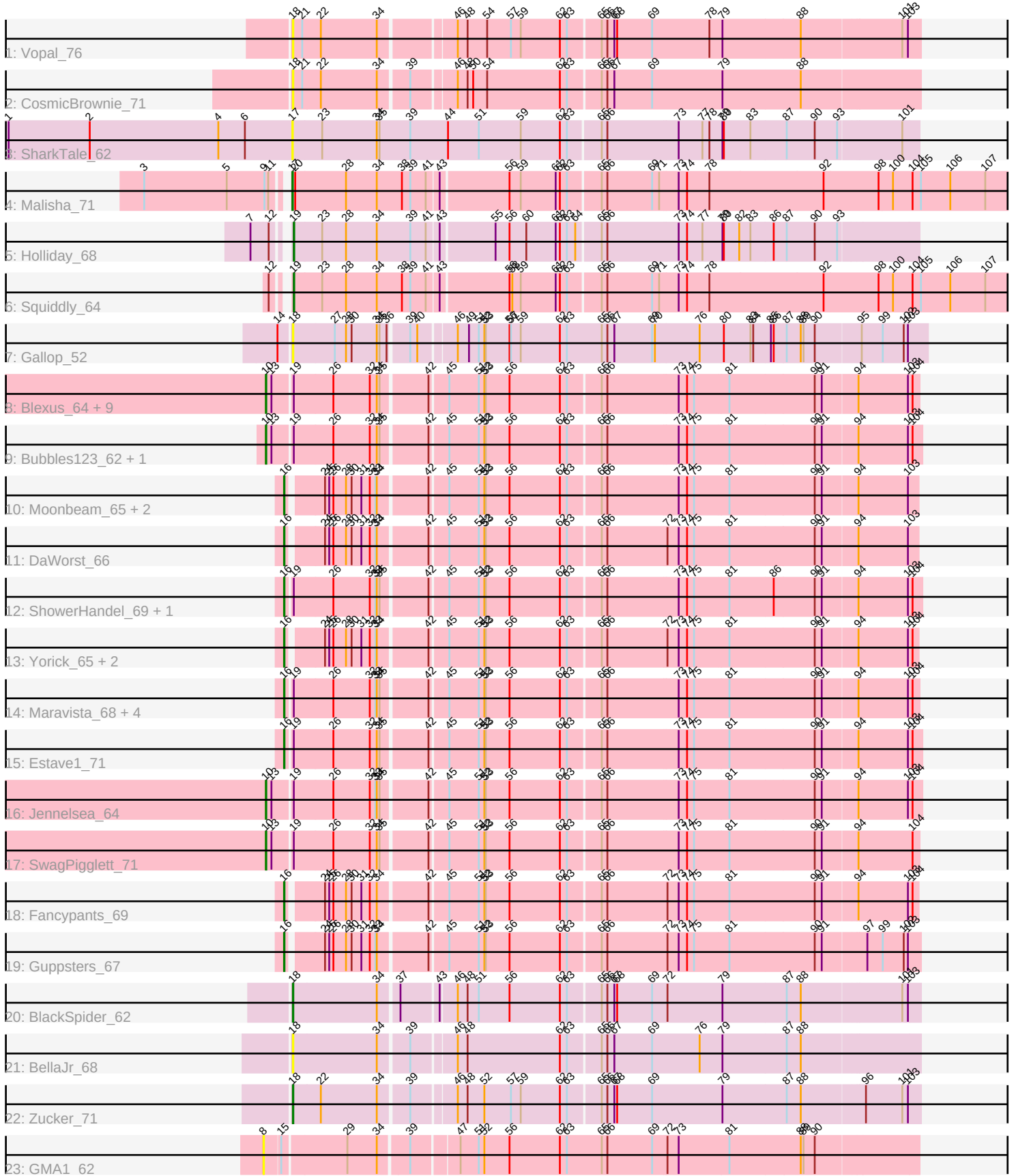


# Zoomed Pham 331007



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 331007 Report

This analysis was run 09/05/26 on database version 662.

Pham number 331007 has 42 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Vopal\_76
- Track 2 : CosmicBrownie\_71
- Track 3 : SharkTale\_62
- Track 4 : Malisha\_71
- Track 5 : Holliday\_68
- Track 6 : Squiddly\_64
- Track 7 : Gallop\_52
- Track 8 : Blexus\_64, Ramsey\_65, NormanBulbieJr\_66, Burwell21\_64, Beanstalk\_64, Priscilla\_66, MinionDave\_65, CaptainTrips\_64, Cabrinians\_67, Koella\_60
- Track 9 : Bubbles123\_62, Spikelee\_73
- Track 10 : Moonbeam\_65, Jarcoab\_65, Emma\_68
- Track 11 : DaWorst\_66
- Track 12 : ShowerHandel\_69, ByChance\_59
- Track 13 : Yorick\_65, Whouxphf\_63, Aubs\_66
- Track 14 : Maravista\_68, Crumble\_61, BobaPhett\_70, Zizzle\_70, Pippy\_65
- Track 15 : Estave1\_71
- Track 16 : Jennelsea\_64
- Track 17 : SwagPiggett\_71
- Track 18 : Fancypants\_69
- Track 19 : Guppsters\_67
- Track 20 : BlackSpider\_62
- Track 21 : BellaJr\_68
- Track 22 : Zucker\_71
- Track 23 : GMA1\_62

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

The start number called the most often in the published annotations is 16, it was called in 17 of the 36 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aubs\_66, BobaPhett\_70, ByChance\_59, Crumble\_61, DaWorst\_66, Emma\_68, Estave1\_71, Fancypants\_69, Guppsters\_67, Jarcoab\_65, Maravista\_68,

Moonbeam\_65, Pippy\_65, ShowerHandel\_69, Whouxphf\_63, Yorick\_65, Zizzle\_70,

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

- 

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

- Beanstalk\_64, BellaJr\_68, BlackSpider\_62, Blexus\_64, Bubbles123\_62, Burwell21\_64, Cabrinians\_67, CaptainTrips\_64, CosmicBrownie\_71, GMA1\_62, Gallop\_52, Holliday\_68, Jennelsea\_64, Koella\_60, Malisha\_71, MinionDave\_65, NormanBulbieJr\_66, Priscilla\_66, Ramsey\_65, SharkTale\_62, Spikelee\_73, Squiddly\_64, SwagPiggett\_71, Vopal\_76, Zucker\_71,

### Summary by start number:

Start 8:

- Found in 1 of 42 ( 2.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GMA1\_62 (singleton),

Start 10:

- Found in 14 of 42 ( 33.3% ) of genes in pham
- Manual Annotations of this start: 14 of 36
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beanstalk\_64 (F1), Blexus\_64 (F1), Bubbles123\_62 (F1), Burwell21\_64 (F1), Cabrinians\_67 (F1), CaptainTrips\_64 (F1), Jennelsea\_64 (F1), Koella\_60 (F1), MinionDave\_65 (F1), NormanBulbieJr\_66 (F1), Priscilla\_66 (F1), Ramsey\_65 (F1), Spikelee\_73 (F1), SwagPiggett\_71 (F1),

Start 16:

- Found in 17 of 42 ( 40.5% ) of genes in pham
- Manual Annotations of this start: 17 of 36
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aubs\_66 (F1), BobaPhett\_70 (F1), ByChance\_59 (F1), Crumble\_61 (F1), DaWorst\_66 (F1), Emma\_68 (F1), Estave1\_71 (F1), Fancypants\_69 (F1), Guppsters\_67 (F1), Jacob\_65 (F1), Maravista\_68 (F1), Moonbeam\_65 (F1), Pippy\_65 (F1), ShowerHandel\_69 (F1), Whouxphf\_63 (F1), Yorick\_65 (F1), Zizzle\_70 (F1),

Start 17:

- Found in 2 of 42 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 1 of 36
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Malisha\_71 (DN), SharkTale\_62 (DC1),

Start 18:

- Found in 6 of 42 ( 14.3% ) of genes in pham
- Manual Annotations of this start: 2 of 36
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BellaJr\_68 (FN), BlackSpider\_62 (FN), CosmicBrownie\_71 (AY), Gallop\_52 (ES), Vopal\_76 (AY), Zucker\_71 (FN),

Start 19:

- Found in 24 of 42 ( 57.1% ) of genes in pham
- Manual Annotations of this start: 2 of 36
- Called 8.3% of time when present
- Phage (with cluster) where this start called: Holliday\_68 (DN1), Squiddly\_64 (DN2),

### **Summary by clusters:**

There are 9 clusters represented in this pham: DN, F1, singleton, DN1, ES, DN2, AY, FN, DC1,

Info for manual annotations of cluster DN:

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

Info for manual annotations of cluster DN1:

- Start number 19 was manually annotated 1 time for cluster DN1.

Info for manual annotations of cluster DN2:

- Start number 19 was manually annotated 1 time for cluster DN2.

Info for manual annotations of cluster F1:

- Start number 10 was manually annotated 14 times for cluster F1.
- Start number 16 was manually annotated 17 times for cluster F1.

Info for manual annotations of cluster FN:

- Start number 18 was manually annotated 2 times for cluster FN.

### **Gene Information:**

Gene: Aubs\_66 Start: 43049, Stop: 44338, Start Num: 16

Candidate Starts for Aubs\_66:

(Start: 16 @43049 has 17 MA's), (24, 43118), (25, 43127), (26, 43136), (28, 43163), (30, 43175), (31, 43196), (32, 43214), (33, 43226), (34, 43229), (42, 43328), (45, 43364), (51, 43427), (52, 43439), (53, 43442), (56, 43493), (62, 43601), (63, 43616), (65, 43682), (66, 43694), (72, 43820), (73, 43844), (74, 43862), (75, 43877), (81, 43949), (90, 44129), (91, 44144), (94, 44213), (103, 44318), (104, 44327),

Gene: Beanstalk\_64 Start: 41039, Stop: 42379, Start Num: 10

Candidate Starts for Beanstalk\_64:

(Start: 10 @41039 has 14 MA's), (13, 41051), (Start: 19 @41090 has 2 MA's), (26, 41174), (32, 41252), (34, 41267), (35, 41273), (42, 41366), (45, 41402), (51, 41465), (52, 41477), (53, 41480), (56, 41531), (62, 41639), (63, 41654), (65, 41720), (66, 41732), (73, 41882), (74, 41900), (75, 41915), (81, 41987), (90, 42167), (91, 42182), (94, 42251), (103, 42356), (104, 42365),

Gene: BellaJr\_68 Start: 38975, Stop: 40267, Start Num: 18

Candidate Starts for BellaJr\_68:

(Start: 18 @38975 has 2 MA's), (34, 39152), (39, 39212), (46, 39299), (48, 39320), (62, 39518), (63, 39533), (65, 39599), (66, 39611), (67, 39626), (69, 39707), (76, 39809), (79, 39857), (87, 39992), (88, 40022),

Gene: BlackSpider\_62 Start: 36669, Stop: 37961, Start Num: 18

Candidate Starts for BlackSpider\_62:

(Start: 18 @36669 has 2 MA's), (34, 36846), (37, 36885), (43, 36960), (46, 36993), (48, 37014), (51, 37038), (56, 37104), (62, 37212), (63, 37227), (65, 37293), (66, 37305), (67, 37320), (68, 37326), (69, 37401), (72, 37434), (79, 37551), (87, 37686), (88, 37716), (101, 37923), (103, 37935),

Gene: Blexus\_64 Start: 43178, Stop: 44518, Start Num: 10

Candidate Starts for Blexus\_64:

(Start: 10 @43178 has 14 MA's), (13, 43190), (Start: 19 @43229 has 2 MA's), (26, 43313), (32, 43391), (34, 43406), (35, 43412), (42, 43505), (45, 43541), (51, 43604), (52, 43616), (53, 43619), (56, 43670), (62, 43778), (63, 43793), (65, 43859), (66, 43871), (73, 44021), (74, 44039), (75, 44054), (81, 44126), (90, 44306), (91, 44321), (94, 44390), (103, 44495), (104, 44504),

Gene: BobaPhett\_70 Start: 45473, Stop: 46780, Start Num: 16

Candidate Starts for BobaPhett\_70:

(Start: 16 @45473 has 17 MA's), (Start: 19 @45485 has 2 MA's), (26, 45569), (32, 45647), (33, 45659), (34, 45662), (35, 45668), (42, 45761), (45, 45797), (51, 45860), (52, 45872), (53, 45875), (56, 45926), (62, 46034), (63, 46049), (65, 46115), (66, 46127), (73, 46277), (74, 46295), (75, 46310), (81, 46382), (90, 46562), (91, 46577), (94, 46646), (103, 46751), (104, 46760),

Gene: Bubbles123\_62 Start: 42191, Stop: 43537, Start Num: 10

Candidate Starts for Bubbles123\_62:

(Start: 10 @42191 has 14 MA's), (13, 42203), (Start: 19 @42242 has 2 MA's), (26, 42326), (32, 42404), (34, 42419), (35, 42425), (42, 42518), (45, 42554), (51, 42617), (52, 42629), (53, 42632), (56, 42683), (62, 42791), (63, 42806), (65, 42872), (66, 42884), (73, 43034), (74, 43052), (75, 43067), (81, 43139), (90, 43319), (91, 43334), (94, 43403), (103, 43508), (104, 43517),

Gene: Burwell21\_64 Start: 42756, Stop: 44096, Start Num: 10

Candidate Starts for Burwell21\_64:

(Start: 10 @42756 has 14 MA's), (13, 42768), (Start: 19 @42807 has 2 MA's), (26, 42891), (32, 42969), (34, 42984), (35, 42990), (42, 43083), (45, 43119), (51, 43182), (52, 43194), (53, 43197), (56, 43248), (62, 43356), (63, 43371), (65, 43437), (66, 43449), (73, 43599), (74, 43617), (75, 43632), (81, 43704), (90, 43884), (91, 43899), (94, 43968), (103, 44073), (104, 44082),

Gene: ByChance\_59 Start: 38815, Stop: 40122, Start Num: 16

Candidate Starts for ByChance\_59:

(Start: 16 @38815 has 17 MA's), (Start: 19 @38827 has 2 MA's), (26, 38911), (32, 38989), (33, 39001), (34, 39004), (35, 39010), (42, 39103), (45, 39139), (51, 39202), (52, 39214), (53, 39217), (56, 39268), (62, 39376), (63, 39391), (65, 39457), (66, 39469), (73, 39619), (74, 39637), (75, 39652), (81, 39724), (86, 39817), (90, 39904), (91, 39919), (94, 39988), (103, 40093), (104, 40102),

Gene: Cabrinians\_67 Start: 42834, Stop: 44174, Start Num: 10

Candidate Starts for Cabrinians\_67:

(Start: 10 @42834 has 14 MA's), (13, 42846), (Start: 19 @42885 has 2 MA's), (26, 42969), (32, 43047), (34, 43062), (35, 43068), (42, 43161), (45, 43197), (51, 43260), (52, 43272), (53, 43275), (56, 43326), (62, 43434), (63, 43449), (65, 43515), (66, 43527), (73, 43677), (74, 43695), (75, 43710), (81, 43782), (90, 43962), (91, 43977), (94, 44046), (103, 44151), (104, 44160),

Gene: CaptainTrips\_64 Start: 42569, Stop: 43909, Start Num: 10

Candidate Starts for CaptainTrips\_64:

(Start: 10 @42569 has 14 MA's), (13, 42581), (Start: 19 @42620 has 2 MA's), (26, 42704), (32, 42782), (34, 42797), (35, 42803), (42, 42896), (45, 42932), (51, 42995), (52, 43007), (53, 43010), (56, 43061), (62, 43169), (63, 43184), (65, 43250), (66, 43262), (73, 43412), (74, 43430), (75, 43445), (81, 43517),

(90, 43697), (91, 43712), (94, 43781), (103, 43886), (104, 43895),

Gene: CosmicBrownie\_71 Start: 38887, Stop: 40179, Start Num: 18

Candidate Starts for CosmicBrownie\_71:

(Start: 18 @38887 has 2 MA's), (21, 38905), (22, 38944), (34, 39064), (39, 39124), (46, 39211), (48, 39232), (50, 39244), (54, 39274), (62, 39430), (63, 39445), (65, 39511), (66, 39523), (67, 39538), (69, 39619), (79, 39769), (88, 39934),

Gene: Crumble\_61 Start: 38770, Stop: 40077, Start Num: 16

Candidate Starts for Crumble\_61:

(Start: 16 @38770 has 17 MA's), (Start: 19 @38782 has 2 MA's), (26, 38866), (32, 38944), (33, 38956), (34, 38959), (35, 38965), (42, 39058), (45, 39094), (51, 39157), (52, 39169), (53, 39172), (56, 39223), (62, 39331), (63, 39346), (65, 39412), (66, 39424), (73, 39574), (74, 39592), (75, 39607), (81, 39679), (90, 39859), (91, 39874), (94, 39943), (103, 40048), (104, 40057),

Gene: DaWorst\_66 Start: 42381, Stop: 43670, Start Num: 16

Candidate Starts for DaWorst\_66:

(Start: 16 @42381 has 17 MA's), (24, 42450), (25, 42459), (26, 42468), (28, 42495), (30, 42507), (31, 42528), (32, 42546), (33, 42558), (34, 42561), (42, 42660), (45, 42696), (51, 42759), (52, 42771), (53, 42774), (56, 42825), (62, 42933), (63, 42948), (65, 43014), (66, 43026), (72, 43152), (73, 43176), (74, 43194), (75, 43209), (81, 43281), (90, 43461), (91, 43476), (94, 43545), (103, 43650),

Gene: Emma\_68 Start: 42404, Stop: 43693, Start Num: 16

Candidate Starts for Emma\_68:

(Start: 16 @42404 has 17 MA's), (24, 42473), (25, 42482), (26, 42491), (28, 42518), (30, 42530), (31, 42551), (32, 42569), (33, 42581), (34, 42584), (42, 42683), (45, 42719), (51, 42782), (52, 42794), (53, 42797), (56, 42848), (62, 42956), (63, 42971), (65, 43037), (66, 43049), (73, 43199), (74, 43217), (75, 43232), (81, 43304), (90, 43484), (91, 43499), (94, 43568), (103, 43673),

Gene: Estave1\_71 Start: 45232, Stop: 46539, Start Num: 16

Candidate Starts for Estave1\_71:

(Start: 16 @45232 has 17 MA's), (Start: 19 @45244 has 2 MA's), (26, 45328), (32, 45406), (34, 45421), (35, 45427), (42, 45520), (45, 45556), (51, 45619), (52, 45631), (53, 45634), (56, 45685), (62, 45793), (63, 45808), (65, 45874), (66, 45886), (73, 46036), (74, 46054), (75, 46069), (81, 46141), (90, 46321), (91, 46336), (94, 46405), (103, 46510), (104, 46519),

Gene: Fancypants\_69 Start: 43416, Stop: 44705, Start Num: 16

Candidate Starts for Fancypants\_69:

(Start: 16 @43416 has 17 MA's), (24, 43485), (25, 43494), (26, 43503), (28, 43530), (30, 43542), (31, 43563), (32, 43581), (34, 43596), (42, 43695), (45, 43731), (51, 43794), (52, 43806), (53, 43809), (56, 43860), (62, 43968), (63, 43983), (65, 44049), (66, 44061), (72, 44187), (73, 44211), (74, 44229), (75, 44244), (81, 44316), (90, 44496), (91, 44511), (94, 44580), (103, 44685), (104, 44694),

Gene: GMA1\_62 Start: 35817, Stop: 37163, Start Num: 8

Candidate Starts for GMA1\_62:

(8, 35817), (15, 35850), (29, 35982), (34, 36045), (39, 36105), (47, 36198), (51, 36237), (52, 36249), (56, 36303), (62, 36411), (63, 36426), (65, 36501), (66, 36513), (69, 36609), (72, 36639), (73, 36663), (81, 36771), (88, 36921), (89, 36927), (90, 36951),

Gene: Gallop\_52 Start: 35896, Stop: 37209, Start Num: 18

Candidate Starts for Gallop\_52:

(14, 35872), (Start: 18 @35896 has 2 MA's), (27, 35983), (28, 36007), (30, 36019), (34, 36073), (35, 36079), (36, 36094), (39, 36133), (40, 36148), (46, 36220), (49, 36244), (51, 36265), (52, 36277), (53,

36280), (56, 36331), (57, 36334), (59, 36355), (62, 36439), (63, 36454), (65, 36529), (66, 36541), (67, 36556), (69, 36637), (70, 36643), (76, 36736), (80, 36787), (83, 36844), (84, 36850), (85, 36886), (86, 36892), (87, 36919), (88, 36949), (89, 36955), (90, 36979), (95, 37069), (99, 37114), (102, 37159), (103, 37168),

Gene: Guppsters\_67 Start: 42336, Stop: 43631, Start Num: 16

Candidate Starts for Guppsters\_67:

(Start: 16 @42336 has 17 MA's), (24, 42405), (25, 42414), (26, 42423), (28, 42450), (30, 42462), (31, 42483), (32, 42501), (33, 42513), (34, 42516), (42, 42615), (45, 42651), (51, 42714), (52, 42726), (53, 42729), (56, 42780), (62, 42888), (63, 42903), (65, 42969), (66, 42981), (72, 43107), (73, 43131), (74, 43149), (75, 43164), (81, 43236), (90, 43416), (91, 43431), (97, 43518), (99, 43551), (102, 43596), (103, 43605),

Gene: Holliday\_68 Start: 41613, Stop: 42908, Start Num: 19

Candidate Starts for Holliday\_68:

(7, 41556), (12, 41592), (Start: 19 @41613 has 2 MA's), (23, 41673), (28, 41724), (34, 41790), (39, 41862), (41, 41895), (43, 41919), (55, 42027), (56, 42057), (60, 42093), (61, 42156), (62, 42165), (63, 42180), (64, 42198), (65, 42246), (66, 42258), (73, 42408), (74, 42426), (77, 42459), (79, 42501), (80, 42504), (82, 42537), (83, 42561), (86, 42609), (87, 42636), (90, 42696), (93, 42744),

Gene: Jacob\_65 Start: 42805, Stop: 44094, Start Num: 16

Candidate Starts for Jacob\_65:

(Start: 16 @42805 has 17 MA's), (24, 42874), (25, 42883), (26, 42892), (28, 42919), (30, 42931), (31, 42952), (32, 42970), (33, 42982), (34, 42985), (42, 43084), (45, 43120), (51, 43183), (52, 43195), (53, 43198), (56, 43249), (62, 43357), (63, 43372), (65, 43438), (66, 43450), (73, 43600), (74, 43618), (75, 43633), (81, 43705), (90, 43885), (91, 43900), (94, 43969), (103, 44074),

Gene: Jennelsea\_64 Start: 41484, Stop: 42830, Start Num: 10

Candidate Starts for Jennelsea\_64:

(Start: 10 @41484 has 14 MA's), (13, 41496), (Start: 19 @41535 has 2 MA's), (26, 41619), (32, 41697), (33, 41709), (34, 41712), (35, 41718), (42, 41811), (45, 41847), (51, 41910), (52, 41922), (53, 41925), (56, 41976), (62, 42084), (63, 42099), (65, 42165), (66, 42177), (73, 42327), (74, 42345), (75, 42360), (81, 42432), (90, 42612), (91, 42627), (94, 42696), (103, 42801), (104, 42810),

Gene: Koella\_60 Start: 38732, Stop: 40072, Start Num: 10

Candidate Starts for Koella\_60:

(Start: 10 @38732 has 14 MA's), (13, 38744), (Start: 19 @38783 has 2 MA's), (26, 38867), (32, 38945), (34, 38960), (35, 38966), (42, 39059), (45, 39095), (51, 39158), (52, 39170), (53, 39173), (56, 39224), (62, 39332), (63, 39347), (65, 39413), (66, 39425), (73, 39575), (74, 39593), (75, 39608), (81, 39680), (90, 39860), (91, 39875), (94, 39944), (103, 40049), (104, 40058),

Gene: Malisha\_71 Start: 42853, Stop: 44712, Start Num: 17

Candidate Starts for Malisha\_71:

(3, 42568), (5, 42745), (9, 42826), (11, 42832), (Start: 17 @42853 has 1 MA's), (20, 42859), (28, 42967), (34, 43033), (38, 43087), (39, 43105), (41, 43138), (43, 43162), (56, 43300), (59, 43324), (61, 43399), (62, 43408), (63, 43423), (65, 43489), (66, 43501), (69, 43597), (71, 43612), (73, 43651), (74, 43669), (78, 43717), (92, 43960), (98, 44077), (100, 44107), (104, 44149), (105, 44167), (106, 44230), (107, 44305), (108, 44383), (109, 44410), (110, 44413), (111, 44470), (112, 44476), (113, 44500), (115, 44548), (116, 44581),

Gene: Maravista\_68 Start: 44721, Stop: 46022, Start Num: 16

Candidate Starts for Maravista\_68:

(Start: 16 @44721 has 17 MA's), (Start: 19 @44733 has 2 MA's), (26, 44817), (32, 44895), (33, 44907), (34, 44910), (35, 44916), (42, 45009), (45, 45045), (51, 45108), (52, 45120), (53, 45123), (56, 45174), (62, 45282), (63, 45297), (65, 45363), (66, 45375), (73, 45525), (74, 45543), (75, 45558), (81, 45630), (90, 45810), (91, 45825), (94, 45894), (103, 45999), (104, 46008),

Gene: MinionDave\_65 Start: 43105, Stop: 44445, Start Num: 10

Candidate Starts for MinionDave\_65:

(Start: 10 @43105 has 14 MA's), (13, 43117), (Start: 19 @43156 has 2 MA's), (26, 43240), (32, 43318), (34, 43333), (35, 43339), (42, 43432), (45, 43468), (51, 43531), (52, 43543), (53, 43546), (56, 43597), (62, 43705), (63, 43720), (65, 43786), (66, 43798), (73, 43948), (74, 43966), (75, 43981), (81, 44053), (90, 44233), (91, 44248), (94, 44317), (103, 44422), (104, 44431),

Gene: Moonbeam\_65 Start: 42333, Stop: 43622, Start Num: 16

Candidate Starts for Moonbeam\_65:

(Start: 16 @42333 has 17 MA's), (24, 42402), (25, 42411), (26, 42420), (28, 42447), (30, 42459), (31, 42480), (32, 42498), (33, 42510), (34, 42513), (42, 42612), (45, 42648), (51, 42711), (52, 42723), (53, 42726), (56, 42777), (62, 42885), (63, 42900), (65, 42966), (66, 42978), (73, 43128), (74, 43146), (75, 43161), (81, 43233), (90, 43413), (91, 43428), (94, 43497), (103, 43602),

Gene: NormanBulbieJr\_66 Start: 42745, Stop: 44085, Start Num: 10

Candidate Starts for NormanBulbieJr\_66:

(Start: 10 @42745 has 14 MA's), (13, 42757), (Start: 19 @42796 has 2 MA's), (26, 42880), (32, 42958), (34, 42973), (35, 42979), (42, 43072), (45, 43108), (51, 43171), (52, 43183), (53, 43186), (56, 43237), (62, 43345), (63, 43360), (65, 43426), (66, 43438), (73, 43588), (74, 43606), (75, 43621), (81, 43693), (90, 43873), (91, 43888), (94, 43957), (103, 44062), (104, 44071),

Gene: Pippy\_65 Start: 42083, Stop: 43390, Start Num: 16

Candidate Starts for Pippy\_65:

(Start: 16 @42083 has 17 MA's), (Start: 19 @42095 has 2 MA's), (26, 42179), (32, 42257), (33, 42269), (34, 42272), (35, 42278), (42, 42371), (45, 42407), (51, 42470), (52, 42482), (53, 42485), (56, 42536), (62, 42644), (63, 42659), (65, 42725), (66, 42737), (73, 42887), (74, 42905), (75, 42920), (81, 42992), (90, 43172), (91, 43187), (94, 43256), (103, 43361), (104, 43370),

Gene: Priscilla\_66 Start: 42844, Stop: 44184, Start Num: 10

Candidate Starts for Priscilla\_66:

(Start: 10 @42844 has 14 MA's), (13, 42856), (Start: 19 @42895 has 2 MA's), (26, 42979), (32, 43057), (34, 43072), (35, 43078), (42, 43171), (45, 43207), (51, 43270), (52, 43282), (53, 43285), (56, 43336), (62, 43444), (63, 43459), (65, 43525), (66, 43537), (73, 43687), (74, 43705), (75, 43720), (81, 43792), (90, 43972), (91, 43987), (94, 44056), (103, 44161), (104, 44170),

Gene: Ramsey\_65 Start: 42573, Stop: 43913, Start Num: 10

Candidate Starts for Ramsey\_65:

(Start: 10 @42573 has 14 MA's), (13, 42585), (Start: 19 @42624 has 2 MA's), (26, 42708), (32, 42786), (34, 42801), (35, 42807), (42, 42900), (45, 42936), (51, 42999), (52, 43011), (53, 43014), (56, 43065), (62, 43173), (63, 43188), (65, 43254), (66, 43266), (73, 43416), (74, 43434), (75, 43449), (81, 43521), (90, 43701), (91, 43716), (94, 43785), (103, 43890), (104, 43899),

Gene: SharkTale\_62 Start: 45437, Stop: 46753, Start Num: 17

Candidate Starts for SharkTale\_62:

(1, 44828), (2, 45002), (4, 45278), (6, 45335), (Start: 17 @45437 has 1 MA's), (23, 45500), (34, 45617), (35, 45623), (39, 45689), (44, 45770), (51, 45836), (59, 45926), (62, 46010), (63, 46025), (65, 46091), (66, 46103), (73, 46253), (77, 46304), (78, 46319), (79, 46346), (80, 46349), (83, 46406), (87, 46481), (90, 46541), (93, 46589), (101, 46718),



Gene: ShowerHandel\_69 Start: 42755, Stop: 44062, Start Num: 16

Candidate Starts for ShowerHandel\_69:

(Start: 16 @42755 has 17 MA's), (Start: 19 @42767 has 2 MA's), (26, 42851), (32, 42929), (33, 42941), (34, 42944), (35, 42950), (42, 43043), (45, 43079), (51, 43142), (52, 43154), (53, 43157), (56, 43208), (62, 43316), (63, 43331), (65, 43397), (66, 43409), (73, 43559), (74, 43577), (75, 43592), (81, 43664), (86, 43757), (90, 43844), (91, 43859), (94, 43928), (103, 44033), (104, 44042),

Gene: Spikelee\_73 Start: 44421, Stop: 45761, Start Num: 10

Candidate Starts for Spikelee\_73:

(Start: 10 @44421 has 14 MA's), (13, 44433), (Start: 19 @44472 has 2 MA's), (26, 44556), (32, 44634), (34, 44649), (35, 44655), (42, 44748), (45, 44784), (51, 44847), (52, 44859), (53, 44862), (56, 44913), (62, 45021), (63, 45036), (65, 45102), (66, 45114), (73, 45264), (74, 45282), (75, 45297), (81, 45369), (90, 45549), (91, 45564), (94, 45633), (103, 45738), (104, 45747),

Gene: Squiddly\_64 Start: 41175, Stop: 43031, Start Num: 19

Candidate Starts for Squiddly\_64:

(12, 41154), (Start: 19 @41175 has 2 MA's), (23, 41235), (28, 41286), (34, 41352), (38, 41406), (39, 41424), (41, 41457), (43, 41481), (56, 41619), (58, 41625), (59, 41643), (61, 41718), (62, 41727), (63, 41742), (65, 41808), (66, 41820), (69, 41916), (71, 41931), (73, 41970), (74, 41988), (78, 42036), (92, 42279), (98, 42396), (100, 42426), (104, 42468), (105, 42486), (106, 42549), (107, 42624), (108, 42702), (109, 42729), (110, 42732), (111, 42789), (112, 42795), (113, 42819), (114, 42828), (115, 42867), (117, 42903),

Gene: SwagPiggett\_71 Start: 45063, Stop: 46403, Start Num: 10

Candidate Starts for SwagPiggett\_71:

(Start: 10 @45063 has 14 MA's), (13, 45075), (Start: 19 @45114 has 2 MA's), (26, 45198), (32, 45276), (34, 45291), (35, 45297), (42, 45390), (45, 45426), (51, 45489), (52, 45501), (53, 45504), (56, 45555), (62, 45663), (63, 45678), (65, 45744), (66, 45756), (73, 45906), (74, 45924), (75, 45939), (81, 46011), (90, 46191), (91, 46206), (94, 46275), (104, 46389),

Gene: Vopal\_76 Start: 41915, Stop: 43207, Start Num: 18

Candidate Starts for Vopal\_76:

(Start: 18 @41915 has 2 MA's), (21, 41933), (22, 41972), (34, 42092), (46, 42239), (48, 42260), (54, 42302), (57, 42353), (59, 42374), (62, 42458), (63, 42473), (65, 42539), (66, 42551), (67, 42566), (68, 42572), (69, 42647), (78, 42770), (79, 42797), (88, 42962), (101, 43169), (103, 43181),

Gene: Whouxphf\_63 Start: 42670, Stop: 43959, Start Num: 16

Candidate Starts for Whouxphf\_63:

(Start: 16 @42670 has 17 MA's), (24, 42739), (25, 42748), (26, 42757), (28, 42784), (30, 42796), (31, 42817), (32, 42835), (33, 42847), (34, 42850), (42, 42949), (45, 42985), (51, 43048), (52, 43060), (53, 43063), (56, 43114), (62, 43222), (63, 43237), (65, 43303), (66, 43315), (72, 43441), (73, 43465), (74, 43483), (75, 43498), (81, 43570), (90, 43750), (91, 43765), (94, 43834), (103, 43939), (104, 43948),

Gene: Yorick\_65 Start: 42910, Stop: 44199, Start Num: 16

Candidate Starts for Yorick\_65:

(Start: 16 @42910 has 17 MA's), (24, 42979), (25, 42988), (26, 42997), (28, 43024), (30, 43036), (31, 43057), (32, 43075), (33, 43087), (34, 43090), (42, 43189), (45, 43225), (51, 43288), (52, 43300), (53, 43303), (56, 43354), (62, 43462), (63, 43477), (65, 43543), (66, 43555), (72, 43681), (73, 43705), (74, 43723), (75, 43738), (81, 43810), (90, 43990), (91, 44005), (94, 44074), (103, 44179), (104, 44188),

Gene: Zizzle\_70 Start: 44388, Stop: 45695, Start Num: 16

Candidate Starts for Zizzle\_70:

(Start: 16 @44388 has 17 MA's), (Start: 19 @44400 has 2 MA's), (26, 44484), (32, 44562), (33, 44574), (34, 44577), (35, 44583), (42, 44676), (45, 44712), (51, 44775), (52, 44787), (53, 44790), (56, 44841), (62, 44949), (63, 44964), (65, 45030), (66, 45042), (73, 45192), (74, 45210), (75, 45225), (81, 45297), (90, 45477), (91, 45492), (94, 45561), (103, 45666), (104, 45675),

Gene: Zucker\_71 Start: 40903, Stop: 42195, Start Num: 18

Candidate Starts for Zucker\_71:

(Start: 18 @40903 has 2 MA's), (22, 40960), (34, 41080), (39, 41140), (46, 41227), (48, 41248), (52, 41284), (57, 41341), (59, 41362), (62, 41446), (63, 41461), (65, 41527), (66, 41539), (67, 41554), (68, 41560), (69, 41635), (79, 41785), (87, 41920), (88, 41950), (96, 42079), (101, 42157), (103, 42169),