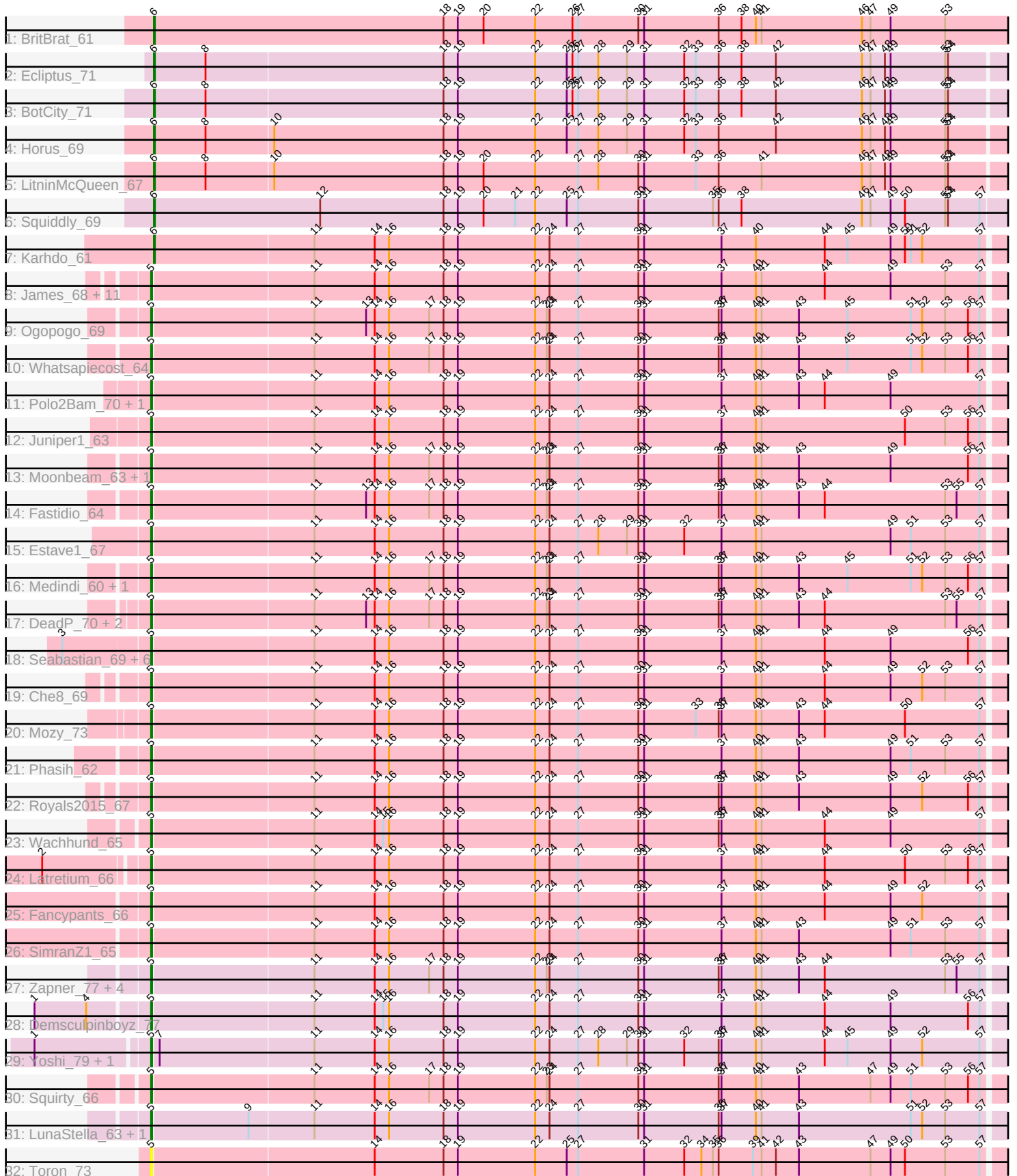


# Pham 231411



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 231411 Report

This analysis was run 02/07/26 on database version 634.

Pham number 231411 has 60 members, 5 are drafts.

Phages represented in each track:

- Track 1 : BritBrat\_61
- Track 2 : Ecliptus\_71
- Track 3 : BotCity\_71
- Track 4 : Horus\_69
- Track 5 : LitninMcQueen\_67
- Track 6 : Squiddly\_69
- Track 7 : Karhdo\_61
- Track 8 : James\_68, Saal\_66, Yorick\_63, Mattes\_68, Eradicator\_57, Gorge\_68, OlympiaSaint\_66, BuzzLyseyear\_70, Lizziana\_70, Pollywog\_65, GUmble\_62, Tchotchke\_63
- Track 9 : Ogopogo\_69
- Track 10 : Whatsapiecost\_64
- Track 11 : Polo2Bam\_70, NewHope4\_65
- Track 12 : Juniper1\_63
- Track 13 : Moonbeam\_63, Emma\_66
- Track 14 : Fastidio\_64
- Track 15 : Estave1\_67
- Track 16 : Medindi\_60, VRedHorse\_64
- Track 17 : DeadP\_70, Wee\_68, Taj\_68
- Track 18 : Seabastian\_69, Ochi17\_67, Llama\_68, Jinglebell\_69, Modragons\_67, OfUltron\_69, AlpineSix\_69
- Track 19 : Che8\_69
- Track 20 : Mozy\_73
- Track 21 : Phasi\_62
- Track 22 : Royals2015\_67
- Track 23 : Wachhund\_65
- Track 24 : Latretium\_66
- Track 25 : Fancypants\_66
- Track 26 : SimranZ1\_65
- Track 27 : Zapner\_77, DillTech15\_61, Mantra\_60, Jabbawokkie\_78, Blarby\_76
- Track 28 : Demsculpinboyz\_77
- Track 29 : Yoshi\_79, ThetaBob\_71
- Track 30 : Squirty\_66
- Track 31 : LunaStella\_63, TChen\_65
- Track 32 : Toron\_73

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

The start number called the most often in the published annotations is 5, it was called in 48 of the 55 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AlpineSix\_69, Blarby\_76, BuzzLyseyear\_70, Che8\_69, DeadP\_70, Demsculpinboyz\_77, DillTech15\_61, Emma\_66, Eradicator\_57, Estave1\_67, Fancypants\_66, Fastidio\_64, GUmbie\_62, Gorge\_68, Jabbawokkie\_78, James\_68, Jinglebell\_69, Juniper1\_63, Latretium\_66, Lizziana\_70, Llama\_68, LunaStella\_63, Mantra\_60, Mattes\_68, Medindi\_60, Modragons\_67, Moonbeam\_63, Mozy\_73, NewHope4\_65, Ochi17\_67, OfUltron\_69, Ogopogo\_69, OlympiaSaint\_66, Phasih\_62, Pollywog\_65, Polo2Bam\_70, Royals2015\_67, Saal\_66, Seabastian\_69, SimranZ1\_65, Squirty\_66, TChen\_65, Taj\_68, Tchotchke\_63, ThetaBob\_71, Toron\_73, VRedHorse\_64, Wachhund\_65, Wee\_68, Whatsapiecost\_64, Yorick\_63, Yoshi\_79, Zapner\_77,

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

- 

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

- BotCity\_71, BritBrat\_61, Ecliptus\_71, Horus\_69, Karhdo\_61, LitninMcQueen\_67, Squiddly\_69,

### **Summary by start number:**

Start 5:

- Found in 53 of 60 ( 88.3% ) of genes in pham
- Manual Annotations of this start: 48 of 55
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AlpineSix\_69 (F1), Blarby\_76 (F), BuzzLyseyear\_70 (F1), Che8\_69 (F1), DeadP\_70 (F1), Demsculpinboyz\_77 (F2), DillTech15\_61 (F1), Emma\_66 (F1), Eradicator\_57 (F1), Estave1\_67 (F1), Fancypants\_66 (F1), Fastidio\_64 (F1), GUmbie\_62 (F1), Gorge\_68 (F1), Jabbawokkie\_78 (F2), James\_68 (F1), Jinglebell\_69 (F1), Juniper1\_63 (F1), Latretium\_66 (F1), Lizziana\_70 (F1), Llama\_68 (F1), LunaStella\_63 (F4), Mantra\_60 (F1), Mattes\_68 (F1), Medindi\_60 (F1), Modragons\_67 (F1), Moonbeam\_63 (F1), Mozy\_73 (F1), NewHope4\_65 (F1), Ochi17\_67 (F1), OfUltron\_69 (F1), Ogopogo\_69 (F1), OlympiaSaint\_66 (F1), Phasih\_62 (F1), Pollywog\_65 (F1), Polo2Bam\_70 (F1), Royals2015\_67 (F1), Saal\_66 (F1), Seabastian\_69 (F1), SimranZ1\_65 (F1), Squirty\_66 (F3), TChen\_65 (F4), Taj\_68 (F1), Tchotchke\_63 (F1), ThetaBob\_71 (F4), Toron\_73 (F6), VRedHorse\_64 (F1), Wachhund\_65 (F1), Wee\_68 (F1), Whatsapiecost\_64 (F1), Yorick\_63 (F1), Yoshi\_79 (F2), Zapner\_77 (F2),

Start 6:

- Found in 7 of 60 ( 11.7% ) of genes in pham
- Manual Annotations of this start: 7 of 55
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BotCity\_71 (DN), BritBrat\_61 (CY2), Ecliptus\_71 (DN), Horus\_69 (DN1), Karhdo\_61 (F1), LitninMcQueen\_67 (DN1), Squiddly\_69 (DN2),

## Summary by clusters:

There are 10 clusters represented in this pham: DN, F1, F2, F3, F4, F6, CY2, F, DN1, DN2,

Info for manual annotations of cluster CY2:

- Start number 6 was manually annotated 1 time for cluster CY2.

Info for manual annotations of cluster DN:

- Start number 6 was manually annotated 2 times for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 6 was manually annotated 2 times for cluster DN1.

Info for manual annotations of cluster DN2:

- Start number 6 was manually annotated 1 time for cluster DN2.

Info for manual annotations of cluster F1:

- Start number 5 was manually annotated 40 times for cluster F1.
- Start number 6 was manually annotated 1 time for cluster F1.

Info for manual annotations of cluster F2:

- Start number 5 was manually annotated 4 times for cluster F2.

Info for manual annotations of cluster F3:

- Start number 5 was manually annotated 1 time for cluster F3.

Info for manual annotations of cluster F4:

- Start number 5 was manually annotated 3 times for cluster F4.

## Gene Information:

Gene: AlpineSix\_69 Start: 43940, Stop: 44821, Start Num: 5

Candidate Starts for AlpineSix\_69:

(3, 43853), (Start: 5 @43940 has 48 MA's), (11, 44105), (14, 44168), (16, 44183), (18, 44240), (19, 44255), (22, 44336), (24, 44351), (27, 44381), (30, 44444), (31, 44450), (37, 44531), (40, 44567), (41, 44573), (44, 44639), (49, 44708), (56, 44789), (57, 44801),

Gene: Blarby\_76 Start: 43102, Stop: 43983, Start Num: 5

Candidate Starts for Blarby\_76:

(Start: 5 @43102 has 48 MA's), (11, 43267), (14, 43330), (16, 43345), (17, 43387), (18, 43402), (19, 43417), (22, 43498), (23, 43510), (24, 43513), (27, 43543), (30, 43606), (31, 43612), (36, 43690), (37, 43693), (40, 43729), (41, 43735), (43, 43774), (44, 43801), (53, 43927), (55, 43939), (57, 43963),

Gene: BotCity\_71 Start: 42307, Stop: 43245, Start Num: 6

Candidate Starts for BotCity\_71:

(Start: 6 @42307 has 7 MA's), (8, 42361), (18, 42607), (19, 42622), (22, 42703), (25, 42736), (26, 42742), (27, 42748), (28, 42769), (29, 42799), (31, 42817), (32, 42859), (33, 42871), (36, 42895), (38, 42919), (42, 42955), (46, 43045), (47, 43054), (48, 43069), (49, 43075), (53, 43132), (54, 43135),

Gene: BritBrat\_61 Start: 41289, Stop: 42236, Start Num: 6

Candidate Starts for BritBrat\_61:

(Start: 6 @41289 has 7 MA's), (18, 41592), (19, 41607), (20, 41634), (22, 41688), (26, 41727), (27, 41733), (30, 41796), (31, 41802), (36, 41880), (38, 41904), (40, 41919), (41, 41925), (46, 42030), (47, 42039), (49, 42060), (53, 42117),

Gene: BuzzLyseyear\_70 Start: 42721, Stop: 43602, Start Num: 5

Candidate Starts for BuzzLyseyear\_70:

(Start: 5 @42721 has 48 MA's), (11, 42886), (14, 42949), (16, 42964), (18, 43021), (19, 43036), (22, 43117), (24, 43132), (27, 43162), (30, 43225), (31, 43231), (37, 43312), (40, 43348), (41, 43354), (44, 43420), (49, 43489), (53, 43546), (57, 43582),

Gene: Che8\_69 Start: 44217, Stop: 45098, Start Num: 5

Candidate Starts for Che8\_69:

(Start: 5 @44217 has 48 MA's), (11, 44382), (14, 44445), (16, 44460), (18, 44517), (19, 44532), (22, 44613), (24, 44628), (27, 44658), (30, 44721), (31, 44727), (37, 44808), (40, 44844), (41, 44850), (44, 44916), (49, 44985), (52, 45018), (53, 45042), (57, 45078),

Gene: DeadP\_70 Start: 43847, Stop: 44728, Start Num: 5

Candidate Starts for DeadP\_70:

(Start: 5 @43847 has 48 MA's), (11, 44012), (13, 44066), (14, 44075), (16, 44090), (17, 44132), (18, 44147), (19, 44162), (22, 44243), (23, 44255), (24, 44258), (27, 44288), (30, 44351), (31, 44357), (36, 44435), (37, 44438), (40, 44474), (41, 44480), (43, 44519), (44, 44546), (53, 44672), (55, 44684), (57, 44708),

Gene: Demsculpinboyz\_77 Start: 41733, Stop: 42614, Start Num: 5

Candidate Starts for Demsculpinboyz\_77:

(1, 41622), (4, 41676), (Start: 5 @41733 has 48 MA's), (11, 41898), (14, 41961), (15, 41970), (16, 41976), (18, 42033), (19, 42048), (22, 42129), (24, 42144), (27, 42174), (30, 42237), (31, 42243), (37, 42324), (40, 42360), (41, 42366), (44, 42432), (49, 42501), (56, 42582), (57, 42594),

Gene: DillTech15\_61 Start: 39862, Stop: 40743, Start Num: 5

Candidate Starts for DillTech15\_61:

(Start: 5 @39862 has 48 MA's), (11, 40027), (14, 40090), (16, 40105), (17, 40147), (18, 40162), (19, 40177), (22, 40258), (23, 40270), (24, 40273), (27, 40303), (30, 40366), (31, 40372), (36, 40450), (37, 40453), (40, 40489), (41, 40495), (43, 40534), (44, 40561), (53, 40687), (55, 40699), (57, 40723),

Gene: Ecliptus\_71 Start: 42822, Stop: 43760, Start Num: 6

Candidate Starts for Ecliptus\_71:

(Start: 6 @42822 has 7 MA's), (8, 42876), (18, 43122), (19, 43137), (22, 43218), (25, 43251), (26, 43257), (27, 43263), (28, 43284), (29, 43314), (31, 43332), (32, 43374), (33, 43386), (36, 43410), (38, 43434), (42, 43470), (46, 43560), (47, 43569), (48, 43584), (49, 43590), (53, 43647), (54, 43650),

Gene: Emma\_66 Start: 41167, Stop: 42048, Start Num: 5

Candidate Starts for Emma\_66:

(Start: 5 @41167 has 48 MA's), (11, 41332), (14, 41395), (16, 41410), (17, 41452), (18, 41467), (19, 41482), (22, 41563), (23, 41575), (24, 41578), (27, 41608), (30, 41671), (31, 41677), (36, 41755), (37, 41758), (40, 41794), (41, 41800), (43, 41839), (49, 41935), (56, 42016), (57, 42028),

Gene: Eradicator\_57 Start: 39571, Stop: 40452, Start Num: 5

Candidate Starts for Eradicator\_57:

(Start: 5 @39571 has 48 MA's), (11, 39736), (14, 39799), (16, 39814), (18, 39871), (19, 39886), (22, 39967), (24, 39982), (27, 40012), (30, 40075), (31, 40081), (37, 40162), (40, 40198), (41, 40204), (44, 40270), (49, 40339), (53, 40396), (57, 40432),

Gene: Estave1\_67 Start: 42639, Stop: 43520, Start Num: 5

Candidate Starts for Estave1\_67:

(Start: 5 @42639 has 48 MA's), (11, 42804), (14, 42867), (16, 42882), (18, 42939), (19, 42954), (22, 43035), (24, 43050), (27, 43080), (28, 43101), (29, 43131), (30, 43143), (31, 43149), (32, 43191), (37, 43230), (40, 43266), (41, 43272), (49, 43407), (51, 43428), (53, 43464), (57, 43500),

Gene: Fancypants\_66 Start: 41997, Stop: 42878, Start Num: 5

Candidate Starts for Fancypants\_66:

(Start: 5 @41997 has 48 MA's), (11, 42162), (14, 42225), (16, 42240), (18, 42297), (19, 42312), (22, 42393), (24, 42408), (27, 42438), (30, 42501), (31, 42507), (37, 42588), (40, 42624), (41, 42630), (44, 42696), (49, 42765), (52, 42798), (57, 42858),

Gene: Fastidio\_64 Start: 40012, Stop: 40893, Start Num: 5

Candidate Starts for Fastidio\_64:

(Start: 5 @40012 has 48 MA's), (11, 40177), (13, 40231), (14, 40240), (16, 40255), (17, 40297), (18, 40312), (19, 40327), (22, 40408), (23, 40420), (24, 40423), (27, 40453), (30, 40516), (31, 40522), (36, 40600), (37, 40603), (40, 40639), (41, 40645), (43, 40684), (44, 40711), (53, 40837), (55, 40849), (57, 40873),

Gene: GUmbie\_62 Start: 40798, Stop: 41679, Start Num: 5

Candidate Starts for GUmbie\_62:

(Start: 5 @40798 has 48 MA's), (11, 40963), (14, 41026), (16, 41041), (18, 41098), (19, 41113), (22, 41194), (24, 41209), (27, 41239), (30, 41302), (31, 41308), (37, 41389), (40, 41425), (41, 41431), (44, 41497), (49, 41566), (53, 41623), (57, 41659),

Gene: Gorge\_68 Start: 42740, Stop: 43621, Start Num: 5

Candidate Starts for Gorge\_68:

(Start: 5 @42740 has 48 MA's), (11, 42905), (14, 42968), (16, 42983), (18, 43040), (19, 43055), (22, 43136), (24, 43151), (27, 43181), (30, 43244), (31, 43250), (37, 43331), (40, 43367), (41, 43373), (44, 43439), (49, 43508), (53, 43565), (57, 43601),

Gene: Horus\_69 Start: 42027, Stop: 42965, Start Num: 6

Candidate Starts for Horus\_69:

(Start: 6 @42027 has 7 MA's), (8, 42081), (10, 42150), (18, 42327), (19, 42342), (22, 42423), (25, 42456), (27, 42468), (28, 42489), (29, 42519), (31, 42537), (32, 42579), (33, 42591), (36, 42615), (42, 42675), (46, 42765), (47, 42774), (48, 42789), (49, 42795), (53, 42852), (54, 42855),

Gene: Jabbawokkie\_78 Start: 43022, Stop: 43903, Start Num: 5

Candidate Starts for Jabbawokkie\_78:

(Start: 5 @43022 has 48 MA's), (11, 43187), (14, 43250), (16, 43265), (17, 43307), (18, 43322), (19, 43337), (22, 43418), (23, 43430), (24, 43433), (27, 43463), (30, 43526), (31, 43532), (36, 43610), (37, 43613), (40, 43649), (41, 43655), (43, 43694), (44, 43721), (53, 43847), (55, 43859), (57, 43883),

Gene: James\_68 Start: 42865, Stop: 43746, Start Num: 5

Candidate Starts for James\_68:

(Start: 5 @42865 has 48 MA's), (11, 43030), (14, 43093), (16, 43108), (18, 43165), (19, 43180), (22, 43261), (24, 43276), (27, 43306), (30, 43369), (31, 43375), (37, 43456), (40, 43492), (41, 43498), (44, 43564), (49, 43633), (53, 43690), (57, 43726),

Gene: Jinglebell\_69 Start: 43939, Stop: 44820, Start Num: 5

Candidate Starts for Jinglebell\_69:

(3, 43852), (Start: 5 @43939 has 48 MA's), (11, 44104), (14, 44167), (16, 44182), (18, 44239), (19, 44254), (22, 44335), (24, 44350), (27, 44380), (30, 44443), (31, 44449), (37, 44530), (40, 44566), (41, 44572), (44, 44638), (49, 44707), (56, 44788), (57, 44800),

Gene: Juniper1\_63 Start: 41675, Stop: 42556, Start Num: 5

Candidate Starts for Juniper1\_63:

(Start: 5 @41675 has 48 MA's), (11, 41840), (14, 41903), (16, 41918), (18, 41975), (19, 41990), (22, 42071), (24, 42086), (27, 42116), (30, 42179), (31, 42185), (37, 42266), (40, 42302), (41, 42308), (50, 42458), (53, 42500), (56, 42524), (57, 42536),

Gene: Karhdo\_61 Start: 41017, Stop: 41898, Start Num: 6

Candidate Starts for Karhdo\_61:

(Start: 6 @41017 has 7 MA's), (11, 41182), (14, 41245), (16, 41260), (18, 41317), (19, 41332), (22, 41413), (24, 41428), (27, 41458), (30, 41521), (31, 41527), (37, 41608), (40, 41644), (44, 41716), (45, 41740), (49, 41785), (50, 41800), (51, 41806), (52, 41818), (57, 41878),

Gene: Latretium\_66 Start: 41901, Stop: 42782, Start Num: 5

Candidate Starts for Latretium\_66:

(2, 41799), (Start: 5 @41901 has 48 MA's), (11, 42066), (14, 42129), (16, 42144), (18, 42201), (19, 42216), (22, 42297), (24, 42312), (27, 42342), (30, 42405), (31, 42411), (37, 42492), (40, 42528), (41, 42534), (44, 42600), (50, 42684), (53, 42726), (56, 42750), (57, 42762),

Gene: LitninMcQueen\_67 Start: 40977, Stop: 41915, Start Num: 6

Candidate Starts for LitninMcQueen\_67:

(Start: 6 @40977 has 7 MA's), (8, 41031), (10, 41100), (18, 41277), (19, 41292), (20, 41319), (22, 41373), (27, 41418), (28, 41439), (30, 41481), (31, 41487), (33, 41541), (36, 41565), (41, 41610), (46, 41715), (47, 41724), (48, 41739), (49, 41745), (53, 41802), (54, 41805),

Gene: Lizziana\_70 Start: 42346, Stop: 43227, Start Num: 5

Candidate Starts for Lizziana\_70:

(Start: 5 @42346 has 48 MA's), (11, 42511), (14, 42574), (16, 42589), (18, 42646), (19, 42661), (22, 42742), (24, 42757), (27, 42787), (30, 42850), (31, 42856), (37, 42937), (40, 42973), (41, 42979), (44, 43045), (49, 43114), (53, 43171), (57, 43207),

Gene: Llama\_68 Start: 43794, Stop: 44675, Start Num: 5

Candidate Starts for Llama\_68:

(3, 43707), (Start: 5 @43794 has 48 MA's), (11, 43959), (14, 44022), (16, 44037), (18, 44094), (19, 44109), (22, 44190), (24, 44205), (27, 44235), (30, 44298), (31, 44304), (37, 44385), (40, 44421), (41, 44427), (44, 44493), (49, 44562), (56, 44643), (57, 44655),

Gene: LunaStella\_63 Start: 40779, Stop: 41660, Start Num: 5

Candidate Starts for LunaStella\_63:

(Start: 5 @40779 has 48 MA's), (9, 40878), (11, 40944), (14, 41007), (16, 41022), (18, 41079), (19, 41094), (22, 41175), (24, 41190), (27, 41220), (30, 41283), (31, 41289), (36, 41367), (37, 41370), (40, 41406), (41, 41412), (43, 41451), (51, 41568), (52, 41580), (53, 41604), (57, 41640),

Gene: Mantra\_60 Start: 40147, Stop: 41028, Start Num: 5

Candidate Starts for Mantra\_60:

(Start: 5 @40147 has 48 MA's), (11, 40312), (14, 40375), (16, 40390), (17, 40432), (18, 40447), (19, 40462), (22, 40543), (23, 40555), (24, 40558), (27, 40588), (30, 40651), (31, 40657), (36, 40735), (37, 40738), (40, 40774), (41, 40780), (43, 40819), (44, 40846), (53, 40972), (55, 40984), (57, 41008),

Gene: Mattes\_68 Start: 42865, Stop: 43746, Start Num: 5

Candidate Starts for Mattes\_68:

(Start: 5 @42865 has 48 MA's), (11, 43030), (14, 43093), (16, 43108), (18, 43165), (19, 43180), (22, 43261), (24, 43276), (27, 43306), (30, 43369), (31, 43375), (37, 43456), (40, 43492), (41, 43498), (44, 43564), (49, 43633), (53, 43690), (57, 43726),

Gene: Medindi\_60 Start: 38637, Stop: 39518, Start Num: 5

Candidate Starts for Medindi\_60:

(Start: 5 @38637 has 48 MA's), (11, 38802), (14, 38865), (16, 38880), (17, 38922), (18, 38937), (19, 38952), (22, 39033), (23, 39045), (24, 39048), (27, 39078), (30, 39141), (31, 39147), (36, 39225), (37, 39228), (40, 39264), (41, 39270), (43, 39309), (45, 39360), (51, 39426), (52, 39438), (53, 39462), (56, 39486), (57, 39498),

Gene: Modragons\_67 Start: 43783, Stop: 44664, Start Num: 5

Candidate Starts for Modragons\_67:

(3, 43696), (Start: 5 @43783 has 48 MA's), (11, 43948), (14, 44011), (16, 44026), (18, 44083), (19, 44098), (22, 44179), (24, 44194), (27, 44224), (30, 44287), (31, 44293), (37, 44374), (40, 44410), (41, 44416), (44, 44482), (49, 44551), (56, 44632), (57, 44644),

Gene: Moonbeam\_63 Start: 41096, Stop: 41977, Start Num: 5

Candidate Starts for Moonbeam\_63:

(Start: 5 @41096 has 48 MA's), (11, 41261), (14, 41324), (16, 41339), (17, 41381), (18, 41396), (19, 41411), (22, 41492), (23, 41504), (24, 41507), (27, 41537), (30, 41600), (31, 41606), (36, 41684), (37, 41687), (40, 41723), (41, 41729), (43, 41768), (49, 41864), (56, 41945), (57, 41957),

Gene: Mozy\_73 Start: 43781, Stop: 44662, Start Num: 5

Candidate Starts for Mozy\_73:

(Start: 5 @43781 has 48 MA's), (11, 43946), (14, 44009), (16, 44024), (18, 44081), (19, 44096), (22, 44177), (24, 44192), (27, 44222), (30, 44285), (31, 44291), (33, 44345), (36, 44369), (37, 44372), (40, 44408), (41, 44414), (43, 44453), (44, 44480), (50, 44564), (57, 44642),

Gene: NewHope4\_65 Start: 41288, Stop: 42169, Start Num: 5

Candidate Starts for NewHope4\_65:

(Start: 5 @41288 has 48 MA's), (11, 41453), (14, 41516), (16, 41531), (18, 41588), (19, 41603), (22, 41684), (24, 41699), (27, 41729), (30, 41792), (31, 41798), (37, 41879), (40, 41915), (41, 41921), (43, 41960), (44, 41987), (49, 42056), (57, 42149),

Gene: Ochi17\_67 Start: 43390, Stop: 44271, Start Num: 5

Candidate Starts for Ochi17\_67:

(3, 43303), (Start: 5 @43390 has 48 MA's), (11, 43555), (14, 43618), (16, 43633), (18, 43690), (19, 43705), (22, 43786), (24, 43801), (27, 43831), (30, 43894), (31, 43900), (37, 43981), (40, 44017), (41, 44023), (44, 44089), (49, 44158), (56, 44239), (57, 44251),

Gene: OfUltron\_69 Start: 43939, Stop: 44820, Start Num: 5

Candidate Starts for OfUltron\_69:

(3, 43852), (Start: 5 @43939 has 48 MA's), (11, 44104), (14, 44167), (16, 44182), (18, 44239), (19, 44254), (22, 44335), (24, 44350), (27, 44380), (30, 44443), (31, 44449), (37, 44530), (40, 44566), (41, 44572), (44, 44638), (49, 44707), (56, 44788), (57, 44800),

Gene: Ogopogo\_69 Start: 41764, Stop: 42645, Start Num: 5

Candidate Starts for Ogopogo\_69:



(Start: 5 @41764 has 48 MA's), (11, 41929), (13, 41983), (14, 41992), (16, 42007), (17, 42049), (18, 42064), (19, 42079), (22, 42160), (23, 42172), (24, 42175), (27, 42205), (30, 42268), (31, 42274), (36, 42352), (37, 42355), (40, 42391), (41, 42397), (43, 42436), (45, 42487), (51, 42553), (52, 42565), (53, 42589), (56, 42613), (57, 42625),

Gene: OlympiaSaint\_66 Start: 41807, Stop: 42688, Start Num: 5

Candidate Starts for OlympiaSaint\_66:

(Start: 5 @41807 has 48 MA's), (11, 41972), (14, 42035), (16, 42050), (18, 42107), (19, 42122), (22, 42203), (24, 42218), (27, 42248), (30, 42311), (31, 42317), (37, 42398), (40, 42434), (41, 42440), (44, 42506), (49, 42575), (53, 42632), (57, 42668),

Gene: Phasih\_62 Start: 41721, Stop: 42602, Start Num: 5

Candidate Starts for Phasih\_62:

(Start: 5 @41721 has 48 MA's), (11, 41886), (14, 41949), (16, 41964), (18, 42021), (19, 42036), (22, 42117), (24, 42132), (27, 42162), (30, 42225), (31, 42231), (37, 42312), (40, 42348), (41, 42354), (43, 42393), (49, 42489), (51, 42510), (53, 42546), (57, 42582),

Gene: Pollywog\_65 Start: 42125, Stop: 43006, Start Num: 5

Candidate Starts for Pollywog\_65:

(Start: 5 @42125 has 48 MA's), (11, 42290), (14, 42353), (16, 42368), (18, 42425), (19, 42440), (22, 42521), (24, 42536), (27, 42566), (30, 42629), (31, 42635), (37, 42716), (40, 42752), (41, 42758), (44, 42824), (49, 42893), (53, 42950), (57, 42986),

Gene: Polo2Bam\_70 Start: 41142, Stop: 42023, Start Num: 5

Candidate Starts for Polo2Bam\_70:

(Start: 5 @41142 has 48 MA's), (11, 41307), (14, 41370), (16, 41385), (18, 41442), (19, 41457), (22, 41538), (24, 41553), (27, 41583), (30, 41646), (31, 41652), (37, 41733), (40, 41769), (41, 41775), (43, 41814), (44, 41841), (49, 41910), (57, 42003),

Gene: Royals2015\_67 Start: 41543, Stop: 42424, Start Num: 5

Candidate Starts for Royals2015\_67:

(Start: 5 @41543 has 48 MA's), (11, 41708), (14, 41771), (16, 41786), (18, 41843), (19, 41858), (22, 41939), (24, 41954), (27, 41984), (30, 42047), (31, 42053), (36, 42131), (37, 42134), (40, 42170), (41, 42176), (43, 42215), (49, 42311), (52, 42344), (56, 42392), (57, 42404),

Gene: Saal\_66 Start: 42559, Stop: 43440, Start Num: 5

Candidate Starts for Saal\_66:

(Start: 5 @42559 has 48 MA's), (11, 42724), (14, 42787), (16, 42802), (18, 42859), (19, 42874), (22, 42955), (24, 42970), (27, 43000), (30, 43063), (31, 43069), (37, 43150), (40, 43186), (41, 43192), (44, 43258), (49, 43327), (53, 43384), (57, 43420),

Gene: Seabastian\_69 Start: 43940, Stop: 44821, Start Num: 5

Candidate Starts for Seabastian\_69:

(3, 43853), (Start: 5 @43940 has 48 MA's), (11, 44105), (14, 44168), (16, 44183), (18, 44240), (19, 44255), (22, 44336), (24, 44351), (27, 44381), (30, 44444), (31, 44450), (37, 44531), (40, 44567), (41, 44573), (44, 44639), (49, 44708), (56, 44789), (57, 44801),

Gene: SimranZ1\_65 Start: 41732, Stop: 42613, Start Num: 5

Candidate Starts for SimranZ1\_65:

(Start: 5 @41732 has 48 MA's), (11, 41897), (14, 41960), (16, 41975), (18, 42032), (19, 42047), (22, 42128), (24, 42143), (27, 42173), (30, 42236), (31, 42242), (37, 42323), (40, 42359), (41, 42365), (43, 42404), (49, 42500), (51, 42521), (53, 42557), (57, 42593),

Gene: Squiddly\_69 Start: 44638, Stop: 45579, Start Num: 6

Candidate Starts for Squiddly\_69:

(Start: 6 @44638 has 7 MA's), (12, 44812), (18, 44941), (19, 44956), (20, 44983), (21, 45016), (22, 45037), (25, 45070), (27, 45082), (30, 45145), (31, 45151), (35, 45223), (36, 45229), (38, 45253), (46, 45379), (47, 45388), (49, 45409), (50, 45424), (53, 45466), (54, 45469), (57, 45502),

Gene: Squirty\_66 Start: 42518, Stop: 43399, Start Num: 5

Candidate Starts for Squirty\_66:

(Start: 5 @42518 has 48 MA's), (11, 42683), (14, 42746), (16, 42761), (17, 42803), (18, 42818), (19, 42833), (22, 42914), (23, 42926), (24, 42929), (27, 42959), (30, 43022), (31, 43028), (36, 43106), (37, 43109), (40, 43145), (41, 43151), (43, 43190), (47, 43265), (49, 43286), (51, 43307), (53, 43343), (56, 43367), (57, 43379),

Gene: TChen\_65 Start: 42730, Stop: 43611, Start Num: 5

Candidate Starts for TChen\_65:

(Start: 5 @42730 has 48 MA's), (9, 42829), (11, 42895), (14, 42958), (16, 42973), (18, 43030), (19, 43045), (22, 43126), (24, 43141), (27, 43171), (30, 43234), (31, 43240), (36, 43318), (37, 43321), (40, 43357), (41, 43363), (43, 43402), (51, 43519), (52, 43531), (53, 43555), (57, 43591),

Gene: Taj\_68 Start: 42961, Stop: 43842, Start Num: 5

Candidate Starts for Taj\_68:

(Start: 5 @42961 has 48 MA's), (11, 43126), (13, 43180), (14, 43189), (16, 43204), (17, 43246), (18, 43261), (19, 43276), (22, 43357), (23, 43369), (24, 43372), (27, 43402), (30, 43465), (31, 43471), (36, 43549), (37, 43552), (40, 43588), (41, 43594), (43, 43633), (44, 43660), (53, 43786), (55, 43798), (57, 43822),

Gene: Tchotchke\_63 Start: 41050, Stop: 41931, Start Num: 5

Candidate Starts for Tchotchke\_63:

(Start: 5 @41050 has 48 MA's), (11, 41215), (14, 41278), (16, 41293), (18, 41350), (19, 41365), (22, 41446), (24, 41461), (27, 41491), (30, 41554), (31, 41560), (37, 41641), (40, 41677), (41, 41683), (44, 41749), (49, 41818), (53, 41875), (57, 41911),

Gene: ThetaBob\_71 Start: 43215, Stop: 44096, Start Num: 5

Candidate Starts for ThetaBob\_71:

(1, 43104), (Start: 5 @43215 has 48 MA's), (7, 43221), (11, 43380), (14, 43443), (16, 43458), (18, 43515), (19, 43530), (22, 43611), (24, 43626), (27, 43656), (28, 43677), (29, 43707), (30, 43719), (31, 43725), (32, 43767), (36, 43803), (37, 43806), (40, 43842), (41, 43848), (44, 43914), (45, 43938), (49, 43983), (52, 44016), (57, 44076),

Gene: Toron\_73 Start: 44999, Stop: 45895, Start Num: 5

Candidate Starts for Toron\_73:

(Start: 5 @44999 has 48 MA's), (14, 45227), (18, 45299), (19, 45314), (22, 45395), (25, 45428), (27, 45440), (31, 45509), (32, 45551), (34, 45569), (35, 45581), (36, 45587), (39, 45623), (41, 45632), (42, 45647), (43, 45671), (47, 45746), (49, 45767), (50, 45782), (53, 45824), (57, 45860),

Gene: VRedHorse\_64 Start: 40519, Stop: 41400, Start Num: 5

Candidate Starts for VRedHorse\_64:

(Start: 5 @40519 has 48 MA's), (11, 40684), (14, 40747), (16, 40762), (17, 40804), (18, 40819), (19, 40834), (22, 40915), (23, 40927), (24, 40930), (27, 40960), (30, 41023), (31, 41029), (36, 41107), (37, 41110), (40, 41146), (41, 41152), (43, 41191), (45, 41242), (51, 41308), (52, 41320), (53, 41344), (56, 41368), (57, 41380),

Gene: Wachhund\_65 Start: 41150, Stop: 42031, Start Num: 5

Candidate Starts for Wachhund\_65:

(Start: 5 @41150 has 48 MA's), (11, 41315), (14, 41378), (15, 41387), (16, 41393), (18, 41450), (19, 41465), (22, 41546), (24, 41561), (27, 41591), (30, 41654), (31, 41660), (36, 41738), (37, 41741), (40, 41777), (41, 41783), (44, 41849), (49, 41918), (57, 42011),

Gene: Wee\_68 Start: 43037, Stop: 43918, Start Num: 5

Candidate Starts for Wee\_68:

(Start: 5 @43037 has 48 MA's), (11, 43202), (13, 43256), (14, 43265), (16, 43280), (17, 43322), (18, 43337), (19, 43352), (22, 43433), (23, 43445), (24, 43448), (27, 43478), (30, 43541), (31, 43547), (36, 43625), (37, 43628), (40, 43664), (41, 43670), (43, 43709), (44, 43736), (53, 43862), (55, 43874), (57, 43898),

Gene: Whatsapiecost\_64 Start: 40446, Stop: 41327, Start Num: 5

Candidate Starts for Whatsapiecost\_64:

(Start: 5 @40446 has 48 MA's), (11, 40611), (14, 40674), (16, 40689), (17, 40731), (18, 40746), (19, 40761), (22, 40842), (23, 40854), (24, 40857), (27, 40887), (30, 40950), (31, 40956), (36, 41034), (37, 41037), (40, 41073), (41, 41079), (43, 41118), (45, 41169), (51, 41235), (52, 41247), (53, 41271), (56, 41295), (57, 41307),

Gene: Yorick\_63 Start: 41673, Stop: 42554, Start Num: 5

Candidate Starts for Yorick\_63:

(Start: 5 @41673 has 48 MA's), (11, 41838), (14, 41901), (16, 41916), (18, 41973), (19, 41988), (22, 42069), (24, 42084), (27, 42114), (30, 42177), (31, 42183), (37, 42264), (40, 42300), (41, 42306), (44, 42372), (49, 42441), (53, 42498), (57, 42534),

Gene: Yoshi\_79 Start: 43479, Stop: 44360, Start Num: 5

Candidate Starts for Yoshi\_79:

(1, 43368), (Start: 5 @43479 has 48 MA's), (7, 43485), (11, 43644), (14, 43707), (16, 43722), (18, 43779), (19, 43794), (22, 43875), (24, 43890), (27, 43920), (28, 43941), (29, 43971), (30, 43983), (31, 43989), (32, 44031), (36, 44067), (37, 44070), (40, 44106), (41, 44112), (44, 44178), (45, 44202), (49, 44247), (52, 44280), (57, 44340),

Gene: Zapner\_77 Start: 43116, Stop: 43997, Start Num: 5

Candidate Starts for Zapner\_77:

(Start: 5 @43116 has 48 MA's), (11, 43281), (14, 43344), (16, 43359), (17, 43401), (18, 43416), (19, 43431), (22, 43512), (23, 43524), (24, 43527), (27, 43557), (30, 43620), (31, 43626), (36, 43704), (37, 43707), (40, 43743), (41, 43749), (43, 43788), (44, 43815), (53, 43941), (55, 43953), (57, 43977),