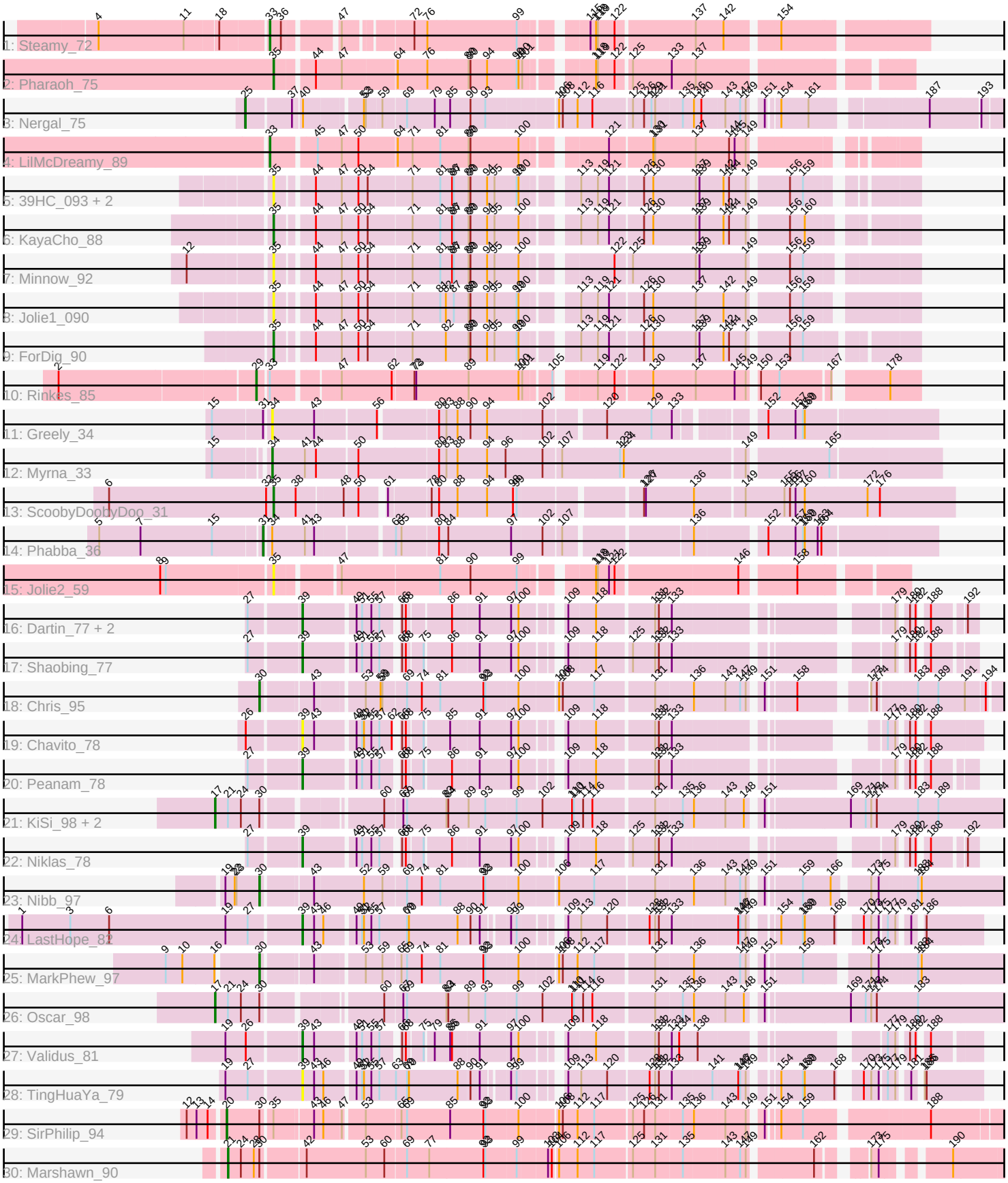
Pham 345953


1: Steamy_72
2: Pharaoh_75
3: Nergal_75
4: LilMcDreamy_89
5: 39HC_093 + 2
6: KayaCho_88
7: Minnow_92
8: Jolie1_090
9: ForDig_90
10: Rinkes_85
11: Greely_34
12: Myrna_33
13: ScoobyDoobyDoo_31
14: Phabba_36
15: Jolie2_59
16: Dartin_77 + 2
17: Shaobing_77
18: Chris_95
19: Chavito_78
20: Peanam_78
21: KiSi_98 + 2
22: Niklas_78
23: Nibb_97
24: LastHope_82
25: MarkPhew_97
26: Oscar_98
27: Validus_81
28: TingHuaYa_79
29: SirPhilip_94
30: Marshawn_90

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 345953 Report

This analysis was run 11/14/26 on database version 672.

Pham number 345953 has 36 members, 9 are drafts.

Phages represented in each track:
- Track 1 : Steamy_72
- Track 2 : Pharaoh_75
- Track 3 : Nergal_75
- Track 4 : LilMcDreamy_89
- Track 5 : 39HC_093, 40BC_093, Hosp_088
- Track 6 : KayaCho_88
- Track 7 : Minnow_92
- Track 8 : Jolie1_090
- Track 9 : ForDig_90
- Track 10 : Rinkes_85
- Track 11 : Greely_34
- Track 12 : Myrna_33
- Track 13 : ScoobyDoobyDoo_31
- Track 14 : Phabba_36
- Track 15 : Jolie2_59
- Track 16 : Dartin_77, Richo_77, McMater_77
- Track 17 : Shaobing_77
- Track 18 : Chris_95
- Track 19 : Chavito_78
- Track 20 : Peanam_78
- Track 21 : KiSi_98, LeMond_97, Scarlett_97
- Track 22 : Niklas_78
- Track 23 : Nibb_97
- Track 24 : LastHope_82
- Track 25 : MarkPhew_97
- Track 26 : Oscar_98
- Track 27 : Validus_81
- Track 28 : TingHuaYa_79
- Track 29 : SirPhilip_94
- Track 30 : Marshawn_90

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

The start number called the most often in the published annotations is 39, it was called in 8 of the 27 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• Chavito_78, Dartin_77, LastHope_82, McMater_77, Niklas_78, Peanam_78, Richo_77, Shaobing_77, TingHuaYa_79, Validus_81,

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

Genes that do not have the "Most Annotated" start:
• 39HC_093, 40BC_093, Chris_95, ForDig_90, Greely_34, Hosp_088, Jolie1_090, Jolie2_59, KayaCho_88, KiSi_98, LeMond_97, LilMcDreamy_89, MarkPhew_97, Marshawn_90, Minnow_92, Myrna_33, Nergal_75, Nibb_97, Oscar_98, Phabba_36, Pharaoh_75, Rinkes_85, Scarlett_97, ScoobyDoobyDoo_31, SirPhilip_94, Steamy_72,

Summary by start number:

Start 17:
• Found in 4 of 36 (11.1%) of genes in pham
• Manual Annotations of this start: 4 of 27
• Called 100.0% of time when present
• Phage (with cluster) where this start called: KiSi_98 (K1), LeMond_97 (K1), Oscar_98 (K1), Scarlett_97 (K1),

Start 20:
• Found in 1 of 36 (2.8%) of genes in pham
• Manual Annotations of this start: 1 of 27
• Called 100.0% of time when present
• Phage (with cluster) where this start called: SirPhilip_94 (K6),

Start 21:
• Found in 5 of 36 (13.9%) of genes in pham
• Manual Annotations of this start: 1 of 27
• Called 20.0% of time when present
• Phage (with cluster) where this start called: Marshawn_90 (K6),

Start 25:
• Found in 1 of 36 (2.8%) of genes in pham
• Manual Annotations of this start: 1 of 27
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Nergal_75 (AG),

Start 29:
• Found in 1 of 36 (2.8%) of genes in pham
• Manual Annotations of this start: 1 of 27
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Rinkes_85 (B9),

Start 30:
• Found in 9 of 36 (25.0%) of genes in pham
• Manual Annotations of this start: 3 of 27

• Called 33.3% of time when present
• Phage (with cluster) where this start called: Chris_95 (K1), MarkPhew_97 (K1), Nibb_97 (K1),

Start 31:
• Found in 2 of 36 (5.6%) of genes in pham
• Manual Annotations of this start: 1 of 27
• Called 50.0% of time when present
• Phage (with cluster) where this start called: Phabba_36 (C2),

Start 33:
• Found in 3 of 36 (8.3%) of genes in pham
• Manual Annotations of this start: 2 of 27
• Called 66.7% of time when present
• Phage (with cluster) where this start called: LilMcDreamy_89 (B12), Steamy_72 (A12),

Start 34:
• Found in 3 of 36 (8.3%) of genes in pham
• Manual Annotations of this start: 1 of 27
• Called 66.7% of time when present
• Phage (with cluster) where this start called: Greely_34 (C2), Myrna_33 (C2),

Start 35:
• Found in 11 of 36 (30.6%) of genes in pham
• Manual Annotations of this start: 4 of 27
• Called 90.9% of time when present
• Phage (with cluster) where this start called: 39HC_093 (B6), 40BC_093 (B6), ForDig_90 (B6), Hosp_088 (B6), Jolie1_090 (B6), Jolie2_59 (G4), KayaCho_88 (B6), Minnow_92 (B6), Pharaoh_75 (A12), ScoobyDoobyDoo_31 (C2),

Start 39:
• Found in 10 of 36 (27.8%) of genes in pham
• Manual Annotations of this start: 8 of 27
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Chavito_78 (K1), Dartin_77 (K1), LastHope_82 (K1), McMater_77 (K1), Niklas_78 (K1), Peanam_78 (K1), Richo_77 (K1), Shaobing_77 (K1), TingHuaYa_79 (K1), Validus_81 (K1),

Summary by clusters:

There are 9 clusters represented in this pham: G4, AG, A12, K1, B6, B12, K6, C2, B9,

Info for manual annotations of cluster A12:
•Start number 33 was manually annotated 1 time for cluster A12.
•Start number 35 was manually annotated 1 time for cluster A12.

Info for manual annotations of cluster AG:
•Start number 25 was manually annotated 1 time for cluster AG.

Info for manual annotations of cluster B12:
•Start number 33 was manually annotated 1 time for cluster B12.

Info for manual annotations of cluster B6:
•Start number 35 was manually annotated 2 times for cluster B6.

Info for manual annotations of cluster B9:
•Start number 29 was manually annotated 1 time for cluster B9.

Info for manual annotations of cluster C2:
•Start number 31 was manually annotated 1 time for cluster C2.
•Start number 34 was manually annotated 1 time for cluster C2.
•Start number 35 was manually annotated 1 time for cluster C2.

Info for manual annotations of cluster K1:
•Start number 17 was manually annotated 4 times for cluster K1.
•Start number 30 was manually annotated 3 times for cluster K1.
•Start number 39 was manually annotated 8 times for cluster K1.

Info for manual annotations of cluster K6:
•Start number 20 was manually annotated 1 time for cluster K6.
•Start number 21 was manually annotated 1 time for cluster K6.

Gene Information:

Gene: 39HC_093 Start: 67833, Stop: 66919, Start Num: 35
Candidate Starts for 39HC_093:
(Start: 35 @67833 has 4 MA's), (44, 67782), (47, 67743), (50, 67716), (54, 67701), (71, 67632), (81, 67587), (86, 67569), (87, 67566), (89, 67542), (90, 67539), (94, 67512), (95, 67500), (99, 67464), (100, 67461), (113, 67395), (119, 67368), (121, 67350), (126, 67299), (130, 67284), (137, 67218), (139, 67212), (142, 67173), (144, 67164), (149, 67137), (156, 67086), (159, 67065),

Gene: 40BC_093 Start: 67833, Stop: 66919, Start Num: 35
Candidate Starts for 40BC_093:
(Start: 35 @67833 has 4 MA's), (44, 67782), (47, 67743), (50, 67716), (54, 67701), (71, 67632), (81, 67587), (86, 67569), (87, 67566), (89, 67542), (90, 67539), (94, 67512), (95, 67500), (99, 67464), (100, 67461), (113, 67395), (119, 67368), (121, 67350), (126, 67299), (130, 67284), (137, 67218), (139, 67212), (142, 67173), (144, 67164), (149, 67137), (156, 67086), (159, 67065),

Gene: Chavito_78 Start: 51311, Stop: 52174, Start Num: 39
Candidate Starts for Chavito_78:
(26, 51233), (Start: 39 @51311 has 8 MA's), (43, 51329), (49, 51386), (51, 51395), (52, 51398), (55, 51410), (57, 51422), (62, 51440), (66, 51443), (68, 51449), (75, 51473), (85, 51509), (91, 51551), (97, 51599), (100, 51611), (109, 51659), (118, 51701), (131, 51788), (132, 51794), (133, 51812), (177, 52049), (179, 52061), (180, 52073), (182, 52082), (188, 52094),

Gene: Chris_95 Start: 58806, Stop: 59939, Start Num: 30
Candidate Starts for Chris_95:
(Start: 30 @58806 has 3 MA's), (43, 58878), (53, 58947), (58, 58971), (59, 58974), (69, 59010), (74, 59034), (81, 59064), (92, 59133), (93, 59136), (100, 59187), (106, 59241), (108, 59247), (117, 59298), (131, 59388), (136, 59445), (143, 59493), (147, 59517), (149, 59526), (151, 59541), (158, 59577), (173, 59667), (174, 59676), (183, 59730), (189, 59763), (191, 59805), (194, 59835),

Gene: Dartin_77 Start: 50562, Stop: 51440, Start Num: 39
Candidate Starts for Dartin_77:
(27, 50487), (Start: 39 @50562 has 8 MA's), (49, 50637), (51, 50646), (55, 50661), (57, 50673), (66, 50694), (68, 50700), (86, 50763), (91, 50802), (97, 50850), (100, 50862), (109, 50910), (118, 50952), (131, 51039), (132, 51045), (133, 51063), (179, 51345), (180, 51357), (182, 51366), (188, 51378), (192, 51423),

Gene: ForDig_90 Start: 67112, Stop: 66186, Start Num: 35
Candidate Starts for ForDig_90:
(Start: 35 @67112 has 4 MA's), (44, 67061), (47, 67022), (50, 66995), (54, 66980), (71, 66911), (82, 66857), (89, 66821), (90, 66818), (94, 66791), (95, 66779), (99, 66743), (100, 66740), (113, 66674), (119, 66647), (121, 66629), (126, 66578), (130, 66563), (137, 66497), (139, 66491), (142, 66452), (144, 66443), (149, 66416), (156, 66365), (159, 66344),

Gene: Greely_34 Start: 13787, Stop: 14752, Start Num: 34
Candidate Starts for Greely_34:
(15, 13700), (Start: 31 @13778 has 1 MA's), (Start: 34 @13787 has 1 MA's), (43, 13853), (56, 13943), (80, 14027), (83, 14039), (88, 14057), (90, 14078), (94, 14105), (102, 14192), (120, 14279), (129, 14351), (133, 14384), (152, 14495), (157, 14534), (159, 14546), (160, 14549),

Gene: Hosp_088 Start: 65138, Stop: 64224, Start Num: 35
Candidate Starts for Hosp_088:
(Start: 35 @65138 has 4 MA's), (44, 65087), (47, 65048), (50, 65021), (54, 65006), (71, 64937), (81, 64892), (86, 64874), (87, 64871), (89, 64847), (90, 64844), (94, 64817), (95, 64805), (99, 64769), (100, 64766), (113, 64700), (119, 64673), (121, 64655), (126, 64604), (130, 64589), (137, 64523), (139, 64517), (142, 64478), (144, 64469), (149, 64442), (156, 64391), (159, 64370),

Gene: Jolie1_090 Start: 67206, Stop: 66277, Start Num: 35
Candidate Starts for Jolie1_090:
(Start: 35 @67206 has 4 MA's), (44, 67155), (47, 67116), (50, 67089), (54, 67074), (71, 67005), (81, 66960), (82, 66951), (87, 66939), (89, 66915), (90, 66912), (94, 66885), (95, 66873), (99, 66837), (100, 66834), (113, 66768), (119, 66741), (121, 66723), (126, 66672), (130, 66657), (137, 66591), (142, 66546), (149, 66510), (156, 66459), (159, 66438),

Gene: Jolie2_59 Start: 41491, Stop: 42402, Start Num: 35
Candidate Starts for Jolie2_59:
(8, 41317), (9, 41326), (Start: 35 @41491 has 4 MA's), (47, 41578), (81, 41734), (90, 41782), (99, 41857), (118, 41950), (119, 41953), (121, 41971), (122, 41980), (146, 42169), (158, 42247),

Gene: KayaCho_88 Start: 67067, Stop: 66147, Start Num: 35
Candidate Starts for KayaCho_88:
(Start: 35 @67067 has 4 MA's), (44, 67016), (47, 66977), (50, 66950), (54, 66935), (71, 66866), (81, 66821), (86, 66803), (87, 66800), (89, 66776), (90, 66773), (94, 66746), (95, 66734), (100, 66695), (113, 66629), (119, 66602), (121, 66584), (126, 66533), (130, 66518), (137, 66452), (139, 66446), (142, 66407), (144, 66398), (149, 66371), (156, 66320), (160, 66296),

Gene: KiSi_98 Start: 59172, Stop: 60431, Start Num: 17
Candidate Starts for KiSi_98:
(Start: 17 @59172 has 4 MA's), (Start: 21 @59193 has 1 MA's), (24, 59214), (Start: 30 @59244 has 3 MA's), (60, 59409), (67, 59436), (69, 59442), (83, 59505), (84, 59508), (89, 59541), (93, 59568), (99, 59616), (102, 59655), (110, 59703), (111, 59706), (114, 59721), (116, 59736), (131, 59829), (135, 59871), (136, 59886), (143, 59934), (148, 59964), (151, 59982), (169, 60102), (171, 60126), (173, 60135), (174, 60144), (183, 60210), (189, 60243),

Gene: LastHope_82 Start: 50083, Stop: 51000, Start Num: 39
Candidate Starts for LastHope_82:
(1, 49636), (3, 49714), (6, 49777), (19, 49966), (27, 50002), (Start: 39 @50083 has 8 MA's), (43, 50101), (46, 50116), (49, 50158), (51, 50167), (52, 50170), (55, 50182), (57, 50194), (69, 50239), (70, 50242), (88, 50320), (90, 50338), (91, 50350), (97, 50386), (99, 50395), (109, 50446), (113, 50464), (120, 50506), (128, 50569), (131, 50578), (132, 50584), (133, 50602), (146, 50701), (147, 50704), (149, 50713), (154, 50743), (159, 50773), (160, 50776), (168, 50821), (170, 50842), (173, 50854), (175, 50866), (177, 50875), (179, 50887), (181, 50899), (186, 50911),

Gene: LeMond_97 Start: 59129, Stop: 60388, Start Num: 17
Candidate Starts for LeMond_97:
(Start: 17 @59129 has 4 MA's), (Start: 21 @59150 has 1 MA's), (24, 59171), (Start: 30 @59201 has 3 MA's), (60, 59366), (67, 59393), (69, 59399), (83, 59462), (84, 59465), (89, 59498), (93, 59525), (99, 59573), (102, 59612), (110, 59660), (111, 59663), (114, 59678), (116, 59693), (131, 59786), (135, 59828), (136, 59843), (143, 59891), (148, 59921), (151, 59939), (169, 60059), (171, 60083), (173, 60092), (174, 60101), (183, 60167), (189, 60200),

Gene: LilMcDreamy_89 Start: 67041, Stop: 66121, Start Num: 33
Candidate Starts for LilMcDreamy_89:
(Start: 33 @67041 has 2 MA's), (45, 66975), (47, 66939), (50, 66912), (64, 66852), (71, 66828), (81, 66783), (89, 66738), (90, 66735), (100, 66657), (121, 66546), (130, 66480), (131, 66477), (137, 66414), (144, 66360), (145, 66351), (149, 66333),

Gene: MarkPhew_97 Start: 58854, Stop: 60011, Start Num: 30
Candidate Starts for MarkPhew_97:
(9, 58713), (10, 58740), (16, 58791), (Start: 30 @58854 has 3 MA's), (43, 58926), (53, 58995), (59, 59022), (65, 59049), (69, 59058), (74, 59082), (81, 59112), (92, 59181), (93, 59184), (100, 59235), (106, 59289), (108, 59295), (112, 59319), (117, 59346), (131, 59436), (136, 59493), (147, 59565), (149, 59574), (151, 59589), (159, 59634), (173, 59721), (175, 59733), (183, 59790), (184, 59796),

Gene: Marshawn_90 Start: 58111, Stop: 59241, Start Num: 21
Candidate Starts for Marshawn_90:
(Start: 21 @58111 has 1 MA's), (24, 58132), (28, 58153), (Start: 30 @58162 has 3 MA's), (42, 58225), (53, 58321), (60, 58351), (69, 58384), (77, 58420), (92, 58507), (93, 58510), (99, 58558), (103, 58603), (104, 58609), (106, 58615), (112, 58645), (117, 58672), (125, 58729), (131, 58765), (135, 58807), (143, 58870), (147, 58894), (149, 58903), (162, 58993), (173, 59047), (175, 59059), (190, 59143),

Gene: McMater_77 Start: 50562, Stop: 51440, Start Num: 39
Candidate Starts for McMater_77:
(27, 50487), (Start: 39 @50562 has 8 MA's), (49, 50637), (51, 50646), (55, 50661), (57, 50673), (66, 50694), (68, 50700), (86, 50763), (91, 50802), (97, 50850), (100, 50862), (109, 50910), (118, 50952), (131, 51039), (132, 51045), (133, 51063), (179, 51345), (180, 51357), (182, 51366), (188, 51378), (192, 51423),

Gene: Minnow_92 Start: 67288, Stop: 66359, Start Num: 35
Candidate Starts for Minnow_92:
(12, 67408), (Start: 35 @67288 has 4 MA's), (44, 67237), (47, 67198), (50, 67171), (54, 67156), (71, 67087), (81, 67042), (86, 67024), (87, 67021), (89, 66997), (90, 66994), (94, 66967), (95, 66955), (100, 66916), (122, 66796), (125, 66772), (137, 66673), (139, 66667), (149, 66592), (156, 66541), (159, 66520),

Gene: Myrna_33 Start: 14312, Stop: 15331, Start Num: 34

Candidate Starts for Myrna_33:
(15, 14237), (Start: 34 @14312 has 1 MA's), (41, 14363), (44, 14381), (50, 14444), (80, 14570), (83, 14582), (88, 14597), (94, 14645), (96, 14675), (102, 14735), (107, 14762), (123, 14852), (124, 14858), (149, 15047), (165, 15161),

Gene: Nergal_75 Start: 50377, Stop: 51474, Start Num: 25
Candidate Starts for Nergal_75:
(Start: 25 @50377 has 1 MA's), (37, 50446), (40, 50455), (52, 50539), (53, 50542), (59, 50566), (69, 50602), (79, 50647), (85, 50671), (90, 50704), (93, 50728), (106, 50833), (108, 50839), (112, 50863), (116, 50887), (125, 50947), (126, 50965), (129, 50977), (131, 50983), (135, 51025), (136, 51040), (140, 51052), (143, 51088), (147, 51112), (149, 51121), (151, 51136), (154, 51151), (161, 51190), (187, 51343), (193, 51418),

Gene: Nibb_97 Start: 58597, Stop: 59775, Start Num: 30
Candidate Starts for Nibb_97:
(19, 58543), (22, 58558), (23, 58561), (Start: 30 @58597 has 3 MA's), (43, 58669), (52, 58747), (59, 58777), (69, 58813), (74, 58837), (81, 58867), (92, 58936), (93, 58939), (100, 58990), (106, 59044), (117, 59101), (131, 59194), (136, 59251), (143, 59299), (147, 59323), (149, 59332), (151, 59347), (159, 59392), (166, 59434), (173, 59485), (175, 59497), (183, 59554), (184, 59560),

Gene: Niklas_78 Start: 50623, Stop: 51501, Start Num: 39
Candidate Starts for Niklas_78:
(27, 50548), (Start: 39 @50623 has 8 MA's), (49, 50698), (51, 50707), (55, 50722), (57, 50734), (66, 50755), (68, 50761), (75, 50785), (86, 50824), (91, 50863), (97, 50911), (100, 50923), (109, 50971), (118, 51013), (125, 51064), (131, 51100), (132, 51106), (133, 51124), (179, 51406), (180, 51418), (182, 51427), (188, 51439), (192, 51484),

Gene: Oscar_98 Start: 59051, Stop: 60310, Start Num: 17
Candidate Starts for Oscar_98:
(Start: 17 @59051 has 4 MA's), (Start: 21 @59072 has 1 MA's), (24, 59093), (Start: 30 @59123 has 3 MA's), (60, 59288), (67, 59315), (69, 59321), (83, 59384), (84, 59387), (89, 59420), (93, 59447), (99, 59495), (102, 59534), (110, 59582), (111, 59585), (114, 59600), (116, 59615), (131, 59708), (135, 59750), (136, 59765), (143, 59813), (148, 59843), (151, 59861), (169, 59981), (171, 60005), (173, 60014), (174, 60023), (183, 60089),

Gene: Peanam_78 Start: 50581, Stop: 51459, Start Num: 39
Candidate Starts for Peanam_78:
(27, 50506), (Start: 39 @50581 has 8 MA's), (49, 50656), (51, 50665), (55, 50680), (57, 50692), (66, 50713), (68, 50719), (75, 50743), (86, 50782), (91, 50821), (97, 50869), (100, 50881), (109, 50929), (118, 50971), (131, 51058), (132, 51064), (133, 51082), (179, 51364), (180, 51376), (182, 51385), (188, 51397),

Gene: Phabba_36 Start: 13954, Stop: 14943, Start Num: 31
Candidate Starts for Phabba_36:
(5, 13702), (7, 13768), (15, 13882), (Start: 31 @13954 has 1 MA's), (Start: 34 @13963 has 1 MA's), (41, 14014), (43, 14029), (63, 14137), (65, 14146), (80, 14203), (84, 14218), (97, 14320), (102, 14368), (107, 14395), (136, 14581), (152, 14683), (157, 14722), (159, 14734), (160, 14737), (163, 14758), (164, 14764),

Gene: Pharaoh_75 Start: 46704, Stop: 45793, Start Num: 35
Candidate Starts for Pharaoh_75:
(Start: 35 @46704 has 4 MA's), (44, 46650), (47, 46608), (64, 46524), (76, 46476), (89, 46410), (90, 46407), (94, 46380), (99, 46332), (100, 46329), (101, 46326), (118, 46239), (119, 46236), (122,

46209), (125, 46188), (133, 46125), (137, 46089),

Gene: Richo_77 Start: 50562, Stop: 51440, Start Num: 39
Candidate Starts for Richo_77:
(27, 50487), (Start: 39 @50562 has 8 MA's), (49, 50637), (51, 50646), (55, 50661), (57, 50673), (66, 50694), (68, 50700), (86, 50763), (91, 50802), (97, 50850), (100, 50862), (109, 50910), (118, 50952), (131, 51039), (132, 51045), (133, 51063), (179, 51345), (180, 51357), (182, 51366), (188, 51378), (192, 51423),

Gene: Rinkes_85 Start: 66609, Stop: 65662, Start Num: 29
Candidate Starts for Rinkes_85:
(2, 66915), (Start: 29 @66609 has 1 MA's), (Start: 33 @66594 has 2 MA's), (47, 66498), (62, 66417), (72, 66384), (73, 66381), (89, 66297), (100, 66216), (101, 66213), (105, 66174), (119, 66123), (122, 66096), (130, 66039), (137, 65973), (145, 65910), (149, 65892), (150, 65883), (153, 65856), (167, 65781), (178, 65709),

Gene: Scarlett_97 Start: 58920, Stop: 60179, Start Num: 17
Candidate Starts for Scarlett_97:
(Start: 17 @58920 has 4 MA's), (Start: 21 @58941 has 1 MA's), (24, 58962), (Start: 30 @58992 has 3 MA's), (60, 59157), (67, 59184), (69, 59190), (83, 59253), (84, 59256), (89, 59289), (93, 59316), (99, 59364), (102, 59403), (110, 59451), (111, 59454), (114, 59469), (116, 59484), (131, 59577), (135, 59619), (136, 59634), (143, 59682), (148, 59712), (151, 59730), (169, 59850), (171, 59874), (173, 59883), (174, 59892), (183, 59958), (189, 59991),

Gene: ScoobyDoobyDoo_31 Start: 11830, Stop: 12846, Start Num: 35
Candidate Starts for ScoobyDoobyDoo_31:
(6, 11563), (32, 11818), (Start: 35 @11830 has 4 MA's), (38, 11866), (48, 11935), (50, 11956), (61, 11989), (78, 12052), (80, 12064), (88, 12094), (94, 12142), (98, 12181), (99, 12187), (126, 12364), (127, 12367), (136, 12445), (149, 12520), (155, 12580), (156, 12589), (157, 12598), (160, 12613), (172, 12712), (176, 12730),

Gene: Shaobing_77 Start: 50598, Stop: 51476, Start Num: 39
Candidate Starts for Shaobing_77:
(27, 50523), (Start: 39 @50598 has 8 MA's), (49, 50673), (51, 50682), (55, 50697), (57, 50709), (66, 50730), (68, 50736), (75, 50760), (86, 50799), (91, 50838), (97, 50886), (100, 50898), (109, 50946), (118, 50988), (125, 51039), (131, 51075), (132, 51081), (133, 51099), (179, 51381), (180, 51393), (182, 51402), (188, 51414),

Gene: SirPhilip_94 Start: 58988, Stop: 60181, Start Num: 20
Candidate Starts for SirPhilip_94:
(12, 58934), (13, 58949), (14, 58967), (Start: 20 @58988 has 1 MA's), (Start: 30 @59039 has 3 MA's), (Start: 35 @59054 has 4 MA's), (43, 59111), (46, 59123), (47, 59150), (53, 59180), (65, 59234), (69, 59243), (85, 59312), (92, 59366), (93, 59369), (100, 59420), (106, 59474), (108, 59480), (112, 59504), (117, 59531), (125, 59588), (126, 59606), (131, 59624), (135, 59666), (136, 59681), (143, 59729), (149, 59762), (151, 59777), (154, 59792), (159, 59822), (188, 59993),

Gene: Steamy_72 Start: 45654, Stop: 44725, Start Num: 33
Candidate Starts for Steamy_72:
(4, 45909), (11, 45774), (18, 45723), (Start: 33 @45654 has 2 MA's), (36, 45636), (47, 45564), (72, 45468), (76, 45447), (99, 45303), (115, 45219), (118, 45210), (119, 45207), (122, 45180), (137, 45060), (142, 45015), (154, 44940),

Gene: TingHuaYa_79 Start: 50154, Stop: 51071, Start Num: 39

Candidate Starts for TingHuaYa_79:
(19, 50037), (27, 50073), (Start: 39 @50154 has 8 MA's), (43, 50172), (46, 50187), (49, 50229), (51, 50238), (52, 50241), (55, 50253), (57, 50265), (63, 50292), (69, 50310), (70, 50313), (88, 50391), (90, 50409), (91, 50421), (97, 50457), (99, 50466), (109, 50517), (113, 50535), (120, 50577), (128, 50640), (131, 50649), (132, 50655), (133, 50673), (141, 50733), (146, 50772), (147, 50775), (149, 50784), (154, 50814), (159, 50844), (160, 50847), (168, 50892), (170, 50913), (173, 50925), (175, 50937), (177, 50946), (179, 50958), (181, 50970), (185, 50979), (186, 50982),

Gene: Validus_81 Start: 51145, Stop: 52035, Start Num: 39
Candidate Starts for Validus_81:
(19, 51034), (26, 51067), (Start: 39 @51145 has 8 MA's), (43, 51163), (49, 51220), (51, 51229), (55, 51244), (57, 51256), (66, 51277), (68, 51283), (75, 51307), (79, 51319), (85, 51343), (86, 51346), (91, 51385), (97, 51433), (100, 51445), (109, 51493), (118, 51535), (131, 51622), (132, 51628), (133, 51646), (134, 51658), (138, 51682), (177, 51919), (179, 51931), (180, 51943), (182, 51952), (188, 51964),