Pham 311480


1: Gustav_23
2: Puppers_23
3: Morrissey_24
4: Mandia_23
5: Widow_23
6: MacGully_54
7: PCoral7_24 + 1
8: Orchid_31 + 4
9: JCole_20
10: Powerball_22
11: Lucky10_22
12: Francois_32
13: Parada_32 + 3
14: Hamood_32 + 3
15: NancyRae_32
16: DelRio_33
17: Brylie_32 + 1
18: Pimento_32
19: BetterKatz_32
20: Ecliptus_29
21: Aloki_63 + 8
22: FlyingTortilla_63 + 1
23: GMA6_48
24: Chidiebere_63
25: Toneprano_61 + 7
26: FruityLoops_61
27: DalanDe_59
28: UBSmoodge_65
29: Thales_58
30: ChisanaKitsune_59
31: MakCheese_29
32: DumpsterDude_27
33: Ruthy_27
34: Zodiarian_27
35: Sprinklemunch_27
36: DonkeyMan_23
37: DearBasketball_26
38: Heinz_23 + 2
39: Tarzan_23
40: DinoNuggs_24 + 1
41: Jojo24_23
42: PeteyPab_35 + 6
43: Darwin_36
44: PhaoMing_21
45: GALI_24
46: P1201_49
47: Mbo2_28
48: Gallia_44
49: ChewyVm_58

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 311480 Report

This analysis was run 06/27/26 on database version 652.

Pham number 311480 has 86 members, 23 are drafts.

Phages represented in each track:
- Track 1 : Gustav_23
- Track 2 : Puppers_23
- Track 3 : Morrissey_24
- Track 4 : Mahdia_23
- Track 5 : Widow_23
- Track 6 : MacGully_54
- Track 7 : PCoral7_24, Toast_24
- Track 8 : Orchid_31, Gibbles_30, Kampe_31, PatrickStar_31, RobinSparkles_34
- Track 9 : JCole_20
- Track 10 : Powerball_22
- Track 11 : Lucky10_22
- Track 12 : Francois_32
- Track 13 : Parada_32, Mulch_32, Nadeem_32, WheatThin_32
- Track 14 : Hamood_32, Chop_32, Ayotoya_32, GrandSlam_32
- Track 15 : NancyRae_32
- Track 16 : DelRio_33
- Track 17 : Brylie_32, Bock_32
- Track 18 : Pimento_32
- Track 19 : BetterKatz_32
- Track 20 : Ecliptus_29
- Track 21 : Aloki_63, Gray_63, Kabocha_64, Farrylious_61, MintFritos_61, Oogie_64, EmoNemo_61, Schomber_62, Hanem_63
- Track 22 : FlyingTortilla_63, ScarletRaider_62
- Track 23 : GMA6_48
- Track 24 : Chidiebere_63
- Track 25 : Toneprano_61, Amoonguss_61, Pakusa_61, Beted_63, Mikronejon_61, Argena_61, Lenoshki_63, Twin_61
- Track 26 : FruityLoops_61
- Track 27 : DalanDe_59
- Track 28 : UBSmoodge_65
- Track 29 : Thales_58
- Track 30 : ChisanaKitsune_59
- Track 31 : MakCheese_29
- Track 32 : DumpsterDude_27
- Track 33 : Ruthy_27
- Track 34 : Zodiariah_27
- Track 35 : Sprinklemunch_27

• Track 36 : DonkeyMan_23
• Track 37 : DearBasketball_26
• Track 38 : Heinz_23, Santhid_23, Hibiscus_23
• Track 39 : Tarzan_23
• Track 40 : DinoNuggs_24, Reyja_24
• Track 41 : Jojo24_23
• Track 42 : PeteyPab_35, PotatoChip_36, Cruella_33, Kimchi1738_33, Stickynote_35, Zion_36, C3PO_33
• Track 43 : Darwin_36
• Track 44 : PhaoMing_21
• Track 45 : GAL1_24
• Track 46 : P1201_49
• Track 47 : Mbo2_28
• Track 48 : Gallia_44
• Track 49 : ChewyVIII_58

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

The start number called the most often in the published annotations is 45, it was called in 21 of the 63 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• BetterKatz_32, DearBasketball_26, DinoNuggs_24, DonkeyMan_23, DumpsterDude_27, Ecliptus_29, Francois_32, GAL1_24, Heinz_23, Hibiscus_23, JCole_20, Jojo24_23, Lucky10_22, MakCheese_29, Mulch_32, Nadeem_32, NancyRae_32, Parada_32, PhaoMing_21, Pimento_32, Reyja_24, Ruthy_27, Santhid_23, Sprinklemunch_27, Tarzan_23, WheatThin_32, Zodiariah_27,

Genes that have the "Most Annotated" start but do not call it:
• Bock_32, Brylie_32, C3PO_33, ChewyVIII_58, Cruella_33, Darwin_36, DelRio_33, Kimchi1738_33, MacGully_54, PeteyPab_35, PotatoChip_36, Powerball_22, Stickynote_35, Zion_36,

Genes that do not have the "Most Annotated" start:
• Aloki_63, Amoonguss_61, Argena_61, Ayotoya_32, Beted_63, Chidiebere_63, ChisanaKitsune_59, Chop_32, DalanDe_59, EmoNemo_61, Farrylious_61, FlyingTortilla_63, FruityLoops_61, GMA6_48, Gallia_44, Gibbles_30, GrandSlam_32, Gray_63, Gustav_23, Hamood_32, Hanem_63, Kabocha_64, Kampe_31, Lenoshki_63, Mahdia_23, Mbo2_28, Mikronejon_61, MintFritos_61, Morrissey_24, Oogie_64, Orchid_31, P1201_49, PCoral7_24, Pakusa_61, PatrickStar_31, Puppers_23, RobinSparkles_34, ScarletRaider_62, Schomber_62, Thales_58, Toast_24, Toneprano_61, Twin_61, UBSmoodge_65, Widow_23,

Summary by start number:

Start 28:
• Found in 1 of 86 (1.2%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: GMA6_48 (DQ),

Start 30:
• Found in 2 of 86 (2.3%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Gallia_44 (singleton), P1201_49 (singleton),

Start 31:
• Found in 8 of 86 (9.3%) of genes in pham
• Manual Annotations of this start: 8 of 63
• Called 100.0% of time when present
• Phage (with cluster) where this start called: C3PO_33 (EN), Cruella_33 (EN), Darwin_36 (EN), Kimchi1738_33 (EN), PeteyPab_35 (EN), PotatoChip_36 (EN), Stickynote_35 (EN), Zion_36 (EN),

Start 32:
• Found in 2 of 86 (2.3%) of genes in pham
• Manual Annotations of this start: 2 of 63
• Called 100.0% of time when present
• Phage (with cluster) where this start called: ChewyVIII_58 (singleton), MacGully_54 (CR7),

Start 33:
• Found in 5 of 86 (5.8%) of genes in pham
• Manual Annotations of this start: 5 of 63
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Gibbles_30 (CX), Kampe_31 (CX), Orchid_31 (CX), PatrickStar_31 (CX), RobinSparkles_34 (CX),

Start 34:
• Found in 12 of 86 (14.0%) of genes in pham
• Manual Annotations of this start: 3 of 63
• Called 25.0% of time when present
• Phage (with cluster) where this start called: Gustav_23 (CD), Mahdia_23 (CD), Morrissey_24 (CD),

Start 38:
• Found in 27 of 86 (31.4%) of genes in pham
• Manual Annotations of this start: 10 of 63
• Called 51.9% of time when present
• Phage (with cluster) where this start called: Aloki_63 (DQ), Chidiebere_63 (DQ), ChisanaKitsune_59 (DQ), DalanDe_59 (DQ), EmoNemo_61 (DQ), Farrylious_61 (DQ), FruityLoops_61 (DQ), Gray_63 (DQ), Hanem_63 (DQ), Kabocha_64 (DQ), MintFritos_61 (DQ), Oogie_64 (DQ), Schomber_62 (DQ), UBSmoodge_65 (DQ),

Start 39:
• Found in 2 of 86 (2.3%) of genes in pham
• Manual Annotations of this start: 2 of 63
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Puppers_23 (CD), Widow_23 (CD),

Start 40:

• Found in 2 of 86 (2.3%) of genes in pham
• Manual Annotations of this start: 1 of 63
• Called 50.0% of time when present
• Phage (with cluster) where this start called: Powerball_22 (CZ4),

Start 42:
• Found in 1 of 86 (1.2%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Mbo2_28 (singleton),

Start 44:
• Found in 26 of 86 (30.2%) of genes in pham
• Manual Annotations of this start: 9 of 63
• Called 34.6% of time when present
• Phage (with cluster) where this start called: Ayotoya_32 (DI), Bock_32 (DI), Brylie_32 (DI), Chop_32 (DI), DelRio_33 (DI), GrandSlam_32 (DI), Hamood_32 (DI), PCoral7_24 (CV), Toast_24 (CV),

Start 45:
• Found in 41 of 86 (47.7%) of genes in pham
• Manual Annotations of this start: 21 of 63
• Called 65.9% of time when present
• Phage (with cluster) where this start called: BetterKatz_32 (DI), DearBasketball_26 (DY), DinoNuggs_24 (DY), DonkeyMan_23 (DY), DumpsterDude_27 (DW), Ecliptus_29 (DN), Francois_32 (DI), GAL1_24 (singleton), Heinz_23 (DY), Hibiscus_23 (DY), JCole_20 (CZ2), Jojo24_23 (DY), Lucky10_22 (DH), MakCheese_29 (DW), Mulch_32 (DI), Nadeem_32 (DI), NancyRae_32 (DI), Parada_32 (DI), PhaoMing_21 (UNK), Pimento_32 (DI), Reyja_24 (DY), Ruthy_27 (DW), Santhid_23 (DY), Sprinklemunch_27 (DW), Tarzan_23 (DY), WheatThin_32 (DI), Zodiariah_27 (DW),

Start 46:
• Found in 18 of 86 (20.9%) of genes in pham
• No Manual Annotations of this start.
• Called 44.4% of time when present
• Phage (with cluster) where this start called: Amoonguss_61 (DQ), Argena_61 (DQ), Beted_63 (DQ), Lenoshki_63 (DQ), Mikronejon_61 (DQ), Pakusa_61 (DQ), Toneprano_61 (DQ), Twin_61 (DQ),

Start 50:
• Found in 5 of 86 (5.8%) of genes in pham
• Manual Annotations of this start: 2 of 63
• Called 40.0% of time when present
• Phage (with cluster) where this start called: FlyingTortilla_63 (DQ), ScarletRaider_62 (DQ),

Start 64:
• Found in 3 of 86 (3.5%) of genes in pham
• No Manual Annotations of this start.
• Called 33.3% of time when present
• Phage (with cluster) where this start called: Thales_58 (DQ),

Summary by clusters:

There are 15 clusters represented in this pham: DN, singleton, EN, CR7, DH, DI, CZ2, CZ4, CD, CX, DY, DW, UNK, CV, DQ,

Info for manual annotations of cluster CD:
•Start number 34 was manually annotated 3 times for cluster CD.
•Start number 39 was manually annotated 2 times for cluster CD.

Info for manual annotations of cluster CR7:
•Start number 32 was manually annotated 1 time for cluster CR7.

Info for manual annotations of cluster CV:
•Start number 44 was manually annotated 2 times for cluster CV.

Info for manual annotations of cluster CX:
•Start number 33 was manually annotated 5 times for cluster CX.

Info for manual annotations of cluster CZ2:
•Start number 45 was manually annotated 1 time for cluster CZ2.

Info for manual annotations of cluster CZ4:
•Start number 40 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster DH:
•Start number 45 was manually annotated 1 time for cluster DH.

Info for manual annotations of cluster DI:
•Start number 44 was manually annotated 7 times for cluster DI.
•Start number 45 was manually annotated 8 times for cluster DI.

Info for manual annotations of cluster DN:
•Start number 45 was manually annotated 1 time for cluster DN.

Info for manual annotations of cluster DQ:
•Start number 38 was manually annotated 10 times for cluster DQ.
•Start number 50 was manually annotated 2 times for cluster DQ.

Info for manual annotations of cluster DW:
•Start number 45 was manually annotated 3 times for cluster DW.

Info for manual annotations of cluster DY:
•Start number 45 was manually annotated 7 times for cluster DY.

Info for manual annotations of cluster EN:
•Start number 31 was manually annotated 8 times for cluster EN.

Gene Information:

Gene: Aloki_63 Start: 50870, Stop: 51364, Start Num: 38

Candidate Starts for Aloki_63:
(Start: 38 @50870 has 10 MA's), (43, 50885), (46, 50903), (61, 50948), (72, 51017), (80, 51047), (81, 51053), (83, 51062), (84, 51065), (113, 51182), (120, 51215), (133, 51272), (135, 51284), (138, 51296), (139, 51299), (143, 51335), (144, 51341),

Gene: Amoonguss_61 Start: 50906, Stop: 51367, Start Num: 46
Candidate Starts for Amoonguss_61:
(Start: 38 @50873 has 10 MA's), (43, 50888), (46, 50906), (61, 50951), (72, 51020), (80, 51050), (81, 51056), (83, 51065), (84, 51068), (113, 51185), (120, 51218), (133, 51275), (135, 51287), (138, 51299), (139, 51302), (143, 51338), (144, 51344),

Gene: Argena_61 Start: 50918, Stop: 51379, Start Num: 46
Candidate Starts for Argena_61:
(Start: 38 @50885 has 10 MA's), (43, 50900), (46, 50918), (61, 50963), (72, 51032), (80, 51062), (81, 51068), (83, 51077), (84, 51080), (113, 51197), (120, 51230), (133, 51287), (135, 51299), (138, 51311), (139, 51314), (143, 51350), (144, 51356),

Gene: Ayotoya_32 Start: 27588, Stop: 27977, Start Num: 44
Candidate Starts for Ayotoya_32:
(11, 27300), (12, 27303), (Start: 44 @27588 has 9 MA's), (53, 27615), (68, 27672), (71, 27699), (74, 27711), (90, 27774), (94, 27786), (113, 27855), (115, 27861), (119, 27888), (121, 27894), (122, 27897), (131, 27930),

Gene: Beted_63 Start: 52598, Stop: 53059, Start Num: 46
Candidate Starts for Beted_63:
(Start: 38 @52565 has 10 MA's), (43, 52580), (46, 52598), (61, 52643), (72, 52712), (80, 52742), (81, 52748), (83, 52757), (84, 52760), (113, 52877), (120, 52910), (133, 52967), (135, 52979), (138, 52991), (139, 52994), (143, 53030), (144, 53036),

Gene: BetterKatz_32 Start: 27064, Stop: 27450, Start Num: 45
Candidate Starts for BetterKatz_32:
(6, 26536), (11, 26773), (12, 26776), (Start: 44 @27061 has 9 MA's), (Start: 45 @27064 has 21 MA's), (68, 27145), (71, 27172), (74, 27184), (86, 27232), (94, 27259), (113, 27328), (115, 27334), (119, 27361), (121, 27367), (122, 27370), (131, 27403),

Gene: Bock_32 Start: 26811, Stop: 27200, Start Num: 44
Candidate Starts for Bock_32:
(11, 26523), (12, 26526), (Start: 44 @26811 has 9 MA's), (Start: 45 @26814 has 21 MA's), (68, 26895), (71, 26922), (74, 26934), (86, 26982), (94, 27009), (113, 27078), (115, 27084), (119, 27111), (121, 27117), (122, 27120), (131, 27153),

Gene: Brylie_32 Start: 26799, Stop: 27188, Start Num: 44
Candidate Starts for Brylie_32:
(11, 26511), (12, 26514), (Start: 44 @26799 has 9 MA's), (Start: 45 @26802 has 21 MA's), (68, 26883), (71, 26910), (74, 26922), (86, 26970), (94, 26997), (113, 27066), (115, 27072), (119, 27099), (121, 27105), (122, 27108), (131, 27141),

Gene: C3PO_33 Start: 30588, Stop: 31046, Start Num: 31
Candidate Starts for C3PO_33:
(Start: 31 @30588 has 8 MA's), (Start: 45 @30657 has 21 MA's), (61, 30708), (70, 30768), (95, 30861), (111, 30912),

Gene: ChewyVIII_58 Start: 40904, Stop: 41350, Start Num: 32

Candidate Starts for ChewyVIII_58:
(Start: 32 @40904 has 2 MA's), (Start: 45 @40958 has 21 MA's), (47, 40967), (57, 40994), (60, 41006), (89, 41144), (97, 41177), (101, 41198), (122, 41270), (124, 41279), (125, 41282), (132, 41315), (134, 41324),

Gene: Chidiebere_63 Start: 50871, Stop: 51365, Start Num: 38
Candidate Starts for Chidiebere_63:
(Start: 38 @50871 has 10 MA's), (43, 50886), (46, 50904), (61, 50949), (72, 51018), (80, 51048), (81, 51054), (83, 51063), (84, 51066), (113, 51183), (120, 51216), (133, 51273), (135, 51285), (138, 51297), (139, 51300), (143, 51336), (144, 51342),

Gene: ChisanaKitsune_59 Start: 49664, Stop: 50158, Start Num: 38
Candidate Starts for ChisanaKitsune_59:
(Start: 38 @49664 has 10 MA's), (43, 49679), (57, 49727), (61, 49742), (72, 49811), (80, 49841), (81, 49847), (83, 49856), (84, 49859), (113, 49976), (120, 50009), (133, 50066), (135, 50078), (138, 50090), (139, 50093), (143, 50129), (144, 50135),

Gene: Chop_32 Start: 27336, Stop: 27725, Start Num: 44
Candidate Starts for Chop_32:
(11, 27048), (12, 27051), (Start: 44 @27336 has 9 MA's), (53, 27363), (68, 27420), (71, 27447), (74, 27459), (90, 27522), (94, 27534), (113, 27603), (115, 27609), (119, 27636), (121, 27642), (122, 27645), (131, 27678),

Gene: Cruella_33 Start: 30588, Stop: 31046, Start Num: 31
Candidate Starts for Cruella_33:
(Start: 31 @30588 has 8 MA's), (Start: 45 @30657 has 21 MA's), (61, 30708), (70, 30768), (95, 30861), (111, 30912),

Gene: DalanDe_59 Start: 54080, Stop: 54571, Start Num: 38
Candidate Starts for DalanDe_59:
(Start: 38 @54080 has 10 MA's), (52, 54125), (64, 54164), (72, 54224), (79, 54251), (80, 54254), (81, 54260), (91, 54299), (93, 54308), (98, 54341), (103, 54356), (110, 54368), (112, 54380), (125, 54431), (136, 54482), (141, 54509), (145, 54539),

Gene: Darwin_36 Start: 30273, Stop: 30731, Start Num: 31
Candidate Starts for Darwin_36:
(Start: 31 @30273 has 8 MA's), (Start: 45 @30342 has 21 MA's), (61, 30393), (70, 30453), (95, 30546), (111, 30597), (125, 30663),

Gene: DearBasketball_26 Start: 19116, Stop: 19505, Start Num: 45
Candidate Starts for DearBasketball_26:
(19, 18894), (Start: 34 @19074 has 3 MA's), (36, 19083), (Start: 44 @19113 has 9 MA's), (Start: 45 @19116 has 21 MA's), (58, 19155), (67, 19197), (82, 19269), (84, 19275), (101, 19353), (116, 19398), (131, 19458),

Gene: DelRio_33 Start: 27807, Stop: 28196, Start Num: 44
Candidate Starts for DelRio_33:
(11, 27519), (12, 27522), (Start: 44 @27807 has 9 MA's), (Start: 45 @27810 has 21 MA's), (68, 27891), (71, 27918), (74, 27930), (94, 28005), (113, 28074), (115, 28080), (119, 28107), (121, 28113), (122, 28116), (131, 28149),

Gene: DinoNuggs_24 Start: 19082, Stop: 19471, Start Num: 45
Candidate Starts for DinoNuggs_24:

(19, 18860), (Start: 34 @19040 has 3 MA's), (36, 19049), (Start: 44 @19079 has 9 MA's), (Start: 45 @19082 has 21 MA's), (58, 19121), (60, 19130), (67, 19163), (82, 19235), (84, 19241), (101, 19319), (116, 19364), (131, 19424),

Gene: DonkeyMan_23 Start: 18871, Stop: 19260, Start Num: 45
Candidate Starts for DonkeyMan_23:
(19, 18649), (Start: 34 @18829 has 3 MA's), (36, 18838), (Start: 44 @18868 has 9 MA's), (Start: 45 @18871 has 21 MA's), (58, 18910), (67, 18952), (68, 18955), (82, 19024), (101, 19108), (129, 19204),

Gene: DumpsterDude_27 Start: 25118, Stop: 25507, Start Num: 45
Candidate Starts for DumpsterDude_27:
(9, 24746), (Start: 45 @25118 has 21 MA's), (49, 25136), (58, 25157), (59, 25163), (62, 25175), (67, 25199), (68, 25202), (73, 25238), (74, 25241), (81, 25265), (85, 25283), (94, 25316), (129, 25451),

Gene: Ecliptus_29 Start: 22305, Stop: 22694, Start Num: 45
Candidate Starts for Ecliptus_29:
(10, 21999), (12, 22017), (Start: 45 @22305 has 21 MA's), (49, 22323), (58, 22344), (59, 22350), (62, 22362), (67, 22386), (68, 22389), (74, 22428), (75, 22434), (81, 22452), (102, 22545), (105, 22551), (122, 22614), (129, 22638), (131, 22647),

Gene: EmoNemo_61 Start: 50870, Stop: 51364, Start Num: 38
Candidate Starts for EmoNemo_61:
(Start: 38 @50870 has 10 MA's), (43, 50885), (46, 50903), (61, 50948), (72, 51017), (80, 51047), (81, 51053), (83, 51062), (84, 51065), (113, 51182), (120, 51215), (133, 51272), (135, 51284), (138, 51296), (139, 51299), (143, 51335), (144, 51341),

Gene: Farrylious_61 Start: 50649, Stop: 51143, Start Num: 38
Candidate Starts for Farrylious_61:
(Start: 38 @50649 has 10 MA's), (43, 50664), (46, 50682), (61, 50727), (72, 50796), (80, 50826), (81, 50832), (83, 50841), (84, 50844), (113, 50961), (120, 50994), (133, 51051), (135, 51063), (138, 51075), (139, 51078), (143, 51114), (144, 51120),

Gene: FlyingTortilla_63 Start: 54543, Stop: 54986, Start Num: 50
Candidate Starts for FlyingTortilla_63:
(Start: 38 @54492 has 10 MA's), (43, 54507), (Start: 50 @54543 has 2 MA's), (68, 54603), (72, 54639), (77, 54660), (80, 54669), (81, 54675), (83, 54684), (84, 54687), (86, 54699), (87, 54705), (115, 54810), (118, 54834), (132, 54891), (133, 54894), (135, 54906), (138, 54918), (139, 54921), (144, 54963), (146, 54981),

Gene: Francois_32 Start: 26828, Stop: 27214, Start Num: 45
Candidate Starts for Francois_32:
(11, 26537), (12, 26540), (Start: 44 @26825 has 9 MA's), (Start: 45 @26828 has 21 MA's), (68, 26909), (71, 26936), (74, 26948), (92, 27020), (94, 27023), (113, 27092), (114, 27095), (115, 27098), (119, 27125), (121, 27131), (122, 27134), (128, 27155), (131, 27167),

Gene: FruityLoops_61 Start: 53797, Stop: 54291, Start Num: 38
Candidate Starts for FruityLoops_61:
(Start: 38 @53797 has 10 MA's), (43, 53812), (Start: 50 @53848 has 2 MA's), (68, 53908), (72, 53944), (77, 53965), (80, 53974), (81, 53980), (83, 53989), (113, 54109), (115, 54115), (118, 54139), (120, 54142), (132, 54196), (133, 54199), (135, 54211), (138, 54223), (139, 54226), (144, 54268), (146, 54286),

Gene: GAL1_24 Start: 20564, Stop: 20953, Start Num: 45

Candidate Starts for GAL1_24:
(Start: 45 @20564 has 21 MA's), (49, 20582), (58, 20603), (59, 20609), (62, 20621), (67, 20645), (68, 20648), (69, 20660), (75, 20693), (81, 20711), (94, 20762), (129, 20897), (131, 20906),

Gene: GMA6_48 Start: 42191, Stop: 42718, Start Num: 28
Candidate Starts for GMA6_48:
(13, 41975), (17, 42029), (18, 42032), (21, 42071), (22, 42074), (23, 42077), (25, 42122), (28, 42191), (Start: 38 @42236 has 10 MA's), (Start: 40 @42245 has 1 MA's), (48, 42281), (Start: 50 @42287 has 2 MA's), (67, 42344), (87, 42455), (91, 42467), (104, 42524), (106, 42527), (130, 42617), (132, 42632), (133, 42635),

Gene: Gallia_44 Start: 36938, Stop: 37393, Start Num: 30
Candidate Starts for Gallia_44:
(30, 36938), (47, 37013), (49, 37022), (54, 37034), (60, 37052), (62, 37061), (81, 37151), (88, 37184), (90, 37190), (91, 37193), (96, 37217), (100, 37238), (133, 37361), (134, 37367),

Gene: Gibbles_30 Start: 35671, Stop: 36108, Start Num: 33
Candidate Starts for Gibbles_30:
(Start: 33 @35671 has 5 MA's), (55, 35746), (56, 35749), (66, 35776), (94, 35917),

Gene: GrandSlam_32 Start: 27336, Stop: 27725, Start Num: 44
Candidate Starts for GrandSlam_32:
(11, 27048), (12, 27051), (Start: 44 @27336 has 9 MA's), (53, 27363), (68, 27420), (71, 27447), (74, 27459), (90, 27522), (94, 27534), (113, 27603), (115, 27609), (119, 27636), (121, 27642), (122, 27645), (131, 27678),

Gene: Gray_63 Start: 50871, Stop: 51365, Start Num: 38
Candidate Starts for Gray_63:
(Start: 38 @50871 has 10 MA's), (43, 50886), (46, 50904), (61, 50949), (72, 51018), (80, 51048), (81, 51054), (83, 51063), (84, 51066), (113, 51183), (120, 51216), (133, 51273), (135, 51285), (138, 51297), (139, 51300), (143, 51336), (144, 51342),

Gene: Gustav_23 Start: 19270, Stop: 19707, Start Num: 34
Candidate Starts for Gustav_23:
(Start: 34 @19270 has 3 MA's), (58, 19333), (59, 19339), (69, 19390), (72, 19411), (73, 19414), (83, 19450), (84, 19453), (86, 19465), (97, 19510), (101, 19531), (107, 19543), (116, 19576), (121, 19600), (122, 19603), (127, 19621), (133, 19651),

Gene: Hamood_32 Start: 27336, Stop: 27725, Start Num: 44
Candidate Starts for Hamood_32:
(11, 27048), (12, 27051), (Start: 44 @27336 has 9 MA's), (53, 27363), (68, 27420), (71, 27447), (74, 27459), (90, 27522), (94, 27534), (113, 27603), (115, 27609), (119, 27636), (121, 27642), (122, 27645), (131, 27678),

Gene: Hanem_63 Start: 50870, Stop: 51364, Start Num: 38
Candidate Starts for Hanem_63:
(Start: 38 @50870 has 10 MA's), (43, 50885), (46, 50903), (61, 50948), (72, 51017), (80, 51047), (81, 51053), (83, 51062), (84, 51065), (113, 51182), (120, 51215), (133, 51272), (135, 51284), (138, 51296), (139, 51299), (143, 51335), (144, 51341),

Gene: Heinz_23 Start: 18963, Stop: 19352, Start Num: 45
Candidate Starts for Heinz_23:

(19, 18741), (Start: 34 @18921 has 3 MA's), (36, 18930), (Start: 44 @18960 has 9 MA's), (Start: 45 @18963 has 21 MA's), (58, 19002), (67, 19044), (68, 19047), (69, 19059), (84, 19122), (101, 19200), (116, 19245), (129, 19296),

Gene: Hibiscus_23 Start: 18911, Stop: 19300, Start Num: 45
Candidate Starts for Hibiscus_23:
(19, 18689), (Start: 34 @18869 has 3 MA's), (36, 18878), (Start: 44 @18908 has 9 MA's), (Start: 45 @18911 has 21 MA's), (58, 18950), (67, 18992), (68, 18995), (69, 19007), (84, 19070), (101, 19148), (116, 19193), (129, 19244),

Gene: JCole_20 Start: 17888, Stop: 18277, Start Num: 45
Candidate Starts for JCole_20:
(Start: 45 @17888 has 21 MA's), (49, 17906), (58, 17927), (59, 17933), (62, 17945), (67, 17969), (68, 17972), (69, 17984), (74, 18011), (75, 18017), (81, 18035), (116, 18170), (129, 18221),

Gene: Jojo24_23 Start: 18908, Stop: 19297, Start Num: 45
Candidate Starts for Jojo24_23:
(19, 18686), (Start: 34 @18866 has 3 MA's), (36, 18875), (Start: 44 @18905 has 9 MA's), (Start: 45 @18908 has 21 MA's), (58, 18947), (67, 18989), (68, 18992), (84, 19067), (101, 19145), (116, 19190), (129, 19241),

Gene: Kabocha_64 Start: 51683, Stop: 52177, Start Num: 38
Candidate Starts for Kabocha_64:
(Start: 38 @51683 has 10 MA's), (43, 51698), (46, 51716), (61, 51761), (72, 51830), (80, 51860), (81, 51866), (83, 51875), (84, 51878), (113, 51995), (120, 52028), (133, 52085), (135, 52097), (138, 52109), (139, 52112), (143, 52148), (144, 52154),

Gene: Kampe_31 Start: 35532, Stop: 35969, Start Num: 33
Candidate Starts for Kampe_31:
(Start: 33 @35532 has 5 MA's), (55, 35607), (56, 35610), (66, 35637), (94, 35778),

Gene: Kimchi1738_33 Start: 29676, Stop: 30134, Start Num: 31
Candidate Starts for Kimchi1738_33:
(Start: 31 @29676 has 8 MA's), (Start: 45 @29745 has 21 MA's), (61, 29796), (70, 29856), (95, 29949), (111, 30000),

Gene: Lenoshki_63 Start: 52598, Stop: 53059, Start Num: 46
Candidate Starts for Lenoshki_63:
(Start: 38 @52565 has 10 MA's), (43, 52580), (46, 52598), (61, 52643), (72, 52712), (80, 52742), (81, 52748), (83, 52757), (84, 52760), (113, 52877), (120, 52910), (133, 52967), (135, 52979), (138, 52991), (139, 52994), (143, 53030), (144, 53036),

Gene: Lucky10_22 Start: 18828, Stop: 19217, Start Num: 45
Candidate Starts for Lucky10_22:
(14, 18546), (15, 18549), (26, 18699), (Start: 45 @18828 has 21 MA's), (49, 18846), (58, 18867), (59, 18873), (60, 18876), (62, 18885), (67, 18909), (68, 18912), (74, 18951), (75, 18957), (81, 18975), (87, 19005), (102, 19068), (105, 19074), (129, 19161), (131, 19170),

Gene: MacGully_54 Start: 36610, Stop: 37059, Start Num: 32
Candidate Starts for MacGully_54:
(1, 35257), (2, 35326), (3, 35362), (4, 35701), (5, 35824), (7, 36208), (8, 36265), (Start: 32 @36610 has 2 MA's), (35, 36625), (Start: 45 @36658 has 21 MA's), (58, 36697), (63, 36718), (75, 36799), (88, 36850), (90, 36856), (103, 36913), (121, 36976), (124, 36988), (132, 37024), (137, 37051),

Gene: Mahdia_23 Start: 18947, Stop: 19378, Start Num: 34
Candidate Starts for Mahdia_23:
(Start: 34 @18947 has 3 MA's), (58, 19010), (73, 19091), (75, 19100), (86, 19142), (87, 19148), (92, 19166), (97, 19187), (101, 19208), (107, 19220), (121, 19277), (122, 19280), (127, 19298), (129, 19304),

Gene: MakCheese_29 Start: 25049, Stop: 25438, Start Num: 45
Candidate Starts for MakCheese_29:
(Start: 45 @25049 has 21 MA's), (49, 25067), (58, 25088), (62, 25106), (67, 25130), (68, 25133), (73, 25169), (74, 25172), (81, 25196), (85, 25214), (94, 25247), (129, 25382),

Gene: Mbo2_28 Start: 29361, Stop: 29771, Start Num: 42
Candidate Starts for Mbo2_28:
(42, 29361), (61, 29421), (64, 29430), (68, 29448), (78, 29517), (87, 29559), (91, 29571), (108, 29634), (123, 29700), (126, 29706),

Gene: Mikronejon_61 Start: 50903, Stop: 51364, Start Num: 46
Candidate Starts for Mikronejon_61:
(Start: 38 @50870 has 10 MA's), (43, 50885), (46, 50903), (61, 50948), (72, 51017), (80, 51047), (81, 51053), (83, 51062), (84, 51065), (113, 51182), (120, 51215), (133, 51272), (135, 51284), (138, 51296), (139, 51299), (143, 51335), (144, 51341),

Gene: MintFritos_61 Start: 50871, Stop: 51365, Start Num: 38
Candidate Starts for MintFritos_61:
(Start: 38 @50871 has 10 MA's), (43, 50886), (46, 50904), (61, 50949), (72, 51018), (80, 51048), (81, 51054), (83, 51063), (84, 51066), (113, 51183), (120, 51216), (133, 51273), (135, 51285), (138, 51297), (139, 51300), (143, 51336), (144, 51342),

Gene: Morrissey_24 Start: 20150, Stop: 20584, Start Num: 34
Candidate Starts for Morrissey_24:
(Start: 34 @20150 has 3 MA's), (58, 20213), (81, 20321), (85, 20339), (86, 20345), (87, 20351), (92, 20369), (107, 20423), (109, 20426), (114, 20444), (115, 20447), (121, 20480), (133, 20531), (141, 20573),

Gene: Mulch_32 Start: 26802, Stop: 27188, Start Num: 45
Candidate Starts for Mulch_32:
(11, 26511), (12, 26514), (Start: 44 @26799 has 9 MA's), (Start: 45 @26802 has 21 MA's), (68, 26883), (71, 26910), (74, 26922), (86, 26970), (94, 26997), (113, 27066), (115, 27072), (119, 27099), (121, 27105), (122, 27108), (131, 27141),

Gene: Nadeem_32 Start: 26802, Stop: 27188, Start Num: 45
Candidate Starts for Nadeem_32:
(11, 26511), (12, 26514), (Start: 44 @26799 has 9 MA's), (Start: 45 @26802 has 21 MA's), (68, 26883), (71, 26910), (74, 26922), (86, 26970), (94, 26997), (113, 27066), (115, 27072), (119, 27099), (121, 27105), (122, 27108), (131, 27141),

Gene: NancyRae_32 Start: 26811, Stop: 27197, Start Num: 45
Candidate Starts for NancyRae_32:
(11, 26520), (12, 26523), (Start: 44 @26808 has 9 MA's), (Start: 45 @26811 has 21 MA's), (68, 26892), (71, 26919), (74, 26931), (94, 27006), (115, 27081), (119, 27108), (121, 27114), (122, 27117), (131, 27150),

Gene: Oogie_64 Start: 52591, Stop: 53085, Start Num: 38
Candidate Starts for Oogie_64:
(Start: 38 @52591 has 10 MA's), (43, 52606), (46, 52624), (61, 52669), (72, 52738), (80, 52768), (81, 52774), (83, 52783), (84, 52786), (113, 52903), (120, 52936), (133, 52993), (135, 53005), (138, 53017), (139, 53020), (143, 53056), (144, 53062),

Gene: Orchid_31 Start: 35532, Stop: 35969, Start Num: 33
Candidate Starts for Orchid_31:
(Start: 33 @35532 has 5 MA's), (55, 35607), (56, 35610), (66, 35637), (94, 35778),

Gene: P1201_49 Start: 36622, Stop: 37077, Start Num: 30
Candidate Starts for P1201_49:
(30, 36622), (47, 36697), (49, 36706), (53, 36715), (54, 36718), (61, 36739), (62, 36745), (76, 36829), (81, 36835), (83, 36844), (96, 36901), (99, 36916), (100, 36922), (133, 37045),

Gene: PCoral7_24 Start: 20696, Stop: 21085, Start Num: 44
Candidate Starts for PCoral7_24:
(Start: 44 @20696 has 9 MA's), (71, 20807), (87, 20873), (103, 20939), (113, 20963), (121, 21002), (122, 21005), (125, 21017), (131, 21038), (137, 21077),

Gene: Pakusa_61 Start: 50645, Stop: 51106, Start Num: 46
Candidate Starts for Pakusa_61:
(Start: 38 @50612 has 10 MA's), (43, 50627), (46, 50645), (61, 50690), (72, 50759), (80, 50789), (81, 50795), (83, 50804), (84, 50807), (113, 50924), (120, 50957), (133, 51014), (135, 51026), (138, 51038), (139, 51041), (143, 51077), (144, 51083),

Gene: Parada_32 Start: 26802, Stop: 27188, Start Num: 45
Candidate Starts for Parada_32:
(11, 26511), (12, 26514), (Start: 44 @26799 has 9 MA's), (Start: 45 @26802 has 21 MA's), (68, 26883), (71, 26910), (74, 26922), (86, 26970), (94, 26997), (113, 27066), (115, 27072), (119, 27099), (121, 27105), (122, 27108), (131, 27141),

Gene: PatrickStar_31 Start: 35532, Stop: 35969, Start Num: 33
Candidate Starts for PatrickStar_31:
(Start: 33 @35532 has 5 MA's), (55, 35607), (56, 35610), (66, 35637), (94, 35778),

Gene: PeteyPab_35 Start: 31433, Stop: 31891, Start Num: 31
Candidate Starts for PeteyPab_35:
(Start: 31 @31433 has 8 MA's), (Start: 45 @31502 has 21 MA's), (61, 31553), (70, 31613), (95, 31706), (111, 31757),

Gene: PhaoMing_21 Start: 19296, Stop: 19685, Start Num: 45
Candidate Starts for PhaoMing_21:
(Start: 45 @19296 has 21 MA's), (49, 19314), (58, 19335), (59, 19341), (62, 19353), (68, 19380), (74, 19419), (75, 19425), (81, 19443), (90, 19482), (105, 19542), (129, 19629),

Gene: Pimento_32 Start: 26280, Stop: 26666, Start Num: 45
Candidate Starts for Pimento_32:
(11, 25989), (12, 25992), (Start: 44 @26277 has 9 MA's), (Start: 45 @26280 has 21 MA's), (67, 26358), (68, 26361), (71, 26388), (74, 26400), (94, 26475), (113, 26544), (115, 26550), (119, 26577), (121, 26583), (122, 26586), (131, 26619),

Gene: PotatoChip_36 Start: 31435, Stop: 31893, Start Num: 31

Candidate Starts for PotatoChip_36:
(Start: 31 @31435 has 8 MA's), (Start: 45 @31504 has 21 MA's), (61, 31555), (70, 31615), (95, 31708), (111, 31759),

Gene: Powerball_22 Start: 19728, Stop: 20138, Start Num: 40
Candidate Starts for Powerball_22:
(20, 19533), (24, 19572), (27, 19623), (37, 19716), (Start: 38 @19719 has 10 MA's), (Start: 40 @19728 has 1 MA's), (Start: 45 @19746 has 21 MA's), (51, 19770), (53, 19773), (54, 19776), (63, 19806), (65, 19815), (67, 19830), (71, 19860), (73, 19869), (74, 19872), (82, 19902), (84, 19908), (87, 19926), (89, 19932), (92, 19944), (97, 19965), (103, 19992), (116, 20031), (117, 20034), (119, 20049), (130, 20088),

Gene: Puppers_23 Start: 18920, Stop: 19375, Start Num: 39
Candidate Starts for Puppers_23:
(16, 18686), (29, 18875), (Start: 39 @18920 has 2 MA's), (41, 18929), (57, 18983), (58, 18986), (61, 18998), (67, 19028), (74, 19070), (75, 19076), (81, 19094), (86, 19118), (87, 19124), (89, 19130), (92, 19142), (96, 19160), (97, 19163), (101, 19184), (116, 19229), (122, 19256), (125, 19268), (127, 19274), (140, 19337), (142, 19358),

Gene: Reyja_24 Start: 19082, Stop: 19471, Start Num: 45
Candidate Starts for Reyja_24:
(19, 18860), (Start: 34 @19040 has 3 MA's), (36, 19049), (Start: 44 @19079 has 9 MA's), (Start: 45 @19082 has 21 MA's), (58, 19121), (60, 19130), (67, 19163), (82, 19235), (84, 19241), (101, 19319), (116, 19364), (131, 19424),

Gene: RobinSparkles_34 Start: 36449, Stop: 36886, Start Num: 33
Candidate Starts for RobinSparkles_34:
(Start: 33 @36449 has 5 MA's), (55, 36524), (56, 36527), (66, 36554), (94, 36695),

Gene: Ruthy_27 Start: 23727, Stop: 24116, Start Num: 45
Candidate Starts for Ruthy_27:
(Start: 45 @23727 has 21 MA's), (49, 23745), (58, 23766), (59, 23772), (62, 23784), (67, 23808), (68, 23811), (73, 23847), (74, 23850), (81, 23874), (85, 23892), (94, 23925), (129, 24060),

Gene: Santhid_23 Start: 18916, Stop: 19305, Start Num: 45
Candidate Starts for Santhid_23:
(19, 18694), (Start: 34 @18874 has 3 MA's), (36, 18883), (Start: 44 @18913 has 9 MA's), (Start: 45 @18916 has 21 MA's), (58, 18955), (67, 18997), (68, 19000), (69, 19012), (84, 19075), (101, 19153), (116, 19198), (129, 19249),

Gene: ScarletRaider_62 Start: 53830, Stop: 54273, Start Num: 50
Candidate Starts for ScarletRaider_62:
(Start: 38 @53779 has 10 MA's), (43, 53794), (Start: 50 @53830 has 2 MA's), (68, 53890), (72, 53926), (77, 53947), (80, 53956), (81, 53962), (83, 53971), (84, 53974), (86, 53986), (87, 53992), (115, 54097), (118, 54121), (132, 54178), (133, 54181), (135, 54193), (138, 54205), (139, 54208), (144, 54250), (146, 54268),

Gene: Schomber_62 Start: 50620, Stop: 51114, Start Num: 38
Candidate Starts for Schomber_62:
(Start: 38 @50620 has 10 MA's), (43, 50635), (46, 50653), (61, 50698), (72, 50767), (80, 50797), (81, 50803), (83, 50812), (84, 50815), (113, 50932), (120, 50965), (133, 51022), (135, 51034), (138, 51046), (139, 51049), (143, 51085), (144, 51091),

Gene: Sprinklemunch_27 Start: 25302, Stop: 25691, Start Num: 45
Candidate Starts for Sprinklemunch_27:
(Start: 45 @25302 has 21 MA's), (49, 25320), (58, 25341), (62, 25359), (67, 25383), (68, 25386), (73, 25422), (74, 25425), (81, 25449), (85, 25467), (92, 25497), (94, 25500), (129, 25635),

Gene: Stickynote_35 Start: 30855, Stop: 31313, Start Num: 31
Candidate Starts for Stickynote_35:
(Start: 31 @30855 has 8 MA's), (Start: 45 @30924 has 21 MA's), (61, 30975), (70, 31035), (95, 31128), (111, 31179),

Gene: Tarzan_23 Start: 18885, Stop: 19274, Start Num: 45
Candidate Starts for Tarzan_23:
(19, 18663), (Start: 34 @18843 has 3 MA's), (36, 18852), (Start: 44 @18882 has 9 MA's), (Start: 45 @18885 has 21 MA's), (58, 18924), (60, 18933), (67, 18966), (68, 18969), (82, 19038), (84, 19044), (101, 19122), (116, 19167), (131, 19227),

Gene: Thales_58 Start: 53079, Stop: 53486, Start Num: 64
Candidate Starts for Thales_58:
(Start: 38 @52995 has 10 MA's), (52, 53040), (64, 53079), (72, 53139), (79, 53166), (80, 53169), (81, 53175), (91, 53214), (93, 53223), (98, 53256), (103, 53271), (110, 53283), (112, 53295), (125, 53346), (136, 53397), (141, 53424), (145, 53454),

Gene: Toast_24 Start: 20696, Stop: 21085, Start Num: 44
Candidate Starts for Toast_24:
(Start: 44 @20696 has 9 MA's), (71, 20807), (87, 20873), (103, 20939), (113, 20963), (121, 21002), (122, 21005), (125, 21017), (131, 21038), (137, 21077),

Gene: Toneprano_61 Start: 50918, Stop: 51379, Start Num: 46
Candidate Starts for Toneprano_61:
(Start: 38 @50885 has 10 MA's), (43, 50900), (46, 50918), (61, 50963), (72, 51032), (80, 51062), (81, 51068), (83, 51077), (84, 51080), (113, 51197), (120, 51230), (133, 51287), (135, 51299), (138, 51311), (139, 51314), (143, 51350), (144, 51356),

Gene: Twin_61 Start: 50903, Stop: 51364, Start Num: 46
Candidate Starts for Twin_61:
(Start: 38 @50870 has 10 MA's), (43, 50885), (46, 50903), (61, 50948), (72, 51017), (80, 51047), (81, 51053), (83, 51062), (84, 51065), (113, 51182), (120, 51215), (133, 51272), (135, 51284), (138, 51296), (139, 51299), (143, 51335), (144, 51341),

Gene: UBSmoodge_65 Start: 54261, Stop: 54755, Start Num: 38
Candidate Starts for UBSmoodge_65:
(Start: 38 @54261 has 10 MA's), (43, 54276), (Start: 50 @54312 has 2 MA's), (68, 54372), (72, 54408), (77, 54429), (80, 54438), (81, 54444), (83, 54453), (86, 54468), (87, 54474), (115, 54579), (120, 54606), (132, 54660), (133, 54663), (135, 54675), (138, 54687), (139, 54690), (144, 54732), (146, 54750),

Gene: WheatThin_32 Start: 26802, Stop: 27188, Start Num: 45
Candidate Starts for WheatThin_32:
(11, 26511), (12, 26514), (Start: 44 @26799 has 9 MA's), (Start: 45 @26802 has 21 MA's), (68, 26883), (71, 26910), (74, 26922), (86, 26970), (94, 26997), (113, 27066), (115, 27072), (119, 27099), (121, 27105), (122, 27108), (131, 27141),

Gene: Widow_23 Start: 18911, Stop: 19366, Start Num: 39

Candidate Starts for Widow_23:
(16, 18677), (29, 18866), (Start: 39 @18911 has 2 MA's), (41, 18920), (57, 18974), (58, 18977), (61, 18989), (67, 19019), (74, 19061), (75, 19067), (86, 19109), (87, 19115), (89, 19121), (92, 19133), (116, 19220), (122, 19247), (125, 19259), (127, 19265), (140, 19328), (142, 19349),

Gene: Zion_36 Start: 31433, Stop: 31891, Start Num: 31
Candidate Starts for Zion_36:
(Start: 31 @31433 has 8 MA's), (Start: 45 @31502 has 21 MA's), (61, 31553), (70, 31613), (95, 31706), (111, 31757),

Gene: Zodiariah_27 Start: 25345, Stop: 25734, Start Num: 45
Candidate Starts for Zodiariah_27:
(Start: 45 @25345 has 21 MA's), (49, 25363), (58, 25384), (62, 25402), (67, 25426), (68, 25429), (73, 25465), (74, 25468), (81, 25492), (94, 25543), (129, 25678),