

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 191336 Report

This analysis was run 11/02/24 on database version 579.

Pham number 191336 has 52 members, 11 are drafts.

Phages represented in each track:

- Track 1 : Shepard_20, LilHuddy_20
- Track 2 : Phaby_20
- Track 3 : Giantsbane_24
- Track 4 : Tokki_20
- Track 5 : Ingrid_23, Loretta_23
- Track 6 : Makai_23
- Track 7 : Truckee_22
- Track 8 : TrixiePhattel_23
- Track 9 : Phaila_22, Uzumaki_23, GantcherGoblin_22, Zeina_23, Argan_22
- Track 10 : BarbieDoll_26
- Track 11 : Renaldo_28, Lewando_26
- Track 12 : Leathea_23
- Track 13 : RainyPolka_26
- Track 14 : RainyPolka_25
- Track 15 : Asis_25, BabyGotBac_25, Salete_25, BayC_25, Maih_25, TP1604_25
- Track 16 : Asis_24, BabyGotBac_24, TP1604_24, Salete_24, BayC_24, Abt2graduatex2_25, Maih_24
- Track 17 : Xkcd426_31
- Track 18 : Mischief19_33
- Track 19 : Xkcd426_32
- Track 20 : Abt2graduatex2_26
- Track 21 : YDN12_27
- Track 22 : Xkcd426_30
- Track 23 : YDN12_26
- Track 24 : WilliamStrong_19
- Track 25 : DizzyRudy_21
- Track 26 : Camille_21
- Track 27 : Damascus_21
- Track 28 : Arzan_16
- Track 29 : Jazzy4900_18, Sunny4976_17
- Track 30 : Paella_34, Qui_34, Elver_33
- Track 31 : TurkishDelight_32

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

The start number called the most often in the published annotations is 25, it was called in 14 of the 41 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Argan_22, Arzan_16, BarbieDoll_26, Elver_33, GantcherGoblin_22, Giantsbane_24, Jazzy4900_18, Leathea_23, Lewando_26, LilHuddy_20, Makai_23, Paella_34, Phaby_20, Phaila_22, Qui_34, Renaldo_28, Shepard_20, Sunny4976_17, Tokki_20, TrixiePhattel_23, Truckee_22, Uzumaki_23, Zeina_23,

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

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

- Abt2graduatex2_25, Abt2graduatex2_26, Asis_24, Asis_25, BabyGotBac_24, BabyGotBac_25, BayC_24, BayC_25, Camille_21, Damascus_21, DizzyRudy_21, Ingrid_23, Loretta_23, Maih_24, Maih_25, Mischief19_33, RainyPolka_25, RainyPolka_26, Salete_24, Salete_25, TP1604_24, TP1604_25, TurkishDelight_32, WilliamStrong_19, Xkcd426_30, Xkcd426_31, Xkcd426_32, YDN12_26, YDN12_27,

Summary by start number:

Start 2:

- Found in 2 of 52 (3.8%) of genes in pham
- Manual Annotations of this start: 2 of 41
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Damascus_21 (EL), DizzyRudy_21 (EL),

Start 7:

- Found in 2 of 52 (3.8%) of genes in pham
- Manual Annotations of this start: 2 of 41
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ingrid_23 (AU3), Loretta_23 (AU3),

Start 12:

- Found in 1 of 52 (1.9%) of genes in pham
- Manual Annotations of this start: 1 of 41
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Camille_21 (EL),

Start 21:

- Found in 9 of 52 (17.3%) of genes in pham
- Manual Annotations of this start: 8 of 41
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abt2graduatex2_26 (BG), Asis_25 (BG), BabyGotBac_25 (BG), BayC_25 (BG), Maih_25 (BG), RainyPolka_26 (BG), Salete_25 (BG), TP1604_25 (BG), Xkcd426_31 (BG),

Start 25:

- Found in 23 of 52 (44.2%) of genes in pham
- Manual Annotations of this start: 14 of 41
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Argan_22 (AU6), Arzan_16 (FI), BarbieDoll_26 (AU6), Elver_33 (FK), GantcherGoblin_22 (AU6), Giantsbane_24 (AU2), Jazzy4900_18 (FI), Leathea_23 (AU6), Lewando_26 (AU6), LilHuddy_20 (AU2), Makai_23 (AU5), Paella_34 (FK), Phaby_20 (AU2), Phaila_22 (AU6), Qui_34 (FK), Renaldo_28 (AU6), Shepard_20 (AU2), Sunny4976_17 (FI), Tokki_20 (AU2), TrixiePhattel_23 (AU6), Truckee_22 (AU5), Uzumaki_23 (AU6), Zeina_23 (AU6),

Start 27:

- Found in 1 of 52 (1.9%) of genes in pham
- Manual Annotations of this start: 1 of 41
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Xkcd426_32 (BG),

Start 36:

- Found in 2 of 52 (3.8%) of genes in pham
- Manual Annotations of this start: 1 of 41
- Called 50.0% of time when present
- Phage (with cluster) where this start called: WilliamStrong_19 (EA6),

Start 62:

- Found in 12 of 52 (23.1%) of genes in pham
- Manual Annotations of this start: 9 of 41
- Called 83.3% of time when present
- Phage (with cluster) where this start called: Abt2graduatex2_25 (BG), Asis_24 (BG), BabyGotBac_24 (BG), BayC_24 (BG), Maih_24 (BG), RainyPolka_25 (BG), Salete_24 (BG), TP1604_24 (BG), Xkcd426_30 (BG), YDN12_26 (BG),

Start 63:

- Found in 1 of 52 (1.9%) of genes in pham
- Manual Annotations of this start: 1 of 41
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TurkishDelight_32 (singleton),

Start 64:

- Found in 1 of 52 (1.9%) of genes in pham
- Manual Annotations of this start: 1 of 41
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Mischief19_33 (BG),

Start 151:

- Found in 1 of 52 (1.9%) of genes in pham
- Manual Annotations of this start: 1 of 41
- Called 100.0% of time when present
- Phage (with cluster) where this start called: YDN12_27 (BG),

Summary by clusters:

There are 10 clusters represented in this pham: EL, singleton, BG, AU3, AU2, AU5, AU6, FI, FK, EA6,

Info for manual annotations of cluster AU2:

- Start number 25 was manually annotated 5 times for cluster AU2.

Info for manual annotations of cluster AU3:

- Start number 7 was manually annotated 2 times for cluster AU3.

Info for manual annotations of cluster AU5:

- Start number 25 was manually annotated 2 times for cluster AU5.

Info for manual annotations of cluster AU6:

- Start number 25 was manually annotated 5 times for cluster AU6.

Info for manual annotations of cluster BG:

- Start number 21 was manually annotated 8 times for cluster BG.
- Start number 27 was manually annotated 1 time for cluster BG.
- Start number 62 was manually annotated 9 times for cluster BG.
- Start number 64 was manually annotated 1 time for cluster BG.
- Start number 151 was manually annotated 1 time for cluster BG.

Info for manual annotations of cluster EA6:

- Start number 36 was manually annotated 1 time for cluster EA6.

Info for manual annotations of cluster EL:

- Start number 2 was manually annotated 2 times for cluster EL.
- Start number 12 was manually annotated 1 time for cluster EL.

Info for manual annotations of cluster FK:

- Start number 25 was manually annotated 2 times for cluster FK.

Gene Information:

Gene: Abt2graduatex2_25 Start: 23773, Stop: 24504, Start Num: 62

Candidate Starts for Abt2graduatex2_25:

(Start: 62 @23773 has 9 MA's), (68, 23788), (71, 23809), (81, 23866), (94, 23932), (107, 24079), (111, 24160), (115, 24196), (132, 24298), (133, 24304),

Gene: Abt2graduatex2_26 Start: 24514, Stop: 25437, Start Num: 21

Candidate Starts for Abt2graduatex2_26:

(Start: 21 @24514 has 8 MA's), (24, 24556), (35, 24622), (51, 24682), (53, 24700), (72, 24760), (80, 24799), (82, 24805), (104, 24982), (108, 25015), (124, 25192), (131, 25225), (134, 25243), (145, 25384), (147, 25414), (150, 25426),

Gene: Argan_22 Start: 17327, Stop: 18250, Start Num: 25

Candidate Starts for Argan_22:

(Start: 25 @17327 has 14 MA's), (46, 17423), (117, 17939), (123, 17978), (126, 17999), (138, 18077), (149, 18233), (150, 18239),

Gene: Arzan_16 Start: 12657, Stop: 13586, Start Num: 25

Candidate Starts for Arzan_16:

(Start: 25 @12657 has 14 MA's), (32, 12690), (67, 12837), (84, 12939), (91, 12999), (107, 13155), (117, 13284), (138, 13413), (147, 13563), (149, 13569),

Gene: Asis_25 Start: 23929, Stop: 24852, Start Num: 21

Candidate Starts for Asis_25:

(Start: 21 @23929 has 8 MA's), (24, 23971), (35, 24037), (44, 24070), (51, 24097), (53, 24115), (60, 24148), (72, 24175), (80, 24214), (82, 24220), (104, 24397), (108, 24430), (124, 24607), (131, 24640), (134, 24658), (145, 24799), (147, 24829), (150, 24841),

Gene: Asis_24 Start: 23188, Stop: 23919, Start Num: 62

Candidate Starts for Asis_24:

(Start: 62 @23188 has 9 MA's), (68, 23203), (71, 23224), (81, 23281), (94, 23347), (107, 23494), (111, 23575), (115, 23611), (132, 23713), (133, 23719),

Gene: BabyGotBac_25 Start: 23929, Stop: 24852, Start Num: 21

Candidate Starts for BabyGotBac_25:

(Start: 21 @23929 has 8 MA's), (24, 23971), (35, 24037), (44, 24070), (51, 24097), (53, 24115), (60, 24148), (72, 24175), (80, 24214), (82, 24220), (104, 24397), (108, 24430), (124, 24607), (131, 24640), (134, 24658), (145, 24799), (147, 24829), (150, 24841),

Gene: BabyGotBac_24 Start: 23188, Stop: 23919, Start Num: 62

Candidate Starts for BabyGotBac_24:

(Start: 62 @23188 has 9 MA's), (68, 23203), (71, 23224), (81, 23281), (94, 23347), (107, 23494), (111, 23575), (115, 23611), (132, 23713), (133, 23719),

Gene: BarbieDoll_26 Start: 19306, Stop: 20223, Start Num: 25

Candidate Starts for BarbieDoll_26:

(Start: 25 @19306 has 14 MA's), (46, 19402), (47, 19405), (91, 19636), (125, 19969), (130, 19993), (137, 20044), (149, 20206),

Gene: BayC_24 Start: 23188, Stop: 23919, Start Num: 62

Candidate Starts for BayC_24:

(Start: 62 @23188 has 9 MA's), (68, 23203), (71, 23224), (81, 23281), (94, 23347), (107, 23494), (111, 23575), (115, 23611), (132, 23713), (133, 23719),

Gene: BayC_25 Start: 23929, Stop: 24852, Start Num: 21

Candidate Starts for BayC_25:

(Start: 21 @23929 has 8 MA's), (24, 23971), (35, 24037), (44, 24070), (51, 24097), (53, 24115), (60, 24148), (72, 24175), (80, 24214), (82, 24220), (104, 24397), (108, 24430), (124, 24607), (131, 24640), (134, 24658), (145, 24799), (147, 24829), (150, 24841),

Gene: Camille_21 Start: 14413, Stop: 15567, Start Num: 12

Candidate Starts for Camille_21:

(6, 14350), (Start: 12 @14413 has 1 MA's), (15, 14455), (16, 14467), (50, 14725), (65, 14806), (87, 14920), (149, 15550),

Gene: Damascus_21 Start: 14882, Stop: 16249, Start Num: 2

Candidate Starts for Damascus_21:

(1, 14819), (Start: 2 @14882 has 2 MA's), (3, 14915), (5, 14978), (9, 15071), (11, 15077), (14, 15104), (17, 15158), (19, 15197), (23, 15263), (28, 15311), (30, 15320), (33, 15326), (39, 15353), (55, 15446), (100, 15725), (106, 15806), (120, 15968), (149, 16232),

Gene: DizzyRudy_21 Start: 14811, Stop: 16178, Start Num: 2

Candidate Starts for DizzyRudy_21:

(1, 14748), (Start: 2 @14811 has 2 MA's), (3, 14844), (4, 14883), (5, 14907), (8, 14973), (19, 15126), (20, 15156), (39, 15282), (47, 15318), (54, 15357), (58, 15390), (79, 15498), (88, 15534), (95, 15597), (96, 15600), (100, 15654), (106, 15735), (112, 15828), (131, 15957), (143, 16071), (147, 16155),

Gene: Elver_33 Start: 23694, Stop: 24623, Start Num: 25

Candidate Starts for Elver_33:

(Start: 25 @23694 has 14 MA's), (32, 23727), (78, 23946), (84, 23976), (117, 24321), (138, 24450), (149, 24606), (150, 24612),

Gene: GantcherGoblin_22 Start: 17366, Stop: 18289, Start Num: 25

Candidate Starts for GantcherGoblin_22:

(Start: 25 @17366 has 14 MA's), (46, 17462), (117, 17978), (123, 18017), (126, 18038), (138, 18116), (149, 18272), (150, 18278),

Gene: Giantsbane_24 Start: 17626, Stop: 18546, Start Num: 25

Candidate Starts for Giantsbane_24:

(Start: 25 @17626 has 14 MA's), (32, 17659), (34, 17671), (42, 17707), (45, 17716), (57, 17773), (84, 17902), (90, 17956), (140, 18385), (149, 18529), (150, 18535),

Gene: Ingrid_23 Start: 17977, Stop: 19170, Start Num: 7

Candidate Starts for Ingrid_23:

(Start: 7 @17977 has 2 MA's), (10, 18007), (13, 18034), (34, 18268), (48, 18331), (49, 18337), (65, 18421), (73, 18475), (78, 18499), (94, 18583), (98, 18595), (103, 18700), (112, 18811), (114, 18841), (138, 18988), (140, 19003), (149, 19153),

Gene: Jazzy4900_18 Start: 12693, Stop: 13619, Start Num: 25

Candidate Starts for Jazzy4900_18:

(Start: 25 @12693 has 14 MA's), (32, 12726), (47, 12789), (84, 12975), (117, 13317), (138, 13446), (149, 13602),

Gene: Leathea_23 Start: 17352, Stop: 18275, Start Num: 25

Candidate Starts for Leathea_23:

(Start: 25 @17352 has 14 MA's), (46, 17448), (94, 17691), (130, 18045), (144, 18195), (149, 18258), (150, 18264),

Gene: Lewando_26 Start: 19288, Stop: 20205, Start Num: 25

Candidate Starts for Lewando_26:

(Start: 25 @19288 has 14 MA's), (46, 19384), (91, 19618), (125, 19951), (130, 19975), (137, 20026), (149, 20188),

Gene: LilHuddy_20 Start: 14940, Stop: 15875, Start Num: 25

Candidate Starts for LilHuddy_20:

(Start: 25 @14940 has 14 MA's), (32, 14973), (34, 14985), (45, 15030), (69, 15144), (91, 15285), (117, 15573), (128, 15639), (130, 15648), (149, 15858),

Gene: Loretta_23 Start: 17977, Stop: 19170, Start Num: 7

Candidate Starts for Loretta_23:

(Start: 7 @17977 has 2 MA's), (10, 18007), (13, 18034), (34, 18268), (48, 18331), (49, 18337), (65, 18421), (73, 18475), (78, 18499), (94, 18583), (98, 18595), (103, 18700), (112, 18811), (114, 18841), (138, 18988), (140, 19003), (149, 19153),

Gene: Maih_24 Start: 23187, Stop: 23918, Start Num: 62

Candidate Starts for Maih_24:

(Start: 62 @23187 has 9 MA's), (68, 23202), (71, 23223), (81, 23280), (94, 23346), (107, 23493), (111, 23574), (115, 23610), (132, 23712), (133, 23718),

Gene: Maih_25 Start: 23928, Stop: 24851, Start Num: 21

Candidate Starts for Maih_25:

(Start: 21 @23928 has 8 MA's), (24, 23970), (35, 24036), (44, 24069), (51, 24096), (53, 24114), (60, 24147), (72, 24174), (80, 24213), (82, 24219), (104, 24396), (108, 24429), (124, 24606), (131, 24639), (134, 24657), (145, 24798), (147, 24828), (150, 24840),

Gene: Makai_23 Start: 18454, Stop: 19380, Start Num: 25

Candidate Starts for Makai_23:

(Start: 25 @18454 has 14 MA's), (32, 18487), (42, 18535), (57, 18601), (93, 18793), (104, 18916), (110, 18979), (117, 19075), (138, 19204), (144, 19300), (148, 19360), (149, 19363), (150, 19369),

Gene: Mischief19_33 Start: 33795, Stop: 34517, Start Num: 64

Candidate Starts for Mischief19_33:

(29, 33657), (38, 33690), (43, 33714), (Start: 64 @33795 has 1 MA's), (66, 33804), (80, 33885), (95, 33960), (98, 33966), (102, 34062), (111, 34179), (115, 34215), (131, 34314), (139, 34365), (147, 34494),

Gene: Paella_34 Start: 23696, Stop: 24625, Start Num: 25

Candidate Starts for Paella_34:

(Start: 25 @23696 has 14 MA's), (32, 23729), (78, 23948), (84, 23978), (117, 24323), (138, 24452), (149, 24608), (150, 24614),

Gene: Phaby_20 Start: 14926, Stop: 15846, Start Num: 25

Candidate Starts for Phaby_20:

(Start: 25 @14926 has 14 MA's), (32, 14959), (34, 14971), (45, 15016), (67, 15112), (84, 15202), (130, 15616), (149, 15829), (150, 15835),

Gene: Phaila_22 Start: 16944, Stop: 17867, Start Num: 25

Candidate Starts for Phaila_22:

(Start: 25 @16944 has 14 MA's), (46, 17040), (117, 17556), (123, 17595), (126, 17616), (138, 17694), (149, 17850), (150, 17856),

Gene: Qui_34 Start: 23696, Stop: 24625, Start Num: 25

Candidate Starts for Qui_34:

(Start: 25 @23696 has 14 MA's), (32, 23729), (78, 23948), (84, 23978), (117, 24323), (138, 24452), (149, 24608), (150, 24614),

Gene: RainyPolka_26 Start: 24385, Stop: 25302, Start Num: 21

Candidate Starts for RainyPolka_26:

(Start: 21 @24385 has 8 MA's), (24, 24427), (35, 24493), (53, 24565), (75, 24646), (80, 24664), (82, 24670), (95, 24736), (104, 24847), (108, 24880), (131, 25090), (134, 25108), (147, 25279), (150, 25291),

Gene: RainyPolka_25 Start: 23647, Stop: 24375, Start Num: 62

Candidate Starts for RainyPolka_25:

(Start: 62 @23647 has 9 MA's), (68, 23662), (71, 23683), (81, 23740), (107, 23950), (113, 24061), (115, 24067), (121, 24106), (131, 24166), (132, 24169),

Gene: Renaldo_28 Start: 19297, Stop: 20214, Start Num: 25

Candidate Starts for Renaldo_28:

(Start: 25 @19297 has 14 MA's), (46, 19393), (91, 19627), (125, 19960), (130, 19984), (137, 20035), (149, 20197),

Gene: Salete_25 Start: 23929, Stop: 24852, Start Num: 21

Candidate Starts for Salete_25:

(Start: 21 @23929 has 8 MA's), (24, 23971), (35, 24037), (44, 24070), (51, 24097), (53, 24115), (60, 24148), (72, 24175), (80, 24214), (82, 24220), (104, 24397), (108, 24430), (124, 24607), (131, 24640), (134, 24658), (145, 24799), (147, 24829), (150, 24841),

Gene: Salete_24 Start: 23188, Stop: 23919, Start Num: 62

Candidate Starts for Salete_24:

(Start: 62 @23188 has 9 MA's), (68, 23203), (71, 23224), (81, 23281), (94, 23347), (107, 23494), (111, 23575), (115, 23611), (132, 23713), (133, 23719),

Gene: Shepard_20 Start: 14937, Stop: 15872, Start Num: 25

Candidate Starts for Shepard_20:

(Start: 25 @14937 has 14 MA's), (32, 14970), (34, 14982), (45, 15027), (69, 15141), (91, 15282), (117, 15570), (128, 15636), (130, 15645), (149, 15855),

Gene: Sunny4976_17 Start: 12693, Stop: 13619, Start Num: 25

Candidate Starts for Sunny4976_17:

(Start: 25 @12693 has 14 MA's), (32, 12726), (47, 12789), (84, 12975), (117, 13317), (138, 13446), (149, 13602),

Gene: TP1604_24 Start: 23188, Stop: 23919, Start Num: 62

Candidate Starts for TP1604_24:

(Start: 62 @23188 has 9 MA's), (68, 23203), (71, 23224), (81, 23281), (94, 23347), (107, 23494), (111, 23575), (115, 23611), (132, 23713), (133, 23719),

Gene: TP1604_25 Start: 23929, Stop: 24852, Start Num: 21

Candidate Starts for TP1604_25:

(Start: 21 @23929 has 8 MA's), (24, 23971), (35, 24037), (44, 24070), (51, 24097), (53, 24115), (60, 24148), (72, 24175), (80, 24214), (82, 24220), (104, 24397), (108, 24430), (124, 24607), (131, 24640), (134, 24658), (145, 24799), (147, 24829), (150, 24841),

Gene: Tokki_20 Start: 14976, Stop: 15896, Start Num: 25

Candidate Starts for Tokki_20:

(Start: 25 @14976 has 14 MA's), (32, 15009), (34, 15021), (45, 15066), (84, 15252), (104, 15438), (130, 15666), (149, 15879), (150, 15885),

Gene: TrixiePhattel_23 Start: 17568, Stop: 18491, Start Num: 25

Candidate Starts for TrixiePhattel_23:

(Start: 25 @17568 has 14 MA's), (117, 18180), (123, 18219), (126, 18240), (138, 18318), (147, 18468), (149, 18474), (150, 18480),

Gene: Truckee_22 Start: 18499, Stop: 19425, Start Num: 25

Candidate Starts for Truckee_22:

(Start: 25 @18499 has 14 MA's), (32, 18532), (42, 18580), (57, 18646), (93, 18838), (104, 18961), (117, 19120), (138, 19249), (144, 19345), (148, 19405), (149, 19408), (150, 19414),

Gene: TurkishDelight_32 Start: 29754, Stop: 30473, Start Num: 63

Candidate Starts for TurkishDelight_32:

(18, 29469), (31, 29604), (59, 29739), (Start: 62 @29745 has 9 MA's), (Start: 63 @29754 has 1 MA's), (66, 29763), (68, 29769), (76, 29826), (77, 29829), (101, 29979), (104, 30027), (105, 30045), (108, 30060), (119, 30198), (142, 30357), (146, 30429), (147, 30450),

Gene: Uzumaki_23 Start: 18185, Stop: 19108, Start Num: 25

Candidate Starts for Uzumaki_23:

(Start: 25 @18185 has 14 MA's), (46, 18281), (117, 18797), (123, 18836), (126, 18857), (138, 18935), (149, 19091), (150, 19097),

Gene: WilliamStrong_19 Start: 16962, Stop: 17843, Start Num: 36

Candidate Starts for WilliamStrong_19:

(Start: 36 @16962 has 1 MA's), (41, 16983), (46, 17007), (52, 17037), (69, 17115), (70, 17121), (84, 17190), (98, 17268), (100, 17319), (106, 17400), (112, 17493), (118, 17550), (122, 17571), (131, 17622), (144, 17766), (147, 17820), (149, 17826),

Gene: Xkcd426_31 Start: 31289, Stop: 32287, Start Num: 21

Candidate Starts for Xkcd426_31:

(Start: 21 @31289 has 8 MA's), (26, 31364), (Start: 36 @31400 has 1 MA's), (37, 31409), (61, 31526), (83, 31640), (89, 31658), (95, 31715), (98, 31721), (104, 31826), (109, 31883), (111, 31937), (116, 31976), (127, 32045), (135, 32093), (144, 32213), (145, 32234), (150, 32276),

Gene: Xkcd426_32 Start: 32302, Stop: 33195, Start Num: 27

Candidate Starts for Xkcd426_32:

(Start: 27 @32302 has 1 MA's), (56, 32443), (Start: 62 @32464 has 9 MA's), (85, 32566), (86, 32569), (94, 32629), (95, 32635), (104, 32746), (107, 32773), (112, 32860), (136, 33025), (141, 33067), (145, 33142),

Gene: Xkcd426_30 Start: 30543, Stop: 31274, Start Num: 62

Candidate Starts for Xkcd426_30:

(Start: 62 @30543 has 9 MA's), (71, 30579), (74, 30606), (99, 30744), (106, 30846), (107, 30852), (109, 30882), (111, 30930), (118, 30990), (129, 31056), (132, 31068),

Gene: YDN12_27 Start: 23900, Stop: 24817, Start Num: 151

Candidate Starts for YDN12_27:

(22, 22943), (40, 23057), (92, 23312), (97, 23327), (Start: 151 @23900 has 1 MA's), (152, 23942), (153, 23969), (154, 23975), (155, 24008), (156, 24074), (157, 24080), (158, 24173), (159, 24179), (160, 24245), (161, 24356), (162, 24389), (163, 24395), (164, 24557), (165, 24599), (166, 24605), (167, 24617), (168, 24758), (169, 24794), (170, 24806),

Gene: YDN12_26 Start: 23157, Stop: 23888, Start Num: 62

Candidate Starts for YDN12_26:

(Start: 62 @23157 has 9 MA's), (71, 23193), (83, 23256), (94, 23316), (95, 23322), (106, 23457), (107, 23463), (109, 23493), (111, 23544), (115, 23580), (132, 23682), (133, 23688),

Gene: Zeina_23 Start: 17566, Stop: 18489, Start Num: 25

Candidate Starts for Zeina_23:

(Start: 25 @17566 has 14 MA's), (46, 17662), (117, 18178), (123, 18217), (126, 18238), (138, 18316), (149, 18472), (150, 18478),