722, Stop: 24273, Start Num: 23



Candidate Starts for DreamTeam\_30:

(3, 23443), (4, 23446), (12, 23638), (19, 23701), (Start: 23 @23722 has 64 MA's), (Start: 25 @23734 has 12 MA's), (29, 23761), (31, 23773), (32, 23794), (33, 23800), (35, 23839), (37, 23854), (47, 23965), (48, 23977), (49, 23980), (50, 23992), (53, 24010), (54, 24016), (55, 24022), (60, 24055), (62, 24073), (64, 24079), (68, 24136), (71, 24178), (75, 24208), (76, 24211), (77, 24232),

Gene: EstebanJulior\_31 Start: 24817, Stop: 25374, Start Num: 23

Candidate Starts for EstebanJulior\_31:

(12, 24760), (Start: 23 @24817 has 64 MA's), (Start: 25 @24829 has 12 MA's), (29, 24856), (31, 24868), (33, 24895), (36, 24940), (37, 24949), (41, 24991), (47, 25060), (48, 25072), (49, 25075), (50, 25087), (53, 25105), (54, 25111), (60, 25150), (61, 25153), (62, 25168), (64, 25174), (71, 25273), (76, 25306), (77, 25327),

Gene: Eunoia\_31 Start: 24783, Stop: 25343, Start Num: 23

Candidate Starts for Eunoia\_31:

(11, 24711), (21, 24774), (Start: 23 @24783 has 64 MA's), (Start: 25 @24795 has 12 MA's), (29, 24822), (31, 24834), (32, 24855), (33, 24861), (35, 24900), (37, 24915), (48, 25038), (49, 25041), (50, 25053), (54, 25077), (60, 25116), (63, 25137), (64, 25140), (65, 25155), (66, 25179), (68, 25197), (70, 25236), (73, 25251), (76, 25272), (77, 25293),

Gene: Fluke\_35 Start: 25328, Stop: 25885, Start Num: 23

Candidate Starts for Fluke\_35:

(10, 25181), (Start: 15 @25304 has 3 MA's), (Start: 23 @25328 has 64 MA's), (Start: 25 @25340 has 12 MA's), (29, 25367), (32, 25400), (33, 25406), (35, 25445), (37, 25460), (41, 25502), (42, 25526), (47, 25571), (48, 25583), (49, 25586), (50, 25598), (53, 25616), (54, 25622), (60, 25661), (62, 25679), (63, 25682), (64, 25685), (71, 25784), (75, 25814), (76, 25817), (77, 25838),

Gene: Galactica\_60 Start: 45960, Stop: 46460, Start Num: 18

Candidate Starts for Galactica\_60:

(9, 45777), (Start: 18 @45960 has 3 MA's), (26, 46005), (45, 46200), (49, 46227), (52, 46251), (57, 46278), (67, 46368),

Gene: Ghobes\_33 Start: 30552, Stop: 30085, Start Num: 28

Candidate Starts for Ghobes\_33:

(24, 30582), (27, 30558), (Start: 28 @30552 has 3 MA's), (31, 30537), (34, 30486), (61, 30276),

Gene: Gisselle\_30 Start: 23722, Stop: 24273, Start Num: 23

Candidate Starts for Gisselle\_30:

(3, 23443), (4, 23446), (12, 23638), (19, 23701), (Start: 23 @23722 has 64 MA's), (Start: 25 @23734 has 12 MA's), (29, 23761), (31, 23773), (32, 23794), (33, 23800), (35, 23839), (37, 23854), (47, 23965), (48, 23977), (49, 23980), (50, 23992), (53, 24010), (54, 24016), (55, 24022), (60, 24055), (62, 24073), (64, 24079), (68, 24136), (71, 24178), (75, 24208), (76, 24211), (77, 24232),

Gene: Glenn\_34 Start: 25199, Stop: 25780, Start Num: 15

Candidate Starts for Glenn\_34:

(10, 25076), (Start: 15 @25199 has 3 MA's), (Start: 23 @25223 has 64 MA's), (Start: 25 @25235 has 12 MA's), (29, 25262), (31, 25274), (32, 25295), (33, 25301), (36, 25346), (37, 25355), (40, 25394), (47, 25466), (48, 25478), (50, 25493), (53, 25511), (54, 25517), (56, 25526), (60, 25556), (64, 25580), (71, 25679), (76, 25712), (77, 25733),

Gene: GreenHearts\_33 Start: 25238, Stop: 25795, Start Num: 23

Candidate Starts for GreenHearts\_33:

(Start: 23 @25238 has 64 MA's), (Start: 25 @25250 has 12 MA's), (29, 25277), (31, 25289), (33, 25316), (37, 25370), (39, 25400), (48, 25493), (50, 25508), (54, 25532), (60, 25571), (64, 25595), (65, 25610), (75, 25724), (76, 25727), (77, 25748), (78, 25775),

Gene: Greenhouse\_33 Start: 25152, Stop: 25709, Start Num: 23

Candidate Starts for Greenhouse\_33:

(20, 25140), (Start: 23 @25152 has 64 MA's), (Start: 25 @25164 has 12 MA's), (29, 25191), (31, 25203), (33, 25230), (37, 25284), (39, 25314), (48, 25407), (50, 25422), (54, 25446), (60, 25485), (64, 25509), (65, 25524), (75, 25638), (76, 25641), (77, 25662), (78, 25689),

Gene: HeadNerd\_30 Start: 23623, Stop: 24180, Start Num: 23

Candidate Starts for HeadNerd\_30:

(Start: 23 @23623 has 64 MA's), (Start: 25 @23635 has 12 MA's), (29, 23662), (31, 23674), (32, 23695), (33, 23701), (36, 23746), (37, 23755), (47, 23866), (48, 23878), (49, 23881), (50, 23893), (54, 23917), (60, 23956), (64, 23980), (71, 24079), (76, 24112), (77, 24133),

Gene: Herb\_31 Start: 24769, Stop: 25329, Start Num: 23

Candidate Starts for Herb\_31:

(Start: 23 @24769 has 64 MA's), (Start: 25 @24781 has 12 MA's), (29, 24808), (32, 24841), (33, 24847), (35, 24886), (37, 24901), (48, 25024), (50, 25039), (54, 25063), (60, 25102), (64, 25126), (66, 25165), (68, 25183), (70, 25222), (73, 25237), (76, 25258), (77, 25279),

Gene: Hiyaa\_62 Start: 47242, Stop: 47736, Start Num: 18

Candidate Starts for Hiyaa\_62:

(6, 47035), (7, 47062), (17, 47236), (Start: 18 @47242 has 3 MA's), (Start: 28 @47299 has 3 MA's), (44, 47461), (45, 47476), (46, 47482), (52, 47527), (69, 47686), (74, 47716),

Gene: Huckleberry\_30 Start: 23611, Stop: 24168, Start Num: 23

Candidate Starts for Huckleberry\_30:

(2, 23338), (4, 23350), (8, 23401), (Start: 23 @23611 has 64 MA's), (Start: 25 @23623 has 12 MA's), (29, 23650), (31, 23662), (33, 23689), (36, 23734), (37, 23743), (47, 23854), (48, 23866), (49, 23869), (50, 23881), (54, 23905), (60, 23944), (64, 23968), (71, 24067), (75, 24097), (76, 24100), (77, 24121),

Gene: HunterDalle\_31 Start: 24780, Stop: 25340, Start Num: 23

Candidate Starts for HunterDalle\_31:

(11, 24708), (21, 24771), (Start: 23 @24780 has 64 MA's), (Start: 25 @24792 has 12 MA's), (29, 24819), (31, 24831), (32, 24852), (33, 24858), (35, 24897), (37, 24912), (48, 25035), (50, 25050), (54, 25074), (60, 25113), (63, 25134), (64, 25137), (70, 25233), (76, 25269), (77, 25290), (79, 25332),

Gene: Huntingdon\_33 Start: 25142, Stop: 25687, Start Num: 25

Candidate Starts for Huntingdon\_33:

(Start: 23 @25130 has 64 MA's), (Start: 25 @25142 has 12 MA's), (29, 25169), (31, 25181), (32, 25202), (33, 25208), (37, 25262), (39, 25292), (48, 25385), (49, 25388), (50, 25400), (54, 25424), (60, 25463), (63, 25484), (64, 25487), (65, 25502), (71, 25586), (76, 25619), (77, 25640), (78, 25667),

Gene: Immaculata\_34 Start: 25194, Stop: 25775, Start Num: 15

Candidate Starts for Immaculata\_34:

(10, 25071), (Start: 15 @25194 has 3 MA's), (Start: 23 @25218 has 64 MA's), (29, 25257), (31, 25269), (32, 25290), (33, 25296), (36, 25341), (37, 25350), (40, 25389), (47, 25461), (48, 25473), (50, 25488), (53, 25506), (54, 25512), (56, 25521), (60, 25551), (64, 25575), (71, 25674), (76, 25707), (77, 25728),

Gene: Joann\_33 Start: 25123, Stop: 25680, Start Num: 23

Candidate Starts for Joann\_33:

(Start: 23 @25123 has 64 MA's), (Start: 25 @25135 has 12 MA's), (29, 25162), (31, 25174), (33, 25201), (37, 25255), (48, 25378), (50, 25393), (54, 25417), (60, 25456), (64, 25480), (65, 25495), (71, 25579), (76, 25612), (77, 25633), (78, 25660),

Gene: Jumboset\_34 Start: 25166, Stop: 25720, Start Num: 23

Candidate Starts for Jumboset\_34:

(4, 24905), (10, 25019), (Start: 15 @25142 has 3 MA's), (Start: 23 @25166 has 64 MA's), (Start: 25 @25178 has 12 MA's), (29, 25202), (32, 25235), (33, 25241), (37, 25295), (40, 25334), (47, 25406), (48, 25418), (49, 25421), (50, 25433), (53, 25451), (54, 25457), (56, 25466), (60, 25496), (64, 25520), (71, 25619), (76, 25652), (77, 25673),

Gene: Kalizoi\_35 Start: 25165, Stop: 25722, Start Num: 23

Candidate Starts for Kalizoi\_35:

(4, 24904), (10, 25018), (Start: 15 @25141 has 3 MA's), (Start: 23 @25165 has 64 MA's), (Start: 25 @25177 has 12 MA's), (29, 25204), (31, 25216), (32, 25237), (33, 25243), (36, 25288), (37, 25297), (40, 25336), (41, 25339), (42, 25363), (47, 25408), (48, 25420), (50, 25435), (53, 25453), (54, 25459), (56, 25468), (60, 25498), (64, 25522), (71, 25621), (76, 25654), (77, 25675),

Gene: Keanu\_60 Start: 46991, Stop: 47491, Start Num: 18

Candidate Starts for Keanu\_60:

(9, 46808), (Start: 18 @46991 has 3 MA's), (Start: 28 @47051 has 3 MA's), (39, 47165), (42, 47198), (44, 47216), (45, 47231), (46, 47237), (52, 47282), (67, 47399), (72, 47459),

Gene: KingBob\_31 Start: 24770, Stop: 25330, Start Num: 23

Candidate Starts for KingBob\_31:

(Start: 23 @24770 has 64 MA's), (Start: 25 @24782 has 12 MA's), (29, 24809), (32, 24842), (33, 24848), (35, 24887), (37, 24902), (48, 25025), (50, 25040), (54, 25064), (60, 25103), (64, 25127), (66, 25166), (68, 25184), (70, 25223), (73, 25238), (76, 25259), (77, 25280),

Gene: Kittykat\_31 Start: 23824, Stop: 24381, Start Num: 23

Candidate Starts for Kittykat\_31:

(Start: 23 @23824 has 64 MA's), (Start: 25 @23836 has 12 MA's), (29, 23863), (31, 23875), (32, 23896), (33, 23902), (35, 23941), (37, 23956), (39, 23986), (47, 24067), (48, 24079), (50, 24094), (54, 24118), (60, 24157), (63, 24178), (64, 24181), (68, 24238), (71, 24280), (76, 24313), (77, 24334),

Gene: Korra\_34 Start: 25199, Stop: 25744, Start Num: 25

Candidate Starts for Korra\_34:

(4, 24926), (10, 25040), (Start: 15 @25163 has 3 MA's), (Start: 23 @25187 has 64 MA's), (Start: 25 @25199 has 12 MA's), (29, 25226), (31, 25238), (33, 25265), (36, 25310), (37, 25319), (40, 25358), (42, 25385), (47, 25430), (48, 25442), (49, 25445), (50, 25457), (53, 25475), (54, 25481), (56, 25490), (60, 25520), (64, 25544), (71, 25643), (76, 25676), (77, 25697),

Gene: Lakshmi\_33 Start: 25122, Stop: 25679, Start Num: 23

Candidate Starts for Lakshmi\_33:

(Start: 23 @25122 has 64 MA's), (Start: 25 @25134 has 12 MA's), (29, 25161), (31, 25173), (33, 25200), (37, 25254), (39, 25284), (48, 25377), (50, 25392), (54, 25416), (60, 25455), (64, 25479), (65, 25494), (75, 25608), (76, 25611), (77, 25632), (78, 25659),

Gene: Lasagna\_30 Start: 23642, Stop: 24199, Start Num: 23

Candidate Starts for Lasagna\_30:

(Start: 23 @23642 has 64 MA's), (Start: 25 @23654 has 12 MA's), (29, 23681), (31, 23693), (33, 23720), (36, 23765), (37, 23774), (40, 23813), (47, 23885), (48, 23897), (49, 23900), (50, 23912), (53,

23930), (60, 23975), (63, 23996), (64, 23999), (71, 24098), (75, 24128), (76, 24131), (77, 24152),

Gene: Lennox\_30 Start: 23615, Stop: 24166, Start Num: 23

Candidate Starts for Lennox\_30:

(Start: 15 @23591 has 3 MA's), (Start: 23 @23615 has 64 MA's), (Start: 25 @23627 has 12 MA's), (29, 23654), (31, 23666), (33, 23693), (36, 23738), (37, 23747), (40, 23786), (47, 23858), (48, 23870), (49, 23873), (50, 23885), (53, 23903), (60, 23948), (64, 23972), (71, 24071), (75, 24101), (76, 24104), (77, 24125),

Gene: LilStuart\_30 Start: 23619, Stop: 24170, Start Num: 23

Candidate Starts for LilStuart\_30:

(Start: 15 @23595 has 3 MA's), (Start: 23 @23619 has 64 MA's), (Start: 25 @23631 has 12 MA's), (29, 23658), (31, 23670), (33, 23697), (36, 23742), (37, 23751), (40, 23790), (47, 23862), (48, 23874), (49, 23877), (50, 23889), (53, 23907), (60, 23952), (64, 23976), (71, 24075), (75, 24105), (76, 24108), (77, 24129),

Gene: Litotes\_34 Start: 25172, Stop: 25729, Start Num: 23

Candidate Starts for Litotes\_34:

(1, 24857), (2, 24884), (4, 24896), (5, 24899), (12, 25088), (14, 25106), (19, 25151), (Start: 23 @25172 has 64 MA's), (Start: 25 @25184 has 12 MA's), (29, 25211), (31, 25223), (32, 25244), (33, 25250), (36, 25295), (37, 25304), (39, 25334), (48, 25427), (49, 25430), (50, 25442), (54, 25466), (60, 25505), (63, 25526), (64, 25529), (75, 25658), (76, 25661), (77, 25682),

Gene: Lucy\_30 Start: 23619, Stop: 24158, Start Num: 25

Candidate Starts for Lucy\_30:

(Start: 15 @23583 has 3 MA's), (Start: 23 @23607 has 64 MA's), (Start: 25 @23619 has 12 MA's), (29, 23646), (31, 23658), (36, 23730), (37, 23739), (40, 23778), (47, 23850), (48, 23862), (50, 23877), (53, 23895), (60, 23940), (64, 23964), (71, 24063), (75, 24093), (76, 24096), (77, 24117),

Gene: Makoto\_30 Start: 23627, Stop: 24178, Start Num: 23

Candidate Starts for Makoto\_30:

(Start: 15 @23603 has 3 MA's), (Start: 23 @23627 has 64 MA's), (Start: 25 @23639 has 12 MA's), (29, 23666), (31, 23678), (33, 23705), (36, 23750), (37, 23759), (40, 23798), (47, 23870), (48, 23882), (49, 23885), (50, 23897), (53, 23915), (60, 23960), (64, 23984), (71, 24083), (75, 24113), (76, 24116), (77, 24137),

Gene: MamaPearl\_31 Start: 24817, Stop: 25374, Start Num: 23

Candidate Starts for MamaPearl\_31:

(12, 24760), (Start: 23 @24817 has 64 MA's), (Start: 25 @24829 has 12 MA's), (29, 24856), (31, 24868), (33, 24895), (36, 24940), (37, 24949), (41, 24991), (47, 25060), (48, 25072), (49, 25075), (50, 25087), (53, 25105), (54, 25111), (60, 25150), (61, 25153), (62, 25168), (64, 25174), (71, 25273), (76, 25306), (77, 25327),

Gene: MeganNoll\_33 Start: 25235, Stop: 25777, Start Num: 25

Candidate Starts for MeganNoll\_33:

(4, 24962), (10, 25076), (Start: 15 @25199 has 3 MA's), (Start: 23 @25223 has 64 MA's), (Start: 25 @25235 has 12 MA's), (29, 25259), (32, 25292), (33, 25298), (37, 25352), (40, 25391), (47, 25463), (48, 25475), (49, 25478), (50, 25490), (53, 25508), (54, 25514), (56, 25523), (60, 25553), (64, 25577), (71, 25676), (76, 25709), (77, 25730),

Gene: Misaeng\_33 Start: 25361, Stop: 25918, Start Num: 23

Candidate Starts for Misaeng\_33:

(Start: 23 @25361 has 64 MA's), (Start: 25 @25373 has 12 MA's), (29, 25400), (31, 25412), (33, 25439), (37, 25493), (39, 25523), (48, 25616), (49, 25619), (50, 25631), (54, 25655), (60, 25694), (64, 25718), (65, 25733), (71, 25817), (76, 25850), (77, 25871), (78, 25898),

Gene: Moki\_30 Start: 23611, Stop: 24168, Start Num: 23

Candidate Starts for Moki\_30:

(2, 23338), (4, 23350), (8, 23401), (Start: 23 @23611 has 64 MA's), (Start: 25 @23623 has 12 MA's), (29, 23650), (31, 23662), (33, 23689), (36, 23734), (37, 23743), (47, 23854), (48, 23866), (49, 23869), (50, 23881), (54, 23905), (60, 23944), (64, 23968), (71, 24067), (75, 24097), (76, 24100), (77, 24121),

Gene: MrGloopy\_34 Start: 25157, Stop: 25711, Start Num: 23

Candidate Starts for MrGloopy\_34:

(4, 24896), (10, 25010), (Start: 15 @25133 has 3 MA's), (Start: 23 @25157 has 64 MA's), (Start: 25 @25169 has 12 MA's), (29, 25193), (32, 25226), (33, 25232), (37, 25286), (40, 25325), (41, 25328), (42, 25352), (47, 25397), (48, 25409), (50, 25424), (53, 25442), (54, 25448), (56, 25457), (60, 25487), (64, 25511), (71, 25610), (76, 25643), (77, 25664),

Gene: Nancia\_30 Start: 23631, Stop: 24182, Start Num: 23

Candidate Starts for Nancia\_30:

(Start: 15 @23607 has 3 MA's), (Start: 23 @23631 has 64 MA's), (Start: 25 @23643 has 12 MA's), (29, 23670), (31, 23682), (33, 23709), (36, 23754), (37, 23763), (40, 23802), (47, 23874), (48, 23886), (49, 23889), (50, 23901), (53, 23919), (60, 23964), (64, 23988), (71, 24087), (75, 24117), (76, 24120), (77, 24141),

Gene: Nubia\_33 Start: 25071, Stop: 25628, Start Num: 23

Candidate Starts for Nubia\_33:

(Start: 23 @25071 has 64 MA's), (Start: 25 @25083 has 12 MA's), (29, 25110), (31, 25122), (33, 25149), (37, 25203), (39, 25233), (48, 25326), (49, 25329), (50, 25341), (54, 25365), (60, 25404), (63, 25425), (64, 25428), (65, 25443), (71, 25527), (76, 25560), (77, 25581), (78, 25608),

Gene: OMalley\_31 Start: 24783, Stop: 25343, Start Num: 23

Candidate Starts for OMalley\_31:

(11, 24711), (21, 24774), (Start: 23 @24783 has 64 MA's), (Start: 25 @24795 has 12 MA's), (29, 24822), (31, 24834), (32, 24855), (33, 24861), (35, 24900), (37, 24915), (48, 25038), (49, 25041), (50, 25053), (54, 25077), (60, 25116), (63, 25137), (64, 25140), (65, 25155), (66, 25179), (68, 25197), (70, 25236), (73, 25251), (76, 25272), (77, 25293),

Gene: OurGirlNessie\_30 Start: 23608, Stop: 24165, Start Num: 23

Candidate Starts for OurGirlNessie\_30:

(Start: 15 @23584 has 3 MA's), (Start: 23 @23608 has 64 MA's), (Start: 25 @23620 has 12 MA's), (29, 23647), (31, 23659), (33, 23686), (36, 23731), (37, 23740), (40, 23779), (47, 23851), (48, 23863), (49, 23866), (50, 23878), (53, 23896), (60, 23941), (64, 23965), (71, 24064), (75, 24094), (76, 24097), (77, 24118),

Gene: Oxynfrius\_33 Start: 25096, Stop: 25653, Start Num: 23

Candidate Starts for Oxynfrius\_33:

(Start: 23 @25096 has 64 MA's), (Start: 25 @25108 has 12 MA's), (29, 25135), (31, 25147), (33, 25174), (37, 25228), (39, 25258), (48, 25351), (50, 25366), (54, 25390), (60, 25429), (63, 25450), (64, 25453), (65, 25468), (75, 25582), (76, 25585), (77, 25606), (78, 25633),

Gene: PartyCup\_36 Start: 25231, Stop: 25776, Start Num: 25

Candidate Starts for PartyCup\_36:

(1, 24904), (2, 24931), (5, 24946), (12, 25135), (14, 25153), (19, 25198), (Start: 23 @25219 has 64 MA's), (Start: 25 @25231 has 12 MA's), (29, 25258), (31, 25270), (32, 25291), (33, 25297), (36, 25342), (37, 25351), (39, 25381), (43, 25420), (48, 25474), (50, 25489), (54, 25513), (60, 25552), (63, 25573), (64, 25576), (68, 25633), (75, 25705), (76, 25708), (77, 25729),

Gene: PinkFriday\_30 Start: 23660, Stop: 24220, Start Num: 23

Candidate Starts for PinkFriday\_30:

(Start: 23 @23660 has 64 MA's), (Start: 25 @23672 has 12 MA's), (29, 23699), (32, 23732), (33, 23738), (35, 23777), (37, 23792), (48, 23915), (49, 23918), (50, 23930), (54, 23954), (60, 23993), (63, 24014), (64, 24017), (65, 24032), (66, 24056), (68, 24074), (70, 24113), (73, 24128), (76, 24149), (77, 24170),

Gene: PitaDog\_30 Start: 23618, Stop: 24169, Start Num: 23

Candidate Starts for PitaDog\_30:

(Start: 15 @23594 has 3 MA's), (Start: 23 @23618 has 64 MA's), (Start: 25 @23630 has 12 MA's), (29, 23657), (31, 23669), (36, 23741), (37, 23750), (40, 23789), (47, 23861), (48, 23873), (49, 23876), (50, 23888), (53, 23906), (60, 23951), (64, 23975), (71, 24074), (75, 24104), (76, 24107), (77, 24128),

Gene: Potatoes\_34 Start: 25219, Stop: 25776, Start Num: 23

Candidate Starts for Potatoes\_34:

(10, 25072), (Start: 15 @25195 has 3 MA's), (Start: 23 @25219 has 64 MA's), (29, 25258), (31, 25270), (32, 25291), (33, 25297), (36, 25342), (37, 25351), (40, 25390), (47, 25462), (48, 25474), (50, 25489), (53, 25507), (54, 25513), (56, 25522), (60, 25552), (64, 25576), (71, 25675), (76, 25708), (77, 25729),

Gene: Preamble\_30 Start: 23678, Stop: 24235, Start Num: 23

Candidate Starts for Preamble\_30:

(19, 23657), (Start: 23 @23678 has 64 MA's), (Start: 25 @23690 has 12 MA's), (29, 23717), (32, 23750), (33, 23756), (35, 23795), (37, 23810), (39, 23840), (47, 23921), (48, 23933), (50, 23948), (54, 23972), (60, 24011), (63, 24032), (64, 24035), (68, 24092), (71, 24134), (76, 24167), (77, 24188),

Gene: Pterodactyl\_30 Start: 23609, Stop: 24160, Start Num: 23

Candidate Starts for Pterodactyl\_30:

(Start: 15 @23585 has 3 MA's), (Start: 23 @23609 has 64 MA's), (Start: 25 @23621 has 12 MA's), (29, 23648), (31, 23660), (33, 23687), (36, 23732), (37, 23741), (40, 23780), (47, 23852), (48, 23864), (49, 23867), (50, 23879), (53, 23897), (60, 23942), (64, 23966), (71, 24065), (75, 24095), (76, 24098), (77, 24119),

Gene: Pumancara\_30 Start: 23579, Stop: 24139, Start Num: 23

Candidate Starts for Pumancara\_30:

(Start: 23 @23579 has 64 MA's), (Start: 25 @23591 has 12 MA's), (29, 23618), (32, 23651), (33, 23657), (35, 23696), (37, 23711), (48, 23834), (49, 23837), (50, 23849), (54, 23873), (60, 23912), (63, 23933), (64, 23936), (65, 23951), (66, 23975), (68, 23993), (70, 24032), (73, 24047), (76, 24068), (77, 24089),

Gene: RAP15\_34 Start: 25199, Stop: 25777, Start Num: 15

Candidate Starts for RAP15\_34:

(4, 24962), (10, 25076), (Start: 15 @25199 has 3 MA's), (Start: 23 @25223 has 64 MA's), (Start: 25 @25235 has 12 MA's), (29, 25259), (32, 25292), (33, 25298), (37, 25352), (40, 25391), (47, 25463), (48, 25475), (49, 25478), (50, 25490), (53, 25508), (54, 25514), (56, 25523), (60, 25553), (64, 25577), (71, 25676), (76, 25709), (77, 25730),

Gene: RcigaStruga\_33 Start: 25142, Stop: 25687, Start Num: 25

Candidate Starts for RcigaStruga\_33:

(Start: 23 @25130 has 64 MA's), (Start: 25 @25142 has 12 MA's), (29, 25169), (31, 25181), (32, 25202), (33, 25208), (37, 25262), (39, 25292), (48, 25385), (49, 25388), (50, 25400), (54, 25424), (60, 25463), (63, 25484), (64, 25487), (65, 25502), (71, 25586), (76, 25619), (77, 25640), (78, 25667),

Gene: Riovina\_31 Start: 24783, Stop: 25343, Start Num: 23

Candidate Starts for Riovina\_31:

(11, 24711), (21, 24774), (Start: 23 @24783 has 64 MA's), (Start: 25 @24795 has 12 MA's), (29, 24822), (31, 24834), (32, 24855), (33, 24861), (35, 24900), (37, 24915), (48, 25038), (49, 25041), (50, 25053), (54, 25077), (60, 25116), (63, 25137), (64, 25140), (65, 25155), (66, 25179), (68, 25197), (70, 25236), (73, 25251), (76, 25272), (77, 25293),

Gene: Riverdale\_34 Start: 25153, Stop: 25710, Start Num: 23

Candidate Starts for Riverdale\_34:

(10, 25006), (Start: 15 @25129 has 3 MA's), (Start: 23 @25153 has 64 MA's), (Start: 25 @25165 has 12 MA's), (29, 25192), (31, 25204), (32, 25225), (33, 25231), (36, 25276), (37, 25285), (40, 25324), (47, 25396), (48, 25408), (50, 25423), (53, 25441), (54, 25447), (56, 25456), (60, 25486), (64, 25510), (71, 25609), (76, 25642), (77, 25663),

Gene: Rozby\_34 Start: 25154, Stop: 25711, Start Num: 23

Candidate Starts for Rozby\_34:

(10, 25007), (Start: 15 @25130 has 3 MA's), (Start: 23 @25154 has 64 MA's), (Start: 25 @25166 has 12 MA's), (29, 25193), (31, 25205), (32, 25226), (33, 25232), (36, 25277), (37, 25286), (40, 25325), (47, 25397), (48, 25409), (49, 25412), (50, 25424), (53, 25442), (54, 25448), (56, 25457), (60, 25487), (64, 25511), (71, 25610), (76, 25643), (77, 25664),

Gene: Sapo\_32 Start: 30573, Stop: 30124, Start Num: 28

Candidate Starts for Sapo\_32:

(16, 30636), (24, 30603), (27, 30579), (Start: 28 @30573 has 3 MA's), (42, 30435), (51, 30360), (52, 30351),

Gene: Savage2526\_34 Start: 25217, Stop: 25771, Start Num: 23

Candidate Starts for Savage2526\_34:

(4, 24956), (10, 25070), (Start: 15 @25193 has 3 MA's), (Start: 23 @25217 has 64 MA's), (Start: 25 @25229 has 12 MA's), (29, 25253), (32, 25286), (33, 25292), (37, 25346), (40, 25385), (47, 25457), (48, 25469), (49, 25472), (50, 25484), (53, 25502), (54, 25508), (56, 25517), (60, 25547), (64, 25571), (71, 25670), (76, 25703), (77, 25724),

Gene: Scuttle\_34 Start: 25238, Stop: 25795, Start Num: 23

Candidate Starts for Scuttle\_34:

(4, 24977), (Start: 15 @25214 has 3 MA's), (Start: 23 @25238 has 64 MA's), (Start: 25 @25250 has 12 MA's), (29, 25277), (30, 25283), (31, 25289), (32, 25310), (33, 25316), (37, 25370), (40, 25409), (42, 25436), (47, 25481), (48, 25493), (49, 25496), (50, 25508), (53, 25526), (54, 25532), (55, 25538), (60, 25571), (64, 25595), (71, 25694), (76, 25727), (77, 25748),

Gene: Sergei\_31 Start: 24770, Stop: 25330, Start Num: 23

Candidate Starts for Sergei\_31:

(Start: 23 @24770 has 64 MA's), (Start: 25 @24782 has 12 MA's), (29, 24809), (32, 24842), (33, 24848), (35, 24887), (37, 24902), (48, 25025), (50, 25040), (54, 25064), (60, 25103), (64, 25127), (66, 25166), (68, 25184), (70, 25223), (73, 25238), (76, 25259), (77, 25280),

Gene: Spocter\_63 Start: 47283, Stop: 47777, Start Num: 18

Candidate Starts for Spocter\_63:

(6, 47076), (17, 47277), (Start: 18 @47283 has 3 MA's), (27, 47334), (Start: 28 @47340 has 3 MA's), (44, 47502), (45, 47517), (46, 47523), (52, 47568), (74, 47757),

Gene: Supakev\_31 Start: 24783, Stop: 25343, Start Num: 23

Candidate Starts for Supakev\_31:

(11, 24711), (21, 24774), (Start: 23 @24783 has 64 MA's), (Start: 25 @24795 has 12 MA's), (29, 24822), (31, 24834), (32, 24855), (33, 24861), (35, 24900), (37, 24915), (48, 25038), (50, 25053), (54, 25077), (60, 25116), (63, 25137), (64, 25140), (70, 25236), (76, 25272), (77, 25293), (79, 25335),

Gene: Suppi\_34 Start: 25234, Stop: 25779, Start Num: 25

Candidate Starts for Suppi\_34:

(1, 24907), (2, 24934), (5, 24949), (12, 25138), (13, 25141), (14, 25156), (19, 25201), (Start: 23 @25222 has 64 MA's), (Start: 25 @25234 has 12 MA's), (29, 25261), (31, 25273), (32, 25294), (33, 25300), (36, 25345), (37, 25354), (39, 25384), (42, 25420), (43, 25423), (48, 25477), (50, 25492), (54, 25516), (60, 25555), (64, 25579), (68, 25636), (75, 25708), (76, 25711), (77, 25732),

Gene: TattModd\_34 Start: 25216, Stop: 25773, Start Num: 23

Candidate Starts for TattModd\_34:

(10, 25069), (Start: 15 @25192 has 3 MA's), (Start: 23 @25216 has 64 MA's), (Start: 25 @25228 has 12 MA's), (29, 25255), (31, 25267), (32, 25288), (33, 25294), (36, 25339), (37, 25348), (40, 25387), (47, 25459), (48, 25471), (50, 25486), (53, 25504), (54, 25510), (56, 25519), (60, 25549), (64, 25573), (71, 25672), (76, 25705), (77, 25726),

Gene: Temper16\_31 Start: 24770, Stop: 25330, Start Num: 23

Candidate Starts for Temper16\_31:

(Start: 23 @24770 has 64 MA's), (Start: 25 @24782 has 12 MA's), (29, 24809), (32, 24842), (33, 24848), (35, 24887), (37, 24902), (48, 25025), (50, 25040), (54, 25064), (60, 25103), (64, 25127), (66, 25166), (68, 25184), (70, 25223), (73, 25238), (76, 25259), (77, 25280),

Gene: Urla\_31 Start: 24836, Stop: 25381, Start Num: 25

Candidate Starts for Urla\_31:

(12, 24767), (Start: 23 @24824 has 64 MA's), (Start: 25 @24836 has 12 MA's), (29, 24863), (31, 24875), (33, 24902), (36, 24947), (37, 24956), (47, 25067), (48, 25079), (49, 25082), (50, 25094), (54, 25118), (59, 25145), (61, 25160), (63, 25178), (64, 25181), (71, 25280), (76, 25313), (77, 25334),

Gene: Vallejo\_34 Start: 25168, Stop: 25713, Start Num: 25

Candidate Starts for Vallejo\_34:

(10, 25009), (Start: 15 @25132 has 3 MA's), (Start: 23 @25156 has 64 MA's), (Start: 25 @25168 has 12 MA's), (29, 25195), (31, 25207), (32, 25228), (33, 25234), (36, 25279), (37, 25288), (40, 25327), (47, 25399), (48, 25411), (50, 25426), (53, 25444), (54, 25450), (56, 25459), (60, 25489), (64, 25513), (71, 25612), (76, 25645), (77, 25666),

Gene: Vulture\_31 Start: 24780, Stop: 25340, Start Num: 23

Candidate Starts for Vulture\_31:

(11, 24708), (21, 24771), (Start: 23 @24780 has 64 MA's), (Start: 25 @24792 has 12 MA's), (29, 24819), (31, 24831), (32, 24852), (33, 24858), (35, 24897), (37, 24912), (48, 25035), (50, 25050), (54, 25074), (60, 25113), (63, 25134), (64, 25137), (70, 25233), (76, 25269), (77, 25290), (79, 25332),

Gene: Wawa\_34 Start: 25208, Stop: 25765, Start Num: 23

Candidate Starts for Wawa\_34:

(4, 24947), (10, 25061), (Start: 15 @25184 has 3 MA's), (Start: 23 @25208 has 64 MA's), (Start: 25 @25220 has 12 MA's), (29, 25247), (31, 25259), (33, 25286), (36, 25331), (37, 25340), (40, 25379), (42, 25406), (47, 25451), (48, 25463), (49, 25466), (50, 25478), (53, 25496), (54, 25502), (56, 25511),



(60, 25541), (64, 25565), (71, 25664), (76, 25697), (77, 25718),

Gene: Wayne\_34 Start: 25280, Stop: 25825, Start Num: 25

Candidate Starts for Wayne\_34:

(1, 24953), (2, 24980), (5, 24995), (12, 25184), (13, 25187), (14, 25202), (19, 25247), (Start: 23 @25268 has 64 MA's), (Start: 25 @25280 has 12 MA's), (29, 25307), (31, 25319), (32, 25340), (33, 25346), (36, 25391), (37, 25400), (39, 25430), (42, 25466), (43, 25469), (48, 25523), (50, 25538), (54, 25562), (60, 25601), (64, 25625), (68, 25682), (75, 25754), (76, 25757), (77, 25778),

Gene: WonderBoy\_29 Start: 23599, Stop: 24150, Start Num: 23

Candidate Starts for WonderBoy\_29:

(Start: 15 @23575 has 3 MA's), (Start: 23 @23599 has 64 MA's), (Start: 25 @23611 has 12 MA's), (29, 23638), (31, 23650), (33, 23677), (36, 23722), (37, 23731), (40, 23770), (47, 23842), (48, 23854), (49, 23857), (50, 23869), (53, 23887), (60, 23932), (64, 23956), (71, 24055), (75, 24085), (76, 24088), (77, 24109),

Gene: Zorro\_34 Start: 25187, Stop: 25744, Start Num: 23

Candidate Starts for Zorro\_34:

(4, 24926), (10, 25040), (Start: 15 @25163 has 3 MA's), (Start: 23 @25187 has 64 MA's), (Start: 25 @25199 has 12 MA's), (29, 25226), (31, 25238), (32, 25259), (33, 25265), (36, 25310), (37, 25319), (40, 25358), (41, 25361), (42, 25385), (47, 25430), (48, 25442), (50, 25457), (53, 25475), (54, 25481), (56, 25490), (60, 25520), (64, 25544), (71, 25643), (76, 25676), (77, 25697),