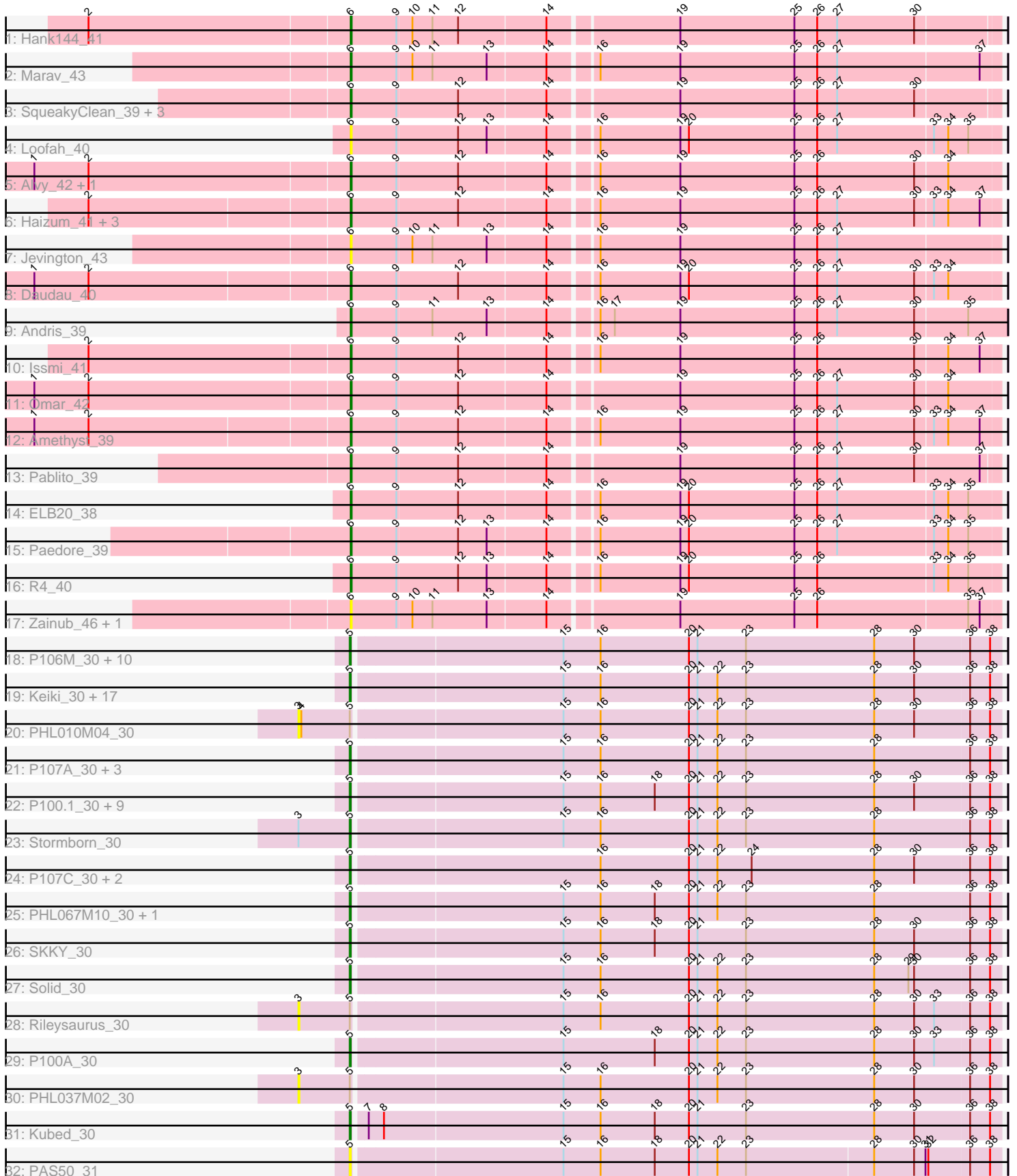


Pham 163544



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 163544 Report

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

Pham number 163544 has 82 members, 19 are drafts.

Phages represented in each track:

- Track 1 : Hank144\_41
- Track 2 : Marav\_43
- Track 3 : SqueakyClean\_39, GirlDinner\_41, Animus\_39, Janus\_40
- Track 4 : Loofah\_40
- Track 5 : Alvy\_42, BartholomewSD\_42
- Track 6 : Haizum\_41, Diane\_39, Tefunt\_41, Nishikigoi\_41
- Track 7 : Jevington\_43
- Track 8 : Daudau\_40
- Track 9 : Andris\_39
- Track 10 : Issmi\_41
- Track 11 : Omar\_42
- Track 12 : Amethyst\_39
- Track 13 : Pablito\_39
- Track 14 : ELB20\_38
- Track 15 : Paedore\_39
- Track 16 : R4\_40
- Track 17 : Zainub\_46, Paolo\_44
- Track 18 : P106M\_30, P106L\_30, Attacne\_30, Aquarius\_30, P9.1\_30, DrParker\_30, Procrass1\_30, P106C\_31, PHL060L00\_30, P106I\_30, P106A\_30
- Track 19 : Keiki\_30, PHL071N05\_30, Moyashi\_30, Ouroboros\_30, P100D\_30, MEAK\_30, PA6\_31, Cota\_30, QueenBey\_30, Enoki\_30, Pirate\_30, BruceLethal\_30, Enochoraptor\_31, Lauchelly\_30, MrAK\_30, P14.4\_30, P108C\_30, Supernova\_30
- Track 20 : PHL010M04\_30
- Track 21 : P107A\_30, P105\_30, PHL113M01\_30, PHL111M01\_30
- Track 22 : P100.1\_30, PHL114L00\_30, Wizzo\_30, P1.1\_30, PAD20\_31, P101A\_30, LilBandit\_30, Leviosa\_30, P104A\_30, PHL112N00\_30
- Track 23 : Stormborn\_30
- Track 24 : P107C\_30, ATCC29399BT\_30, ATCC29399BC\_30
- Track 25 : PHL067M10\_30, P104B\_30
- Track 26 : SKKY\_30
- Track 27 : Solid\_30
- Track 28 : Rileysaurus\_30
- Track 29 : P100A\_30
- Track 30 : PHL037M02\_30
- Track 31 : Kubed\_30
- Track 32 : PAS50\_31

### **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 43 of the 63 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ATCC29399BC\_30, ATCC29399BT\_30, Aquarius\_30, Attacne\_30, BruceLethal\_30, Cota\_30, DrParker\_30, Enochoraptor\_31, Enoki\_30, Keiki\_30, Kubed\_30, Lauchelly\_30, Leviosa\_30, LilBandit\_30, MEAK\_30, Moyashi\_30, MrAK\_30, Ouroboros\_30, P1.1\_30, P100.1\_30, P100A\_30, P100D\_30, P101A\_30, P104A\_30, P104B\_30, P105\_30, P106A\_30, P106C\_31, P106I\_30, P106L\_30, P106M\_30, P107A\_30, P107C\_30, P108C\_30, P14.4\_30, P9.1\_30, PA6\_31, PAD20\_31, PAS50\_31, PHL060L00\_30, PHL067M10\_30, PHL071N05\_30, PHL111M01\_30, PHL112N00\_30, PHL113M01\_30, PHL114L00\_30, Pirate\_30, Procrass1\_30, QueenBey\_30, SKKY\_30, Solid\_30, Stormborn\_30, Supernova\_30, Wizzo\_30,

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

- PHL010M04\_30, PHL037M02\_30, Rileysaurus\_30,

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

- Alvy\_42, Amethyst\_39, Andris\_39, Animus\_39, BartholomewSD\_42, Daudau\_40, Diane\_39, ELB20\_38, GirlDinner\_41, Haizum\_41, Hank144\_41, Issmi\_41, Janus\_40, Jevington\_43, Loofah\_40, Marav\_43, Nishikigoi\_41, Omar\_42, Pablito\_39, Paedore\_39, Paolo\_44, R4\_40, SqueakyClean\_39, Tefunt\_41, Zainub\_46,

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

Start 3:

- Found in 4 of 82 ( 4.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 75.0% of time when present
- Phage (with cluster) where this start called: PHL010M04\_30 (BU), PHL037M02\_30 (BU), Rileysaurus\_30 (BU),

Start 5:

- Found in 57 of 82 ( 69.5% ) of genes in pham
- Manual Annotations of this start: 43 of 63
- Called 94.7% of time when present
- Phage (with cluster) where this start called: ATCC29399BC\_30 (BU), ATCC29399BT\_30 (BU), Aquarius\_30 (BU), Attacne\_30 (BU), BruceLethal\_30 (BU), Cota\_30 (BU), DrParker\_30 (BU), Enochoraptor\_31 (BU), Enoki\_30 (BU), Keiki\_30 (BU), Kubed\_30 (BU), Lauchelly\_30 (BU), Leviosa\_30 (BU), LilBandit\_30 (BU), MEAK\_30 (BU), Moyashi\_30 (BU), MrAK\_30 (BU), Ouroboros\_30 (BU), P1.1\_30 (BU), P100.1\_30 (BU), P100A\_30 (BU), P100D\_30 (BU), P101A\_30 (BU), P104A\_30 (BU), P104B\_30 (BU), P105\_30 (BU), P106A\_30 (BU), P106C\_31 (BU), P106I\_30 (BU), P106L\_30 (BU), P106M\_30 (BU), P107A\_30 (BU), P107C\_30 (BU), P108C\_30 (BU), P14.4\_30 (BU), P9.1\_30 (BU), PA6\_31 (BU), PAD20\_31 (BU), PAS50\_31 (BU), PHL060L00\_30 (BU), PHL067M10\_30 (BU), PHL071N05\_30 (BU), PHL111M01\_30 (BU), PHL112N00\_30 (BU), PHL113M01\_30 (BU), PHL114L00\_30 (BU), Pirate\_30 (BU), Procrass1\_30 (BU), QueenBey\_30 (BU), SKKY\_30 (BU), Solid\_30 (BU),

Stormborn\_30 (BU), Supernova\_30 (BU), Wizzo\_30 (BU),

Start 6:

- Found in 25 of 82 ( 30.5% ) of genes in pham
- Manual Annotations of this start: 20 of 63
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alvy\_42 (BD2), Amethyst\_39 (BD2), Andris\_39 (BD2), Animus\_39 (BD2), BartholomewSD\_42 (BD2), Daudau\_40 (BD2), Diane\_39 (BD2), ELB20\_38 (BD2), GirlDinner\_41 (BD2), Haizum\_41 (BD2), Hank144\_41 (BD2), Issmi\_41 (BD2), Janus\_40 (BD2), Jevington\_43 (BD2), Loofah\_40 (BD2), Marav\_43 (BD2), Nishikigoi\_41 (BD2), Omar\_42 (BD2), Pablito\_39 (BD2), Paedore\_39 (BD2), Paolo\_44 (BD2), R4\_40 (BD2), SqueakyClean\_39 (BD2), Tefunt\_41 (BD2), Zainub\_46 (BD2),

### Summary by clusters:

There are 2 clusters represented in this pham: BU, BD2,

Info for manual annotations of cluster BD2:

- Start number 6 was manually annotated 20 times for cluster BD2.

Info for manual annotations of cluster BU:

- Start number 5 was manually annotated 43 times for cluster BU.

### Gene Information:

Gene: ATCC29399BC\_30 Start: 21324, Stop: 20653, Start Num: 5

Candidate Starts for ATCC29399BC\_30:

(Start: 5 @21324 has 43 MA's), (16, 21072), (20, 20979), (21, 20970), (22, 20949), (24, 20913), (28, 20784), (30, 20742), (36, 20685), (38, 20664),

Gene: ATCC29399BT\_30 Start: 21324, Stop: 20653, Start Num: 5

Candidate Starts for ATCC29399BT\_30:

(Start: 5 @21324 has 43 MA's), (16, 21072), (20, 20979), (21, 20970), (22, 20949), (24, 20913), (28, 20784), (30, 20742), (36, 20685), (38, 20664),

Gene: Alvy\_42 Start: 29365, Stop: 30027, Start Num: 6

Candidate Starts for Alvy\_42:

(1, 29038), (2, 29095), (Start: 6 @29365 has 20 MA's), (9, 29413), (12, 29476), (14, 29566), (16, 29611), (19, 29695), (25, 29815), (26, 29839), (30, 29941), (34, 29974),

Gene: Amethyst\_39 Start: 28730, Stop: 29392, Start Num: 6

Candidate Starts for Amethyst\_39:

(1, 28406), (2, 28463), (Start: 6 @28730 has 20 MA's), (9, 28778), (12, 28841), (14, 28931), (16, 28976), (19, 29060), (25, 29180), (26, 29204), (27, 29225), (30, 29306), (33, 29324), (34, 29339), (37, 29372),

Gene: Andris\_39 Start: 28789, Stop: 29460, Start Num: 6

Candidate Starts for Andris\_39:

(Start: 6 @28789 has 20 MA's), (9, 28837), (11, 28873), (13, 28930), (14, 28990), (16, 29035), (17, 29050), (19, 29119), (25, 29239), (26, 29263), (27, 29284), (30, 29365), (35, 29419),

Gene: Animus\_39 Start: 29205, Stop: 29864, Start Num: 6

Candidate Starts for Animus\_39:

(Start: 6 @29205 has 20 MA's), (9, 29253), (12, 29316), (14, 29406), (19, 29535), (25, 29655), (26, 29679), (27, 29700), (30, 29781),

Gene: Aquarius\_30 Start: 20797, Stop: 20126, Start Num: 5

Candidate Starts for Aquarius\_30:

(Start: 5 @20797 has 43 MA's), (15, 20584), (16, 20545), (20, 20452), (21, 20443), (23, 20392), (28, 20257), (30, 20215), (36, 20158), (38, 20137),

Gene: Attacne\_30 Start: 20812, Stop: 20141, Start Num: 5

Candidate Starts for Attacne\_30:

(Start: 5 @20812 has 43 MA's), (15, 20599), (16, 20560), (20, 20467), (21, 20458), (23, 20407), (28, 20272), (30, 20230), (36, 20173), (38, 20152),

Gene: BartholomewSD\_42 Start: 29364, Stop: 30026, Start Num: 6

Candidate Starts for BartholomewSD\_42:

(1, 29037), (2, 29094), (Start: 6 @29364 has 20 MA's), (9, 29412), (12, 29475), (14, 29565), (16, 29610), (19, 29694), (25, 29814), (26, 29838), (30, 29940), (34, 29973),

Gene: BruceLethal\_30 Start: 21333, Stop: 20662, Start Num: 5

Candidate Starts for BruceLethal\_30:

(Start: 5 @21333 has 43 MA's), (15, 21120), (16, 21081), (20, 20988), (21, 20979), (22, 20958), (23, 20928), (28, 20793), (30, 20751), (36, 20694), (38, 20673),

Gene: Cota\_30 Start: 21373, Stop: 20702, Start Num: 5

Candidate Starts for Cota\_30:

(Start: 5 @21373 has 43 MA's), (15, 21160), (16, 21121), (20, 21028), (21, 21019), (22, 20998), (23, 20968), (28, 20833), (30, 20791), (36, 20734), (38, 20713),

Gene: Daudau\_40 Start: 29122, Stop: 29784, Start Num: 6

Candidate Starts for Daudau\_40:

(1, 28798), (2, 28855), (Start: 6 @29122 has 20 MA's), (9, 29170), (12, 29233), (14, 29323), (16, 29368), (19, 29452), (20, 29461), (25, 29572), (26, 29596), (27, 29617), (30, 29698), (33, 29716), (34, 29731),

Gene: Diane\_39 Start: 28959, Stop: 29621, Start Num: 6

Candidate Starts for Diane\_39:

(2, 28692), (Start: 6 @28959 has 20 MA's), (9, 29007), (12, 29070), (14, 29160), (16, 29205), (19, 29289), (25, 29409), (26, 29433), (27, 29454), (30, 29535), (33, 29553), (34, 29568), (37, 29601),

Gene: DrParker\_30 Start: 21427, Stop: 20756, Start Num: 5

Candidate Starts for DrParker\_30:

(Start: 5 @21427 has 43 MA's), (15, 21214), (16, 21175), (20, 21082), (21, 21073), (23, 21022), (28, 20887), (30, 20845), (36, 20788), (38, 20767),

Gene: ELB20\_38 Start: 29365, Stop: 30027, Start Num: 6

Candidate Starts for ELB20\_38:

(Start: 6 @29365 has 20 MA's), (9, 29413), (12, 29476), (14, 29566), (16, 29611), (19, 29695), (20, 29704), (25, 29815), (26, 29839), (27, 29860), (33, 29959), (34, 29974), (35, 29995),

Gene: Enochoraptor\_31 Start: 21346, Stop: 20675, Start Num: 5

Candidate Starts for Enochoraptor\_31:

(Start: 5 @21346 has 43 MA's), (15, 21133), (16, 21094), (20, 21001), (21, 20992), (22, 20971), (23, 20941), (28, 20806), (30, 20764), (36, 20707), (38, 20686),

Gene: Enoki\_30 Start: 21357, Stop: 20686, Start Num: 5

Candidate Starts for Enoki\_30:

(Start: 5 @21357 has 43 MA's), (15, 21144), (16, 21105), (20, 21012), (21, 21003), (22, 20982), (23, 20952), (28, 20817), (30, 20775), (36, 20718), (38, 20697),

Gene: GirlDinner\_41 Start: 28706, Stop: 29365, Start Num: 6

Candidate Starts for GirlDinner\_41:

(Start: 6 @28706 has 20 MA's), (9, 28754), (12, 28817), (14, 28907), (19, 29036), (25, 29156), (26, 29180), (27, 29201), (30, 29282),

Gene: Haizum\_41 Start: 29074, Stop: 29736, Start Num: 6

Candidate Starts for Haizum\_41:

(2, 28807), (Start: 6 @29074 has 20 MA's), (9, 29122), (12, 29185), (14, 29275), (16, 29320), (19, 29404), (25, 29524), (26, 29548), (27, 29569), (30, 29650), (33, 29668), (34, 29683), (37, 29716),

Gene: Hank144\_41 Start: 29070, Stop: 29729, Start Num: 6

Candidate Starts for Hank144\_41:

(2, 28800), (Start: 6 @29070 has 20 MA's), (9, 29118), (10, 29133), (11, 29154), (12, 29181), (14, 29271), (19, 29400), (25, 29520), (26, 29544), (27, 29565), (30, 29646),

Gene: Issmi\_41 Start: 29674, Stop: 30336, Start Num: 6

Candidate Starts for Issmi\_41:

(2, 29404), (Start: 6 @29674 has 20 MA's), (9, 29722), (12, 29785), (14, 29875), (16, 29920), (19, 30004), (25, 30124), (26, 30148), (30, 30250), (34, 30283), (37, 30316),

Gene: Janus\_40 Start: 29046, Stop: 29705, Start Num: 6

Candidate Starts for Janus\_40:

(Start: 6 @29046 has 20 MA's), (9, 29094), (12, 29157), (14, 29247), (19, 29376), (25, 29496), (26, 29520), (27, 29541), (30, 29622),

Gene: Jevington\_43 Start: 29464, Stop: 30126, Start Num: 6

Candidate Starts for Jevington\_43:

(Start: 6 @29464 has 20 MA's), (9, 29512), (10, 29527), (11, 29548), (13, 29605), (14, 29665), (16, 29710), (19, 29794), (25, 29914), (26, 29938), (27, 29959),

Gene: Keiki\_30 Start: 21272, Stop: 20601, Start Num: 5

Candidate Starts for Keiki\_30:

(Start: 5 @21272 has 43 MA's), (15, 21059), (16, 21020), (20, 20927), (21, 20918), (22, 20897), (23, 20867), (28, 20732), (30, 20690), (36, 20633), (38, 20612),

Gene: Kubed\_30 Start: 21328, Stop: 20657, Start Num: 5

Candidate Starts for Kubed\_30:

(Start: 5 @21328 has 43 MA's), (7, 21316), (8, 21301), (15, 21115), (16, 21076), (18, 21019), (20, 20983), (21, 20974), (23, 20923), (28, 20788), (30, 20746), (36, 20689), (38, 20668),

Gene: Lauchelly\_30 Start: 21377, Stop: 20706, Start Num: 5

Candidate Starts for Lauchelly\_30:

(Start: 5 @21377 has 43 MA's), (15, 21164), (16, 21125), (20, 21032), (21, 21023), (22, 21002), (23, 20972), (28, 20837), (30, 20795), (36, 20738), (38, 20717),

Gene: Leviosa\_30 Start: 21373, Stop: 20702, Start Num: 5

Candidate Starts for Leviosa\_30:

(Start: 5 @21373 has 43 MA's), (15, 21160), (16, 21121), (18, 21064), (20, 21028), (21, 21019), (22, 20998), (23, 20968), (28, 20833), (30, 20791), (36, 20734), (38, 20713),

Gene: LilBandit\_30 Start: 21167, Stop: 20496, Start Num: 5

Candidate Starts for LilBandit\_30:

(Start: 5 @21167 has 43 MA's), (15, 20954), (16, 20915), (18, 20858), (20, 20822), (21, 20813), (22, 20792), (23, 20762), (28, 20627), (30, 20585), (36, 20528), (38, 20507),

Gene: Loofah\_40 Start: 29235, Stop: 29897, Start Num: 6

Candidate Starts for Loofah\_40:

(Start: 6 @29235 has 20 MA's), (9, 29283), (12, 29346), (13, 29376), (14, 29436), (16, 29481), (19, 29565), (20, 29574), (25, 29685), (26, 29709), (27, 29730), (33, 29829), (34, 29844), (35, 29865),

Gene: MEAK\_30 Start: 21034, Stop: 20363, Start Num: 5

Candidate Starts for MEAK\_30:

(Start: 5 @21034 has 43 MA's), (15, 20821), (16, 20782), (20, 20689), (21, 20680), (22, 20659), (23, 20629), (28, 20494), (30, 20452), (36, 20395), (38, 20374),

Gene: Marav\_43 Start: 29789, Stop: 30451, Start Num: 6

Candidate Starts for Marav\_43:

(Start: 6 @29789 has 20 MA's), (9, 29837), (10, 29852), (11, 29873), (13, 29930), (14, 29990), (16, 30035), (19, 30119), (25, 30239), (26, 30263), (27, 30284), (37, 30431),

Gene: Moyashi\_30 Start: 21139, Stop: 20468, Start Num: 5

Candidate Starts for Moyashi\_30:

(Start: 5 @21139 has 43 MA's), (15, 20926), (16, 20887), (20, 20794), (21, 20785), (22, 20764), (23, 20734), (28, 20599), (30, 20557), (36, 20500), (38, 20479),

Gene: MrAK\_30 Start: 21144, Stop: 20473, Start Num: 5

Candidate Starts for MrAK\_30:

(Start: 5 @21144 has 43 MA's), (15, 20931), (16, 20892), (20, 20799), (21, 20790), (22, 20769), (23, 20739), (28, 20604), (30, 20562), (36, 20505), (38, 20484),

Gene: Nishikigoi\_41 Start: 29074, Stop: 29736, Start Num: 6

Candidate Starts for Nishikigoi\_41:

(2, 28807), (Start: 6 @29074 has 20 MA's), (9, 29122), (12, 29185), (14, 29275), (16, 29320), (19, 29404), (25, 29524), (26, 29548), (27, 29569), (30, 29650), (33, 29668), (34, 29683), (37, 29716),

Gene: Omar\_42 Start: 29302, Stop: 29964, Start Num: 6

Candidate Starts for Omar\_42:

(1, 28975), (2, 29032), (Start: 6 @29302 has 20 MA's), (9, 29350), (12, 29413), (14, 29503), (19, 29632), (25, 29752), (26, 29776), (27, 29797), (30, 29878), (34, 29911),

Gene: Ouroboros\_30 Start: 21354, Stop: 20683, Start Num: 5

Candidate Starts for Ouroboros\_30:

(Start: 5 @21354 has 43 MA's), (15, 21141), (16, 21102), (20, 21009), (21, 21000), (22, 20979), (23, 20949), (28, 20814), (30, 20772), (36, 20715), (38, 20694),

Gene: P1.1\_30 Start: 21372, Stop: 20701, Start Num: 5

Candidate Starts for P1.1\_30:

(Start: 5 @21372 has 43 MA's), (15, 21159), (16, 21120), (18, 21063), (20, 21027), (21, 21018), (22, 20997), (23, 20967), (28, 20832), (30, 20790), (36, 20733), (38, 20712),

Gene: P100.1\_30 Start: 21409, Stop: 20738, Start Num: 5

Candidate Starts for P100.1\_30:

(Start: 5 @21409 has 43 MA's), (15, 21196), (16, 21157), (18, 21100), (20, 21064), (21, 21055), (22, 21034), (23, 21004), (28, 20869), (30, 20827), (36, 20770), (38, 20749),

Gene: P100A\_30 Start: 21359, Stop: 20688, Start Num: 5

Candidate Starts for P100A\_30:

(Start: 5 @21359 has 43 MA's), (15, 21146), (18, 21050), (20, 21014), (21, 21005), (22, 20984), (23, 20954), (28, 20819), (30, 20777), (33, 20756), (36, 20720), (38, 20699),

Gene: P100D\_30 Start: 21352, Stop: 20681, Start Num: 5

Candidate Starts for P100D\_30:

(Start: 5 @21352 has 43 MA's), (15, 21139), (16, 21100), (20, 21007), (21, 20998), (22, 20977), (23, 20947), (28, 20812), (30, 20770), (36, 20713), (38, 20692),

Gene: P101A\_30 Start: 21378, Stop: 20707, Start Num: 5

Candidate Starts for P101A\_30:

(Start: 5 @21378 has 43 MA's), (15, 21165), (16, 21126), (18, 21069), (20, 21033), (21, 21024), (22, 21003), (23, 20973), (28, 20838), (30, 20796), (36, 20739), (38, 20718),

Gene: P104A\_30 Start: 21147, Stop: 20476, Start Num: 5

Candidate Starts for P104A\_30:

(Start: 5 @21147 has 43 MA's), (15, 20934), (16, 20895), (18, 20838), (20, 20802), (21, 20793), (22, 20772), (23, 20742), (28, 20607), (30, 20565), (36, 20508), (38, 20487),

Gene: P104B\_30 Start: 21342, Stop: 20671, Start Num: 5

Candidate Starts for P104B\_30:

(Start: 5 @21342 has 43 MA's), (15, 21129), (16, 21090), (18, 21033), (20, 20997), (21, 20988), (22, 20967), (23, 20937), (28, 20802), (36, 20703), (38, 20682),

Gene: P105\_30 Start: 21007, Stop: 20336, Start Num: 5

Candidate Starts for P105\_30:

(Start: 5 @21007 has 43 MA's), (15, 20794), (16, 20755), (20, 20662), (21, 20653), (22, 20632), (23, 20602), (28, 20467), (36, 20368), (38, 20347),

Gene: P106A\_30 Start: 21433, Stop: 20762, Start Num: 5

Candidate Starts for P106A\_30:

(Start: 5 @21433 has 43 MA's), (15, 21220), (16, 21181), (20, 21088), (21, 21079), (23, 21028), (28, 20893), (30, 20851), (36, 20794), (38, 20773),

Gene: P106C\_31 Start: 21371, Stop: 20700, Start Num: 5

Candidate Starts for P106C\_31:

(Start: 5 @21371 has 43 MA's), (15, 21158), (16, 21119), (20, 21026), (21, 21017), (23, 20966), (28, 20831), (30, 20789), (36, 20732), (38, 20711),

Gene: P106I\_30 Start: 21200, Stop: 20529, Start Num: 5

Candidate Starts for P106I\_30:

(Start: 5 @21200 has 43 MA's), (15, 20987), (16, 20948), (20, 20855), (21, 20846), (23, 20795), (28, 20660), (30, 20618), (36, 20561), (38, 20540),



Gene: P106L\_30 Start: 21371, Stop: 20700, Start Num: 5  
Candidate Starts for P106L\_30:  
(Start: 5 @21371 has 43 MA's), (15, 21158), (16, 21119), (20, 21026), (21, 21017), (23, 20966), (28, 20831), (30, 20789), (36, 20732), (38, 20711),

Gene: P106M\_30 Start: 21371, Stop: 20700, Start Num: 5  
Candidate Starts for P106M\_30:  
(Start: 5 @21371 has 43 MA's), (15, 21158), (16, 21119), (20, 21026), (21, 21017), (23, 20966), (28, 20831), (30, 20789), (36, 20732), (38, 20711),

Gene: P107A\_30 Start: 21387, Stop: 20716, Start Num: 5  
Candidate Starts for P107A\_30:  
(Start: 5 @21387 has 43 MA's), (15, 21174), (16, 21135), (20, 21042), (21, 21033), (22, 21012), (23, 20982), (28, 20847), (36, 20748), (38, 20727),

Gene: P107C\_30 Start: 21324, Stop: 20653, Start Num: 5  
Candidate Starts for P107C\_30:  
(Start: 5 @21324 has 43 MA's), (16, 21072), (20, 20979), (21, 20970), (22, 20949), (24, 20913), (28, 20784), (30, 20742), (36, 20685), (38, 20664),

Gene: P108C\_30 Start: 21338, Stop: 20667, Start Num: 5  
Candidate Starts for P108C\_30:  
(Start: 5 @21338 has 43 MA's), (15, 21125), (16, 21086), (20, 20993), (21, 20984), (22, 20963), (23, 20933), (28, 20798), (30, 20756), (36, 20699), (38, 20678),

Gene: P14.4\_30 Start: 21340, Stop: 20669, Start Num: 5  
Candidate Starts for P14.4\_30:  
(Start: 5 @21340 has 43 MA's), (15, 21127), (16, 21088), (20, 20995), (21, 20986), (22, 20965), (23, 20935), (28, 20800), (30, 20758), (36, 20701), (38, 20680),

Gene: P9.1\_30 Start: 21368, Stop: 20697, Start Num: 5  
Candidate Starts for P9.1\_30:  
(Start: 5 @21368 has 43 MA's), (15, 21155), (16, 21116), (20, 21023), (21, 21014), (23, 20963), (28, 20828), (30, 20786), (36, 20729), (38, 20708),

Gene: PA6\_31 Start: 21332, Stop: 20661, Start Num: 5  
Candidate Starts for PA6\_31:  
(Start: 5 @21332 has 43 MA's), (15, 21119), (16, 21080), (20, 20987), (21, 20978), (22, 20957), (23, 20927), (28, 20792), (30, 20750), (36, 20693), (38, 20672),

Gene: PAD20\_31 Start: 21112, Stop: 20441, Start Num: 5  
Candidate Starts for PAD20\_31:  
(Start: 5 @21112 has 43 MA's), (15, 20899), (16, 20860), (18, 20803), (20, 20767), (21, 20758), (22, 20737), (23, 20707), (28, 20572), (30, 20530), (36, 20473), (38, 20452),

Gene: PAS50\_31 Start: 21277, Stop: 20609, Start Num: 5  
Candidate Starts for PAS50\_31:  
(Start: 5 @21277 has 43 MA's), (15, 21064), (16, 21025), (18, 20968), (20, 20932), (21, 20923), (22, 20902), (23, 20872), (28, 20740), (30, 20698), (31, 20686), (32, 20683), (36, 20641), (38, 20620),

Gene: PHL010M04\_30 Start: 21406, Stop: 20681, Start Num: 3  
Candidate Starts for PHL010M04\_30:

(3, 21406), (4, 21403), (Start: 5 @21352 has 43 MA's), (15, 21139), (16, 21100), (20, 21007), (21, 20998), (22, 20977), (23, 20947), (28, 20812), (30, 20770), (36, 20713), (38, 20692),

Gene: PHL037M02\_30 Start: 21390, Stop: 20665, Start Num: 3

Candidate Starts for PHL037M02\_30:

(3, 21390), (Start: 5 @21336 has 43 MA's), (15, 21123), (16, 21084), (20, 20991), (21, 20982), (22, 20961), (23, 20931), (28, 20796), (30, 20754), (36, 20697), (38, 20676),

Gene: PHL060L00\_30 Start: 21182, Stop: 20511, Start Num: 5

Candidate Starts for PHL060L00\_30:

(Start: 5 @21182 has 43 MA's), (15, 20969), (16, 20930), (20, 20837), (21, 20828), (23, 20777), (28, 20642), (30, 20600), (36, 20543), (38, 20522),

Gene: PHL067M10\_30 Start: 21302, Stop: 20631, Start Num: 5

Candidate Starts for PHL067M10\_30:

(Start: 5 @21302 has 43 MA's), (15, 21089), (16, 21050), (18, 20993), (20, 20957), (21, 20948), (22, 20927), (23, 20897), (28, 20762), (36, 20663), (38, 20642),

Gene: PHL071N05\_30 Start: 21361, Stop: 20690, Start Num: 5

Candidate Starts for PHL071N05\_30:

(Start: 5 @21361 has 43 MA's), (15, 21148), (16, 21109), (20, 21016), (21, 21007), (22, 20986), (23, 20956), (28, 20821), (30, 20779), (36, 20722), (38, 20701),

Gene: PHL111M01\_30 Start: 21059, Stop: 20388, Start Num: 5

Candidate Starts for PHL111M01\_30:

(Start: 5 @21059 has 43 MA's), (15, 20846), (16, 20807), (20, 20714), (21, 20705), (22, 20684), (23, 20654), (28, 20519), (36, 20420), (38, 20399),

Gene: PHL112N00\_30 Start: 21369, Stop: 20698, Start Num: 5

Candidate Starts for PHL112N00\_30:

(Start: 5 @21369 has 43 MA's), (15, 21156), (16, 21117), (18, 21060), (20, 21024), (21, 21015), (22, 20994), (23, 20964), (28, 20829), (30, 20787), (36, 20730), (38, 20709),

Gene: PHL113M01\_30 Start: 21108, Stop: 20437, Start Num: 5

Candidate Starts for PHL113M01\_30:

(Start: 5 @21108 has 43 MA's), (15, 20895), (16, 20856), (20, 20763), (21, 20754), (22, 20733), (23, 20703), (28, 20568), (36, 20469), (38, 20448),

Gene: PHL114L00\_30 Start: 21324, Stop: 20653, Start Num: 5

Candidate Starts for PHL114L00\_30:

(Start: 5 @21324 has 43 MA's), (15, 21111), (16, 21072), (18, 21015), (20, 20979), (21, 20970), (22, 20949), (23, 20919), (28, 20784), (30, 20742), (36, 20685), (38, 20664),

Gene: Pablito\_39 Start: 28612, Stop: 29271, Start Num: 6

Candidate Starts for Pablito\_39:

(Start: 6 @28612 has 20 MA's), (9, 28660), (12, 28723), (14, 28813), (19, 28942), (25, 29062), (26, 29086), (27, 29107), (30, 29188), (37, 29254),

Gene: Paedore\_39 Start: 29220, Stop: 29882, Start Num: 6

Candidate Starts for Paedore\_39:

(Start: 6 @29220 has 20 MA's), (9, 29268), (12, 29331), (13, 29361), (14, 29421), (16, 29466), (19, 29550), (20, 29559), (25, 29670), (26, 29694), (27, 29715), (33, 29814), (34, 29829), (35, 29850),

Gene: Paolo\_44 Start: 29646, Stop: 30308, Start Num: 6

Candidate Starts for Paolo\_44:

(Start: 6 @29646 has 20 MA's), (9, 29694), (10, 29709), (11, 29730), (13, 29787), (14, 29847), (19, 29976), (25, 30096), (26, 30120), (35, 30276), (37, 30288),

Gene: Pirate\_30 Start: 21257, Stop: 20586, Start Num: 5

Candidate Starts for Pirate\_30:

(Start: 5 @21257 has 43 MA's), (15, 21044), (16, 21005), (20, 20912), (21, 20903), (22, 20882), (23, 20852), (28, 20717), (30, 20675), (36, 20618), (38, 20597),

Gene: Procrass1\_30 Start: 21331, Stop: 20660, Start Num: 5

Candidate Starts for Procrass1\_30:

(Start: 5 @21331 has 43 MA's), (15, 21118), (16, 21079), (20, 20986), (21, 20977), (23, 20926), (28, 20791), (30, 20749), (36, 20692), (38, 20671),

Gene: QueenBey\_30 Start: 21314, Stop: 20643, Start Num: 5

Candidate Starts for QueenBey\_30:

(Start: 5 @21314 has 43 MA's), (15, 21101), (16, 21062), (20, 20969), (21, 20960), (22, 20939), (23, 20909), (28, 20774), (30, 20732), (36, 20675), (38, 20654),

Gene: R4\_40 Start: 29375, Stop: 30037, Start Num: 6

Candidate Starts for R4\_40:

(Start: 6 @29375 has 20 MA's), (9, 29423), (12, 29486), (13, 29516), (14, 29576), (16, 29621), (19, 29705), (20, 29714), (25, 29825), (26, 29849), (33, 29969), (34, 29984), (35, 30005),

Gene: Rileysaurus\_30 Start: 21416, Stop: 20691, Start Num: 3

Candidate Starts for Rileysaurus\_30:

(3, 21416), (Start: 5 @21362 has 43 MA's), (15, 21149), (16, 21110), (20, 21017), (21, 21008), (22, 20987), (23, 20957), (28, 20822), (30, 20780), (33, 20759), (36, 20723), (38, 20702),

Gene: SKKY\_30 Start: 21113, Stop: 20442, Start Num: 5

Candidate Starts for SKKY\_30:

(Start: 5 @21113 has 43 MA's), (15, 20900), (16, 20861), (18, 20804), (20, 20768), (21, 20759), (23, 20708), (28, 20573), (30, 20531), (36, 20474), (38, 20453),

Gene: Solid\_30 Start: 21344, Stop: 20673, Start Num: 5

Candidate Starts for Solid\_30:

(Start: 5 @21344 has 43 MA's), (15, 21131), (16, 21092), (20, 20999), (21, 20990), (22, 20969), (23, 20939), (28, 20804), (29, 20768), (30, 20762), (36, 20705), (38, 20684),

Gene: SqueakyClean\_39 Start: 29137, Stop: 29796, Start Num: 6

Candidate Starts for SqueakyClean\_39:

(Start: 6 @29137 has 20 MA's), (9, 29185), (12, 29248), (14, 29338), (19, 29467), (25, 29587), (26, 29611), (27, 29632), (30, 29713),

Gene: Stormborn\_30 Start: 20951, Stop: 20280, Start Num: 5

Candidate Starts for Stormborn\_30:

(3, 21005), (Start: 5 @20951 has 43 MA's), (15, 20738), (16, 20699), (20, 20606), (21, 20597), (22, 20576), (23, 20546), (28, 20411), (36, 20312), (38, 20291),

Gene: Supernova\_30 Start: 21115, Stop: 20444, Start Num: 5

Candidate Starts for Supernova\_30:

(Start: 5 @21115 has 43 MA's), (15, 20902), (16, 20863), (20, 20770), (21, 20761), (22, 20740), (23, 20710), (28, 20575), (30, 20533), (36, 20476), (38, 20455),

Gene: Tefunt\_41 Start: 29076, Stop: 29738, Start Num: 6

Candidate Starts for Tefunt\_41:

(2, 28809), (Start: 6 @29076 has 20 MA's), (9, 29124), (12, 29187), (14, 29277), (16, 29322), (19, 29406), (25, 29526), (26, 29550), (27, 29571), (30, 29652), (33, 29670), (34, 29685), (37, 29718),

Gene: Wizzo\_30 Start: 20840, Stop: 20169, Start Num: 5

Candidate Starts for Wizzo\_30:

(Start: 5 @20840 has 43 MA's), (15, 20627), (16, 20588), (18, 20531), (20, 20495), (21, 20486), (22, 20465), (23, 20435), (28, 20300), (30, 20258), (36, 20201), (38, 20180),

Gene: Zainub\_46 Start: 29607, Stop: 30269, Start Num: 6

Candidate Starts for Zainub\_46:

(Start: 6 @29607 has 20 MA's), (9, 29655), (10, 29670), (11, 29691), (13, 29748), (14, 29808), (19, 29937), (25, 30057), (26, 30081), (35, 30237), (37, 30249),