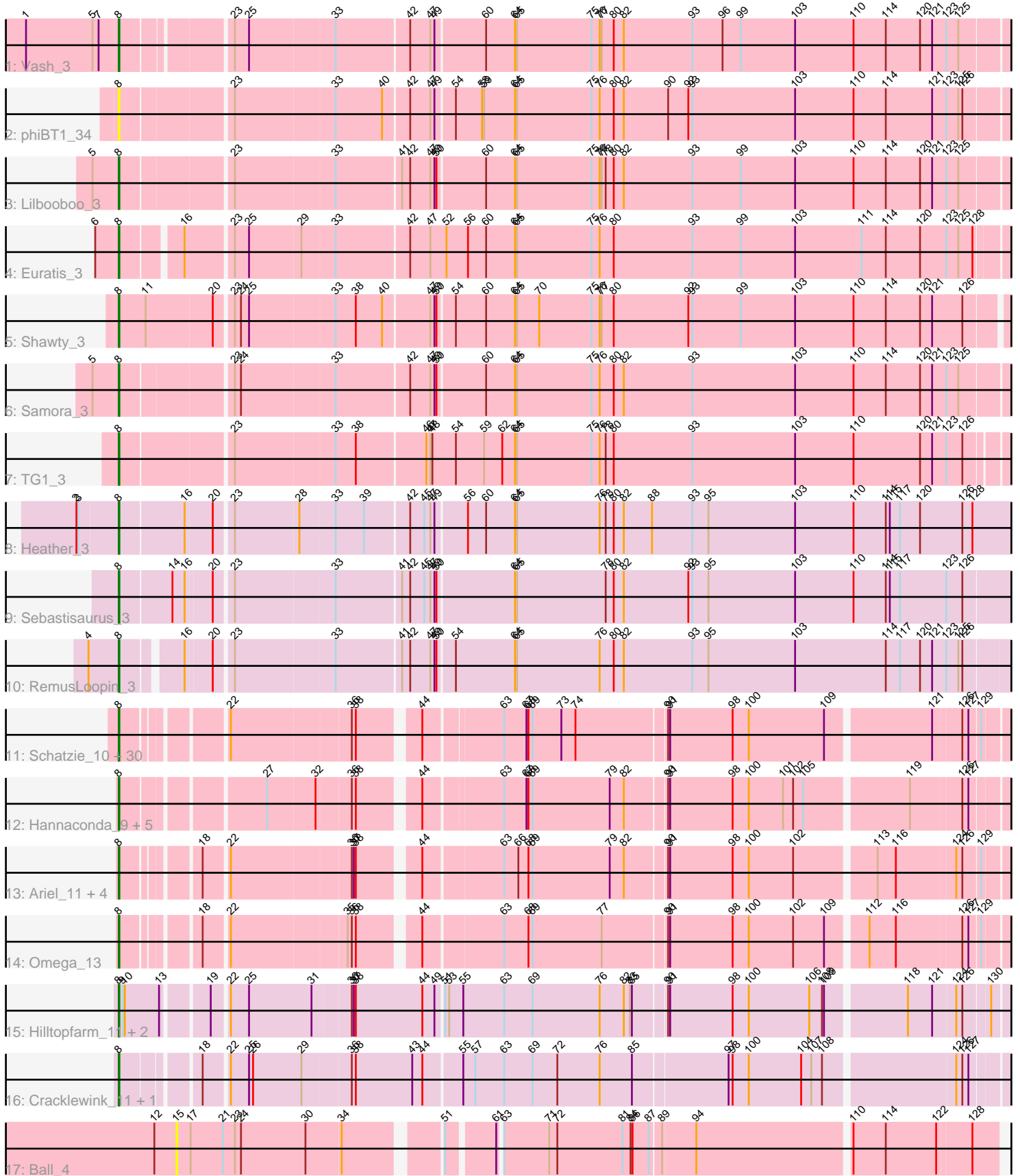


# Pham 202957



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 202957 Report

This analysis was run 01/18/25 on database version 583.

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 202957 has 59 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Vash\_3
- Track 2 : phiBT1\_34
- Track 3 : Lilbooboo\_3
- Track 4 : Euratis\_3
- Track 5 : Shawty\_3
- Track 6 : Samora\_3
- Track 7 : TG1\_3
- Track 8 : Heather\_3
- Track 9 : Sebastisaurus\_3
- Track 10 : RemusLoopin\_3
- Track 11 : Schatzie\_10, Bombitas\_9, Bagrid\_10, Zelink\_12, NihilNomen\_11, EricMillard\_12, Ejimix\_13, Dove\_9, Phoebus\_12, Pound\_11, Kalah2\_12, Optimus\_9, Beem\_12, DmpstrDiver\_11, Hughesyang\_11, HokkenD\_7, Dallas\_11, BAKA\_8, Halley\_12, Klein\_12, Thibault\_8, Minerva\_11, Constella\_7, Duke13\_8, Odette\_11, Yeet\_10, JuicyJay\_13, Wanda\_12, Bobby\_13, ThreeRngTarjay\_11, Redno2\_11
- Track 12 : Hannaconda\_9, Superphikiman\_12, MiaZeal\_12, Porcelain\_12, Courthouse\_12, KashFlow\_6
- Track 13 : Ariel\_11, Squint\_12, Lucky2013\_12, LittleE\_11, Gonephishing\_12
- Track 14 : Omega\_13
- Track 15 : Hilltopfarm\_11, AuntGwenStacy\_11, Typha\_11
- Track 16 : Cracklewink\_11, Bipper\_11
- Track 17 : Ball\_4

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

The start number called the most often in the published annotations is 8, it was called in 53 of the 53 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Ariel\_11, AuntGwenStacy\_11, BAKA\_8, Bagrid\_10, Beem\_12, Bipper\_11, Bobby\_13, Bombitas\_9, Constella\_7, Courthouse\_12, Cracklewink\_11, Dallas\_11, DmpstrDiver\_11, Dove\_9, Duke13\_8, Ejimix\_13, EricMillard\_12, Euratis\_3, Gonephishing\_12, Halley\_12, Hannaconda\_9, Heather\_3, Hilltopfarm\_11, HokkenD\_7, Hughesyang\_11, JuicyJay\_13, Kalah2\_12, KashFlow\_6, Klein\_12, Lilbooboo\_3, LittleE\_11, Lucky2013\_12, MiaZeal\_12, Minerva\_11, NihilNomen\_11, Odette\_11, Omega\_13, Optimus\_9, Phoebus\_12, Porcelain\_12, Pound\_11, Redno2\_11, RemusLoopin\_3, Samora\_3, Schatzie\_10, Sebastisaurus\_3, Shawty\_3, Squint\_12, Superphikiman\_12, TG1\_3, Thibault\_8, ThreeRngTarjay\_11, Typha\_11, Vash\_3, Wanda\_12, Yeet\_10, Zelink\_12, phiBT1\_34,

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

- 

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

- Ball\_4,

### Summary by start number:

Start 8:

- Found in 58 of 59 ( 98.3% ) of genes in pham
- Manual Annotations of this start: 53 of 53
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ariel\_11 (J), AuntGwenStacy\_11 (Y), BAKA\_8 (J), Bagrid\_10 (J), Beem\_12 (J), Bipper\_11 (Y), Bobby\_13 (J), Bombitas\_9 (J), Constella\_7 (J), Courthouse\_12 (J), Cracklewink\_11 (Y), Dallas\_11 (J), DmpstrDiver\_11 (J), Dove\_9 (J), Duke13\_8 (J), Ejimix\_13 (J), EricMillard\_12 (J), Euratis\_3 (BB1), Gonephishing\_12 (J), Halley\_12 (J), Hannaconda\_9 (J), Heather\_3 (BB2), Hilltopfarm\_11 (Y), HokkenD\_7 (J), Hughesyang\_11 (J), JuicyJay\_13 (J), Kalah2\_12 (J), KashFlow\_6 (J), Klein\_12 (J), Lilbooboo\_3 (BB1), LittleE\_11 (J), Lucky2013\_12 (J), MiaZeal\_12 (J), Minerva\_11 (J), NihilNomen\_11 (J), Odette\_11 (J), Omega\_13 (J), Optimus\_9 (J), Phoebus\_12 (J), Porcelain\_12 (J), Pound\_11 (J), Redno2\_11 (J), RemusLoopin\_3 (BB2), Samora\_3 (BB1), Schatzie\_10 (J), Sebastisaurus\_3 (BB2), Shawty\_3 (BB1), Squint\_12 (J), Superphikiman\_12 (J), TG1\_3 (BB1), Thibault\_8 (J), ThreeRngTarjay\_11 (J), Typha\_11 (Y), Vash\_3 (BB1), Wanda\_12 (J), Yeet\_10 (J), Zelink\_12 (J), phiBT1\_34 (BB1),

Start 15:

- Found in 1 of 59 ( 1.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ball\_4 (singleton),

### Summary by clusters:

There are 5 clusters represented in this pham: Y, singleton, J, BB2, BB1,

Info for manual annotations of cluster BB1:

- Start number 8 was manually annotated 6 times for cluster BB1.

Info for manual annotations of cluster BB2:

- Start number 8 was manually annotated 3 times for cluster BB2.

Info for manual annotations of cluster J:

- Start number 8 was manually annotated 40 times for cluster J.

Info for manual annotations of cluster Y:

- Start number 8 was manually annotated 4 times for cluster Y.

**Gene Information:**

Gene: Ariel\_11 Start: 4635, Stop: 5864, Start Num: 8

Candidate Starts for Ariel\_11:

(Start: 8 @4635 has 53 MA's), (18, 4728), (22, 4761), (36, 4932), (37, 4935), (38, 4938), (44, 5016), (63, 5127), (66, 5148), (68, 5163), (69, 5169), (79, 5283), (82, 5304), (90, 5361), (91, 5364), (98, 5457), (100, 5481), (102, 5547), (113, 5658), (116, 5685), (124, 5769), (126, 5778), (129, 5802),

Gene: AuntGwenStacy\_11 Start: 6484, Stop: 7815, Start Num: 8

Candidate Starts for AuntGwenStacy\_11:

(Start: 8 @6484 has 53 MA's), (9, 6490), (10, 6493), (13, 6541), (19, 6598), (22, 6619), (25, 6646), (31, 6739), (36, 6790), (37, 6793), (38, 6796), (44, 6895), (49, 6913), (51, 6922), (53, 6928), (55, 6949), (63, 7009), (69, 7051), (76, 7150), (82, 7186), (83, 7195), (85, 7198), (90, 7243), (91, 7246), (98, 7339), (100, 7363), (106, 7453), (108, 7471), (109, 7474), (118, 7585), (121, 7621), (124, 7654), (126, 7663), (130, 7699),

Gene: BAKA\_8 Start: 5468, Stop: 6691, Start Num: 8

Candidate Starts for BAKA\_8:

(Start: 8 @5468 has 53 MA's), (22, 5594), (36, 5765), (38, 5771), (44, 5849), (63, 5954), (67, 5987), (68, 5990), (69, 5996), (73, 6038), (74, 6059), (90, 6188), (91, 6191), (98, 6284), (100, 6308), (109, 6419), (121, 6566), (126, 6605), (127, 6614), (129, 6629),

Gene: Bagrid\_10 Start: 5265, Stop: 6488, Start Num: 8

Candidate Starts for Bagrid\_10:

(Start: 8 @5265 has 53 MA's), (22, 5391), (36, 5562), (38, 5568), (44, 5646), (63, 5751), (67, 5784), (68, 5787), (69, 5793), (73, 5835), (74, 5856), (90, 5985), (91, 5988), (98, 6081), (100, 6105), (109, 6216), (121, 6363), (126, 6402), (127, 6411), (129, 6426),

Gene: Ball\_4 Start: 2192, Stop: 3328, Start Num: 15

Candidate Starts for Ball\_4:

(12, 2159), (15, 2192), (17, 2213), (21, 2261), (23, 2279), (24, 2288), (30, 2384), (34, 2435), (51, 2558), (61, 2621), (63, 2624), (71, 2690), (72, 2702), (81, 2798), (84, 2810), (86, 2813), (87, 2837), (89, 2852), (94, 2900), (110, 3119), (114, 3167), (122, 3242), (128, 3290),

Gene: Beem\_12 Start: 5831, Stop: 7054, Start Num: 8

Candidate Starts for Beem\_12:

(Start: 8 @5831 has 53 MA's), (22, 5957), (36, 6128), (38, 6134), (44, 6212), (63, 6317), (67, 6350), (68, 6353), (69, 6359), (73, 6401), (74, 6422), (90, 6551), (91, 6554), (98, 6647), (100, 6671), (109, 6782), (121, 6929), (126, 6968), (127, 6977), (129, 6992),

Gene: Bipper\_11 Start: 6524, Stop: 7870, Start Num: 8

Candidate Starts for Bipper\_11:

(Start: 8 @6524 has 53 MA's), (18, 6623), (22, 6656), (25, 6683), (26, 6689), (29, 6761), (36, 6830), (38, 6836), (43, 6920), (44, 6935), (55, 6989), (57, 7007), (63, 7049), (69, 7091), (72, 7127), (76, 7190), (85, 7238), (97, 7373), (98, 7379), (100, 7403), (104, 7481), (107, 7496), (108, 7511), (124, 7694),

(126, 7703), (127, 7712),

Gene: Bobby\_13 Start: 5558, Stop: 6781, Start Num: 8

Candidate Starts for Bobby\_13:

(Start: 8 @5558 has 53 MA's), (22, 5684), (36, 5855), (38, 5861), (44, 5939), (63, 6044), (67, 6077), (68, 6080), (69, 6086), (73, 6128), (74, 6149), (90, 6278), (91, 6281), (98, 6374), (100, 6398), (109, 6509), (121, 6656), (126, 6695), (127, 6704), (129, 6719),

Gene: Bombitas\_9 Start: 5140, Stop: 6363, Start Num: 8

Candidate Starts for Bombitas\_9:

(Start: 8 @5140 has 53 MA's), (22, 5266), (36, 5437), (38, 5443), (44, 5521), (63, 5626), (67, 5659), (68, 5662), (69, 5668), (73, 5710), (74, 5731), (90, 5860), (91, 5863), (98, 5956), (100, 5980), (109, 6091), (121, 6238), (126, 6277), (127, 6286), (129, 6301),

Gene: Constella\_7 Start: 4649, Stop: 5872, Start Num: 8

Candidate Starts for Constella\_7:

(Start: 8 @4649 has 53 MA's), (22, 4775), (36, 4946), (38, 4952), (44, 5030), (63, 5135), (67, 5168), (68, 5171), (69, 5177), (73, 5219), (74, 5240), (90, 5369), (91, 5372), (98, 5465), (100, 5489), (109, 5600), (121, 5747), (126, 5786), (127, 5795), (129, 5810),

Gene: Courthouse\_12 Start: 5434, Stop: 6669, Start Num: 8

Candidate Starts for Courthouse\_12:

(Start: 8 @5434 has 53 MA's), (27, 5620), (32, 5689), (36, 5737), (38, 5743), (44, 5821), (63, 5929), (67, 5962), (68, 5965), (69, 5971), (79, 6085), (82, 6106), (90, 6163), (91, 6166), (98, 6259), (100, 6283), (101, 6334), (102, 6349), (105, 6364), (119, 6508), (126, 6580), (127, 6589),

Gene: Cracklewink\_11 Start: 6524, Stop: 7870, Start Num: 8

Candidate Starts for Cracklewink\_11:

(Start: 8 @6524 has 53 MA's), (18, 6623), (22, 6656), (25, 6683), (26, 6689), (29, 6761), (36, 6830), (38, 6836), (43, 6920), (44, 6935), (55, 6989), (57, 7007), (63, 7049), (69, 7091), (72, 7127), (76, 7190), (85, 7238), (97, 7373), (98, 7379), (100, 7403), (104, 7481), (107, 7496), (108, 7511), (124, 7694), (126, 7703), (127, 7712),

Gene: Dallas\_11 Start: 5370, Stop: 6593, Start Num: 8

Candidate Starts for Dallas\_11:

(Start: 8 @5370 has 53 MA's), (22, 5496), (36, 5667), (38, 5673), (44, 5751), (63, 5856), (67, 5889), (68, 5892), (69, 5898), (73, 5940), (74, 5961), (90, 6090), (91, 6093), (98, 6186), (100, 6210), (109, 6321), (121, 6468), (126, 6507), (127, 6516), (129, 6531),

Gene: DmpstrDiver\_11 Start: 6011, Stop: 7234, Start Num: 8

Candidate Starts for DmpstrDiver\_11:

(Start: 8 @6011 has 53 MA's), (22, 6137), (36, 6308), (38, 6314), (44, 6392), (63, 6497), (67, 6530), (68, 6533), (69, 6539), (73, 6581), (74, 6602), (90, 6731), (91, 6734), (98, 6827), (100, 6851), (109, 6962), (121, 7109), (126, 7148), (127, 7157), (129, 7172),

Gene: Dove\_9 Start: 5139, Stop: 6362, Start Num: 8

Candidate Starts for Dove\_9:

(Start: 8 @5139 has 53 MA's), (22, 5265), (36, 5436), (38, 5442), (44, 5520), (63, 5625), (67, 5658), (68, 5661), (69, 5667), (73, 5709), (74, 5730), (90, 5859), (91, 5862), (98, 5955), (100, 5979), (109, 6090), (121, 6237), (126, 6276), (127, 6285), (129, 6300),

Gene: Duke13\_8 Start: 5396, Stop: 6619, Start Num: 8

Candidate Starts for Duke13\_8:

(Start: 8 @5396 has 53 MA's), (22, 5522), (36, 5693), (38, 5699), (44, 5777), (63, 5882), (67, 5915), (68, 5918), (69, 5924), (73, 5966), (74, 5987), (90, 6116), (91, 6119), (98, 6212), (100, 6236), (109, 6347), (121, 6494), (126, 6533), (127, 6542), (129, 6557),

Gene: Ejimix\_13 Start: 6581, Stop: 7804, Start Num: 8

Candidate Starts for Ejimix\_13:

(Start: 8 @6581 has 53 MA's), (22, 6707), (36, 6878), (38, 6884), (44, 6962), (63, 7067), (67, 7100), (68, 7103), (69, 7109), (73, 7151), (74, 7172), (90, 7301), (91, 7304), (98, 7397), (100, 7421), (109, 7532), (121, 7679), (126, 7718), (127, 7727), (129, 7742),

Gene: EricMillard\_12 Start: 6116, Stop: 7339, Start Num: 8

Candidate Starts for EricMillard\_12:

(Start: 8 @6116 has 53 MA's), (22, 6242), (36, 6413), (38, 6419), (44, 6497), (63, 6602), (67, 6635), (68, 6638), (69, 6644), (73, 6686), (74, 6707), (90, 6836), (91, 6839), (98, 6932), (100, 6956), (109, 7067), (121, 7214), (126, 7253), (127, 7262), (129, 7277),

Gene: Euratis\_3 Start: 2222, Stop: 3574, Start Num: 8

Candidate Starts for Euratis\_3:

(6, 2192), (Start: 8 @2222 has 53 MA's), (16, 2300), (23, 2366), (25, 2387), (29, 2462), (33, 2510), (42, 2615), (47, 2645), (52, 2669), (56, 2699), (60, 2726), (64, 2768), (65, 2771), (75, 2882), (76, 2894), (80, 2915), (93, 3032), (99, 3104), (103, 3185), (111, 3284), (114, 3320), (120, 3371), (123, 3410), (125, 3428), (128, 3449),

Gene: Gonephishing\_12 Start: 5962, Stop: 7191, Start Num: 8

Candidate Starts for Gonephishing\_12:

(Start: 8 @5962 has 53 MA's), (18, 6055), (22, 6088), (36, 6259), (37, 6262), (38, 6265), (44, 6343), (63, 6454), (66, 6475), (68, 6490), (69, 6496), (79, 6610), (82, 6631), (90, 6688), (91, 6691), (98, 6784), (100, 6808), (102, 6874), (113, 6985), (116, 7012), (124, 7096), (126, 7105), (129, 7129),

Gene: Halley\_12 Start: 5831, Stop: 7054, Start Num: 8

Candidate Starts for Halley\_12:

(Start: 8 @5831 has 53 MA's), (22, 5957), (36, 6128), (38, 6134), (44, 6212), (63, 6317), (67, 6350), (68, 6353), (69, 6359), (73, 6401), (74, 6422), (90, 6551), (91, 6554), (98, 6647), (100, 6671), (109, 6782), (121, 6929), (126, 6968), (127, 6977), (129, 6992),

Gene: Hannaconda\_9 Start: 4114, Stop: 5349, Start Num: 8

Candidate Starts for Hannaconda\_9:

(Start: 8 @4114 has 53 MA's), (27, 4300), (32, 4369), (36, 4417), (38, 4423), (44, 4501), (63, 4609), (67, 4642), (68, 4645), (69, 4651), (79, 4765), (82, 4786), (90, 4843), (91, 4846), (98, 4939), (100, 4963), (101, 5014), (102, 5029), (105, 5044), (119, 5188), (126, 5260), (127, 5269),

Gene: Heather\_3 Start: 2179, Stop: 3543, Start Num: 8

Candidate Starts for Heather\_3:

(2, 2119), (3, 2122), (Start: 8 @2179 has 53 MA's), (16, 2272), (20, 2311), (23, 2335), (28, 2428), (33, 2479), (39, 2521), (42, 2584), (45, 2605), (47, 2614), (49, 2620), (56, 2662), (60, 2689), (64, 2731), (65, 2734), (76, 2857), (78, 2866), (80, 2878), (82, 2893), (88, 2935), (93, 2995), (95, 3019), (103, 3148), (110, 3235), (114, 3283), (115, 3289), (117, 3304), (120, 3334), (126, 3397), (128, 3412),

Gene: Hilltopfarm\_11 Start: 6514, Stop: 7845, Start Num: 8

Candidate Starts for Hilltopfarm\_11:

(Start: 8 @6514 has 53 MA's), (9, 6520), (10, 6523), (13, 6571), (19, 6628), (22, 6649), (25, 6676), (31, 6769), (36, 6820), (37, 6823), (38, 6826), (44, 6925), (49, 6943), (51, 6952), (53, 6958), (55, 6979), (63, 7039), (69, 7081), (76, 7180), (82, 7216), (83, 7225), (85, 7228), (90, 7273), (91, 7276), (98, 7369),

(100, 7393), (106, 7483), (108, 7501), (109, 7504), (118, 7615), (121, 7651), (124, 7684), (126, 7693), (130, 7729),

Gene: HokkenD\_7 Start: 5399, Stop: 6622, Start Num: 8

Candidate Starts for HokkenD\_7:

(Start: 8 @5399 has 53 MA's), (22, 5525), (36, 5696), (38, 5702), (44, 5780), (63, 5885), (67, 5918), (68, 5921), (69, 5927), (73, 5969), (74, 5990), (90, 6119), (91, 6122), (98, 6215), (100, 6239), (109, 6350), (121, 6497), (126, 6536), (127, 6545), (129, 6560),

Gene: Hughesyang\_11 Start: 6011, Stop: 7234, Start Num: 8

Candidate Starts for Hughesyang\_11:

(Start: 8 @6011 has 53 MA's), (22, 6137), (36, 6308), (38, 6314), (44, 6392), (63, 6497), (67, 6530), (68, 6533), (69, 6539), (73, 6581), (74, 6602), (90, 6731), (91, 6734), (98, 6827), (100, 6851), (109, 6962), (121, 7109), (126, 7148), (127, 7157), (129, 7172),

Gene: JuicyJay\_13 Start: 6661, Stop: 7884, Start Num: 8

Candidate Starts for JuicyJay\_13:

(Start: 8 @6661 has 53 MA's), (22, 6787), (36, 6958), (38, 6964), (44, 7042), (63, 7147), (67, 7180), (68, 7183), (69, 7189), (73, 7231), (74, 7252), (90, 7381), (91, 7384), (98, 7477), (100, 7501), (109, 7612), (121, 7759), (126, 7798), (127, 7807), (129, 7822),

Gene: Kalah2\_12 Start: 6430, Stop: 7653, Start Num: 8

Candidate Starts for Kalah2\_12:

(Start: 8 @6430 has 53 MA's), (22, 6556), (36, 6727), (38, 6733), (44, 6811), (63, 6916), (67, 6949), (68, 6952), (69, 6958), (73, 7000), (74, 7021), (90, 7150), (91, 7153), (98, 7246), (100, 7270), (109, 7381), (121, 7528), (126, 7567), (127, 7576), (129, 7591),

Gene: KashFlow\_6 Start: 3680, Stop: 4915, Start Num: 8

Candidate Starts for KashFlow\_6:

(Start: 8 @3680 has 53 MA's), (27, 3866), (32, 3935), (36, 3983), (38, 3989), (44, 4067), (63, 4175), (67, 4208), (68, 4211), (69, 4217), (79, 4331), (82, 4352), (90, 4409), (91, 4412), (98, 4505), (100, 4529), (101, 4580), (102, 4595), (105, 4610), (119, 4754), (126, 4826), (127, 4835),

Gene: Klein\_12 Start: 5407, Stop: 6630, Start Num: 8

Candidate Starts for Klein\_12:

(Start: 8 @5407 has 53 MA's), (22, 5533), (36, 5704), (38, 5710), (44, 5788), (63, 5893), (67, 5926), (68, 5929), (69, 5935), (73, 5977), (74, 5998), (90, 6127), (91, 6130), (98, 6223), (100, 6247), (109, 6358), (121, 6505), (126, 6544), (127, 6553), (129, 6568),

Gene: Lilbooboo\_3 Start: 2201, Stop: 3571, Start Num: 8

Candidate Starts for Lilbooboo\_3:

(5, 2165), (Start: 8 @2201 has 53 MA's), (23, 2354), (33, 2498), (41, 2591), (42, 2603), (47, 2633), (49, 2639), (50, 2642), (60, 2708), (64, 2750), (65, 2753), (75, 2864), (76, 2876), (77, 2879), (78, 2885), (80, 2897), (82, 2912), (93, 3014), (99, 3086), (103, 3167), (110, 3254), (114, 3302), (120, 3353), (121, 3371), (123, 3392), (125, 3410),

Gene: LittleE\_11 Start: 5813, Stop: 7042, Start Num: 8

Candidate Starts for LittleE\_11:

(Start: 8 @5813 has 53 MA's), (18, 5906), (22, 5939), (36, 6110), (37, 6113), (38, 6116), (44, 6194), (63, 6305), (66, 6326), (68, 6341), (69, 6347), (79, 6461), (82, 6482), (90, 6539), (91, 6542), (98, 6635), (100, 6659), (102, 6725), (113, 6836), (116, 6863), (124, 6947), (126, 6956), (129, 6980),

Gene: Lucky2013\_12 Start: 5184, Stop: 6413, Start Num: 8

Candidate Starts for Lucky2013\_12:

(Start: 8 @5184 has 53 MA's), (18, 5277), (22, 5310), (36, 5481), (37, 5484), (38, 5487), (44, 5565), (63, 5676), (66, 5697), (68, 5712), (69, 5718), (79, 5832), (82, 5853), (90, 5910), (91, 5913), (98, 6006), (100, 6030), (102, 6096), (113, 6207), (116, 6234), (124, 6318), (126, 6327), (129, 6351),

Gene: MiaZeal\_12 Start: 5253, Stop: 6488, Start Num: 8

Candidate Starts for MiaZeal\_12:

(Start: 8 @5253 has 53 MA's), (27, 5439), (32, 5508), (36, 5556), (38, 5562), (44, 5640), (63, 5748), (67, 5781), (68, 5784), (69, 5790), (79, 5904), (82, 5925), (90, 5982), (91, 5985), (98, 6078), (100, 6102), (101, 6153), (102, 6168), (105, 6183), (119, 6327), (126, 6399), (127, 6408),

Gene: Minerva\_11 Start: 5890, Stop: 7113, Start Num: 8

Candidate Starts for Minerva\_11:

(Start: 8 @5890 has 53 MA's), (22, 6016), (36, 6187), (38, 6193), (44, 6271), (63, 6376), (67, 6409), (68, 6412), (69, 6418), (73, 6460), (74, 6481), (90, 6610), (91, 6613), (98, 6706), (100, 6730), (109, 6841), (121, 6988), (126, 7027), (127, 7036), (129, 7051),

Gene: NihilNomen\_11 Start: 5890, Stop: 7113, Start Num: 8

Candidate Starts for NihilNomen\_11:

(Start: 8 @5890 has 53 MA's), (22, 6016), (36, 6187), (38, 6193), (44, 6271), (63, 6376), (67, 6409), (68, 6412), (69, 6418), (73, 6460), (74, 6481), (90, 6610), (91, 6613), (98, 6706), (100, 6730), (109, 6841), (121, 6988), (126, 7027), (127, 7036), (129, 7051),

Gene: Odette\_11 Start: 5369, Stop: 6592, Start Num: 8

Candidate Starts for Odette\_11:

(Start: 8 @5369 has 53 MA's), (22, 5495), (36, 5666), (38, 5672), (44, 5750), (63, 5855), (67, 5888), (68, 5891), (69, 5897), (73, 5939), (74, 5960), (90, 6089), (91, 6092), (98, 6185), (100, 6209), (109, 6320), (121, 6467), (126, 6506), (127, 6515), (129, 6530),

Gene: Omega\_13 Start: 7158, Stop: 8387, Start Num: 8

Candidate Starts for Omega\_13:

(Start: 8 @7158 has 53 MA's), (18, 7251), (22, 7284), (35, 7449), (36, 7455), (38, 7461), (44, 7539), (63, 7650), (68, 7686), (69, 7692), (77, 7794), (90, 7884), (91, 7887), (98, 7980), (100, 8004), (102, 8070), (109, 8115), (112, 8169), (116, 8208), (126, 8301), (127, 8310), (129, 8325),

Gene: Optimus\_9 Start: 5396, Stop: 6619, Start Num: 8

Candidate Starts for Optimus\_9:

(Start: 8 @5396 has 53 MA's), (22, 5522), (36, 5693), (38, 5699), (44, 5777), (63, 5882), (67, 5915), (68, 5918), (69, 5924), (73, 5966), (74, 5987), (90, 6116), (91, 6119), (98, 6212), (100, 6236), (109, 6347), (121, 6494), (126, 6533), (127, 6542), (129, 6557),

Gene: Phoebus\_12 Start: 6116, Stop: 7339, Start Num: 8

Candidate Starts for Phoebus\_12:

(Start: 8 @6116 has 53 MA's), (22, 6242), (36, 6413), (38, 6419), (44, 6497), (63, 6602), (67, 6635), (68, 6638), (69, 6644), (73, 6686), (74, 6707), (90, 6836), (91, 6839), (98, 6932), (100, 6956), (109, 7067), (121, 7214), (126, 7253), (127, 7262), (129, 7277),

Gene: Porcelain\_12 Start: 5253, Stop: 6488, Start Num: 8

Candidate Starts for Porcelain\_12:

(Start: 8 @5253 has 53 MA's), (27, 5439), (32, 5508), (36, 5556), (38, 5562), (44, 5640), (63, 5748), (67, 5781), (68, 5784), (69, 5790), (79, 5904), (82, 5925), (90, 5982), (91, 5985), (98, 6078), (100, 6102), (101, 6153), (102, 6168), (105, 6183), (119, 6327), (126, 6399), (127, 6408),



Gene: Pound\_11 Start: 5886, Stop: 7109, Start Num: 8

Candidate Starts for Pound\_11:

(Start: 8 @5886 has 53 MA's), (22, 6012), (36, 6183), (38, 6189), (44, 6267), (63, 6372), (67, 6405), (68, 6408), (69, 6414), (73, 6456), (74, 6477), (90, 6606), (91, 6609), (98, 6702), (100, 6726), (109, 6837), (121, 6984), (126, 7023), (127, 7032), (129, 7047),

Gene: Redno2\_11 Start: 5601, Stop: 6824, Start Num: 8

Candidate Starts for Redno2\_11:

(Start: 8 @5601 has 53 MA's), (22, 5727), (36, 5898), (38, 5904), (44, 5982), (63, 6087), (67, 6120), (68, 6123), (69, 6129), (73, 6171), (74, 6192), (90, 6321), (91, 6324), (98, 6417), (100, 6441), (109, 6552), (121, 6699), (126, 6738), (127, 6747), (129, 6762),

Gene: RemusLoopin\_3 Start: 2182, Stop: 3525, Start Num: 8

Candidate Starts for RemusLoopin\_3:

(4, 2137), (Start: 8 @2182 has 53 MA's), (16, 2260), (20, 2296), (23, 2320), (33, 2464), (41, 2557), (42, 2569), (47, 2599), (49, 2605), (50, 2608), (54, 2629), (64, 2716), (65, 2719), (76, 2842), (80, 2863), (82, 2878), (93, 2980), (95, 3004), (103, 3133), (114, 3268), (117, 3289), (120, 3319), (121, 3337), (123, 3358), (125, 3376), (126, 3382),

Gene: Samora\_3 Start: 2204, Stop: 3595, Start Num: 8

Candidate Starts for Samora\_3:

(5, 2168), (Start: 8 @2204 has 53 MA's), (23, 2357), (24, 2366), (33, 2501), (42, 2606), (47, 2636), (49, 2642), (50, 2645), (60, 2711), (64, 2753), (65, 2756), (75, 2867), (76, 2879), (80, 2900), (82, 2915), (93, 3017), (103, 3170), (110, 3257), (114, 3305), (120, 3356), (121, 3374), (123, 3395), (125, 3413),

Gene: Schatzie\_10 Start: 5140, Stop: 6363, Start Num: 8

Candidate Starts for Schatzie\_10:

(Start: 8 @5140 has 53 MA's), (22, 5266), (36, 5437), (38, 5443), (44, 5521), (63, 5626), (67, 5659), (68, 5662), (69, 5668), (73, 5710), (74, 5731), (90, 5860), (91, 5863), (98, 5956), (100, 5980), (109, 6091), (121, 6238), (126, 6277), (127, 6286), (129, 6301),

Gene: Sebastisaurus\_3 Start: 2190, Stop: 3551, Start Num: 8

Candidate Starts for Sebastisaurus\_3:

(Start: 8 @2190 has 53 MA's), (14, 2265), (16, 2283), (20, 2319), (23, 2343), (33, 2487), (41, 2580), (42, 2592), (45, 2613), (47, 2622), (49, 2628), (50, 2631), (64, 2739), (65, 2742), (78, 2874), (80, 2886), (82, 2901), (92, 2997), (93, 3003), (95, 3027), (103, 3156), (110, 3243), (114, 3291), (115, 3297), (117, 3312), (123, 3381), (126, 3405),

Gene: Shawty\_3 Start: 2202, Stop: 3572, Start Num: 8

Candidate Starts for Shawty\_3:

(Start: 8 @2202 has 53 MA's), (11, 2241), (20, 2337), (23, 2361), (24, 2370), (25, 2382), (33, 2505), (38, 2535), (40, 2574), (47, 2640), (49, 2646), (50, 2649), (54, 2670), (60, 2715), (64, 2757), (65, 2760), (70, 2793), (75, 2871), (76, 2883), (77, 2886), (80, 2904), (92, 3015), (93, 3021), (99, 3093), (103, 3174), (110, 3261), (114, 3309), (120, 3360), (121, 3378), (126, 3423),

Gene: Squint\_12 Start: 5184, Stop: 6413, Start Num: 8

Candidate Starts for Squint\_12:

(Start: 8 @5184 has 53 MA's), (18, 5277), (22, 5310), (36, 5481), (37, 5484), (38, 5487), (44, 5565), (63, 5676), (66, 5697), (68, 5712), (69, 5718), (79, 5832), (82, 5853), (90, 5910), (91, 5913), (98, 6006), (100, 6030), (102, 6096), (113, 6207), (116, 6234), (124, 6318), (126, 6327), (129, 6351),

Gene: Superphikiman\_12 Start: 5434, Stop: 6669, Start Num: 8

Candidate Starts for Superphikiman\_12:

(Start: 8 @5434 has 53 MA's), (27, 5620), (32, 5689), (36, 5737), (38, 5743), (44, 5821), (63, 5929), (67, 5962), (68, 5965), (69, 5971), (79, 6085), (82, 6106), (90, 6163), (91, 6166), (98, 6259), (100, 6283), (101, 6334), (102, 6349), (105, 6364), (119, 6508), (126, 6580), (127, 6589),

Gene: TG1\_3 Start: 2208, Stop: 3587, Start Num: 8

Candidate Starts for TG1\_3:

(Start: 8 @2208 has 53 MA's), (23, 2364), (33, 2508), (38, 2538), (46, 2637), (47, 2643), (48, 2646), (54, 2679), (59, 2721), (62, 2748), (64, 2766), (65, 2769), (75, 2880), (76, 2892), (78, 2901), (80, 2913), (93, 3030), (103, 3183), (110, 3270), (120, 3369), (121, 3387), (123, 3408), (126, 3432),

Gene: Thibault\_8 Start: 5396, Stop: 6619, Start Num: 8

Candidate Starts for Thibault\_8:

(Start: 8 @5396 has 53 MA's), (22, 5522), (36, 5693), (38, 5699), (44, 5777), (63, 5882), (67, 5915), (68, 5918), (69, 5924), (73, 5966), (74, 5987), (90, 6116), (91, 6119), (98, 6212), (100, 6236), (109, 6347), (121, 6494), (126, 6533), (127, 6542), (129, 6557),

Gene: ThreeRngTarjay\_11 Start: 5886, Stop: 7109, Start Num: 8

Candidate Starts for ThreeRngTarjay\_11:

(Start: 8 @5886 has 53 MA's), (22, 6012), (36, 6183), (38, 6189), (44, 6267), (63, 6372), (67, 6405), (68, 6408), (69, 6414), (73, 6456), (74, 6477), (90, 6606), (91, 6609), (98, 6702), (100, 6726), (109, 6837), (121, 6984), (126, 7023), (127, 7032), (129, 7047),

Gene: Typha\_11 Start: 6484, Stop: 7815, Start Num: 8

Candidate Starts for Typha\_11:

(Start: 8 @6484 has 53 MA's), (9, 6490), (10, 6493), (13, 6541), (19, 6598), (22, 6619), (25, 6646), (31, 6739), (36, 6790), (37, 6793), (38, 6796), (44, 6895), (49, 6913), (51, 6922), (53, 6928), (55, 6949), (63, 7009), (69, 7051), (76, 7150), (82, 7186), (83, 7195), (85, 7198), (90, 7243), (91, 7246), (98, 7339), (100, 7363), (106, 7453), (108, 7471), (109, 7474), (118, 7585), (121, 7621), (124, 7654), (126, 7663), (130, 7699),

Gene: Vash\_3 Start: 2206, Stop: 3567, Start Num: 8

Candidate Starts for Vash\_3:

(1, 2071), (5, 2170), (7, 2179), (Start: 8 @2206 has 53 MA's), (23, 2350), (25, 2371), (33, 2494), (42, 2599), (47, 2629), (49, 2635), (60, 2704), (64, 2746), (65, 2749), (75, 2860), (76, 2872), (77, 2875), (80, 2893), (82, 2908), (93, 3010), (96, 3055), (99, 3082), (103, 3163), (110, 3250), (114, 3298), (120, 3349), (121, 3367), (123, 3388), (125, 3406),

Gene: Wanda\_12 Start: 5407, Stop: 6630, Start Num: 8

Candidate Starts for Wanda\_12:

(Start: 8 @5407 has 53 MA's), (22, 5533), (36, 5704), (38, 5710), (44, 5788), (63, 5893), (67, 5926), (68, 5929), (69, 5935), (73, 5977), (74, 5998), (90, 6127), (91, 6130), (98, 6223), (100, 6247), (109, 6358), (121, 6505), (126, 6544), (127, 6553), (129, 6568),

Gene: Yeet\_10 Start: 5140, Stop: 6363, Start Num: 8

Candidate Starts for Yeet\_10:

(Start: 8 @5140 has 53 MA's), (22, 5266), (36, 5437), (38, 5443), (44, 5521), (63, 5626), (67, 5659), (68, 5662), (69, 5668), (73, 5710), (74, 5731), (90, 5860), (91, 5863), (98, 5956), (100, 5980), (109, 6091), (121, 6238), (126, 6277), (127, 6286), (129, 6301),

Gene: Zelink\_12 Start: 5914, Stop: 7137, Start Num: 8

Candidate Starts for Zelink\_12:

(Start: 8 @5914 has 53 MA's), (22, 6040), (36, 6211), (38, 6217), (44, 6295), (63, 6400), (67, 6433), (68, 6436), (69, 6442), (73, 6484), (74, 6505), (90, 6634), (91, 6637), (98, 6730), (100, 6754), (109,

6865), (121, 7012), (126, 7051), (127, 7060), (129, 7075),

Gene: phiBT1\_34 Start: 2227, Stop: 3600, Start Num: 8

Candidate Starts for phiBT1\_34:

(Start: 8 @2227 has 53 MA's), (23, 2380), (33, 2524), (40, 2593), (42, 2629), (47, 2659), (49, 2665),  
(54, 2689), (58, 2728), (59, 2731), (64, 2776), (65, 2779), (75, 2890), (76, 2902), (80, 2923), (82, 2938),  
(90, 3004), (92, 3034), (93, 3040), (103, 3193), (110, 3280), (114, 3328), (121, 3397), (123, 3418),  
(125, 3436), (126, 3442),