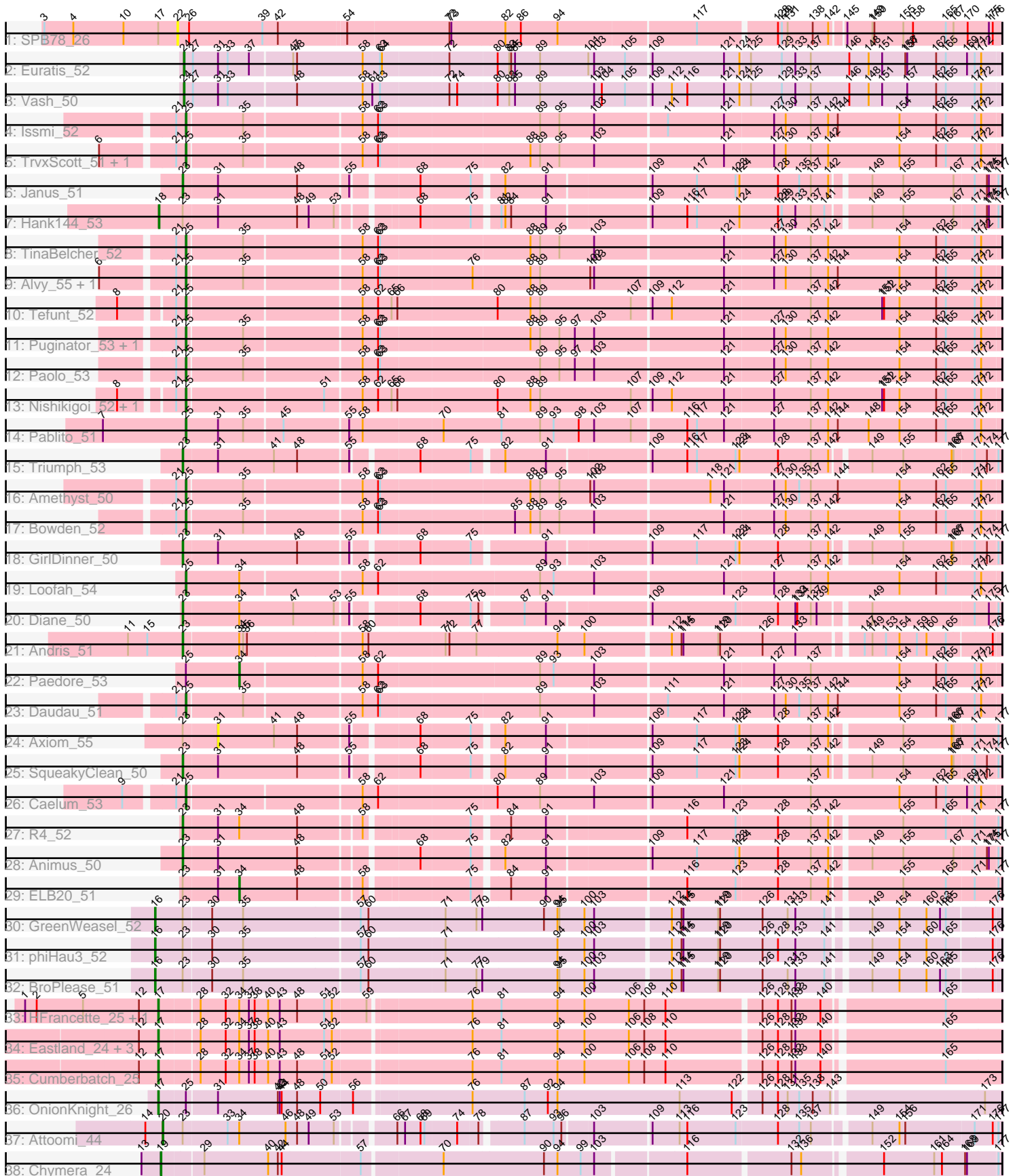


Pham 216278



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 216278 Report

This analysis was run 02/22/25 on database version 588.

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 216278 has 46 members, 2 are drafts.

Phages represented in each track:

- Track 1 : SPB78_26
- Track 2 : Euratis_52
- Track 3 : Vash_50
- Track 4 : Issmi_52
- Track 5 : TrvxScott_51, Thestral_54
- Track 6 : Janus_51
- Track 7 : Hank144_53
- Track 8 : TinaBelcher_52
- Track 9 : Alvy_55, BartholomewSD_55
- Track 10 : Tefunt_52
- Track 11 : Puginator_53, Zainub_53
- Track 12 : Paolo_53
- Track 13 : Nishikigoi_52, Haizum_52
- Track 14 : Pablito_51
- Track 15 : Triumph_53
- Track 16 : Amethyst_50
- Track 17 : Bowden_52
- Track 18 : GirlDinner_50
- Track 19 : Loofah_54
- Track 20 : Diane_50
- Track 21 : Andris_51
- Track 22 : Paedore_53
- Track 23 : Daudau_51
- Track 24 : Axiom_55
- Track 25 : SqueakyClean_50
- Track 26 : Caelum_53
- Track 27 : R4_52
- Track 28 : Animus_50
- Track 29 : ELB20_51
- Track 30 : GreenWeasel_52
- Track 31 : phiHau3_52
- Track 32 : BroPlease_51
- Track 33 : HFrancette_25, Ignacio_25

- Track 34 : Eastland_24, Eklok_25, AxeJC_24, Piccadilly_24
- Track 35 : Cumberbatch_25
- Track 36 : OnionKnight_26
- Track 37 : Attoomi_44
- Track 38 : Chymera_24

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 18 of the 44 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alvy_55, Amethyst_50, BartholomewSD_55, Bowden_52, Caelum_53, Daudau_51, Haizum_52, Issmi_52, Loofah_54, Nishikigoi_52, Pablito_51, Paolo_53, Puginator_53, Tefunt_52, Thestral_54, TinaBelcher_52, TrvxScott_51, Zainub_53,

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

- OnionKnight_26, Paedore_53,

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

- Andris_51, Animus_50, Attoomi_44, AxeJC_24, Axiom_55, BroPlease_51, Chymera_24, Cumberbatch_25, Diane_50, ELB20_51, Eastland_24, Eklok_25, Euratis_52, GirlDinner_50, GreenWeasel_52, HFrancette_25, Hank144_53, Ignacio_25, Janus_51, Piccadilly_24, R4_52, SPB78_26, SqueakyClean_50, Triumph_53, Vash_50, phiHau3_52,

Summary by start number:

Start 16:

- Found in 3 of 46 (6.5%) of genes in pham
- Manual Annotations of this start: 3 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BroPlease_51 (BD4), GreenWeasel_52 (BD4), phiHau3_52 (BD4),

Start 17:

- Found in 9 of 46 (19.6%) of genes in pham
- Manual Annotations of this start: 8 of 44
- Called 88.9% of time when present
- Phage (with cluster) where this start called: AxeJC_24 (BP), Cumberbatch_25 (BP), Eastland_24 (BP), Eklok_25 (BP), HFrancette_25 (BP), Ignacio_25 (BP), OnionKnight_26 (singleton), Piccadilly_24 (BP),

Start 18:

- Found in 1 of 46 (2.2%) of genes in pham
- Manual Annotations of this start: 1 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hank144_53 (BD2),

Start 19:

- Found in 1 of 46 (2.2%) of genes in pham
- Manual Annotations of this start: 1 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chymera_24 (singleton),

Start 20:

- Found in 1 of 46 (2.2%) of genes in pham
- Manual Annotations of this start: 1 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Attoomi_44 (singleton),

Start 22:

- Found in 1 of 46 (2.2%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SPB78_26 (BA),

Start 23:

- Found in 15 of 46 (32.6%) of genes in pham
- Manual Annotations of this start: 8 of 44
- Called 53.3% of time when present
- Phage (with cluster) where this start called: Andris_51 (BD2), Animus_50 (BD2), Diane_50 (BD2), GirlDinner_50 (BD2), Janus_51 (BD2), R4_52 (BD2), SqueakyClean_50 (BD2), Triumph_53 (BD2),

Start 24:

- Found in 2 of 46 (4.3%) of genes in pham
- Manual Annotations of this start: 2 of 44
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Euratis_52 (BB1), Vash_50 (BB1),

Start 25:

- Found in 20 of 46 (43.5%) of genes in pham
- Manual Annotations of this start: 18 of 44
- Called 90.0% of time when present
- Phage (with cluster) where this start called: Alvy_55 (BD2), Amethyst_50 (BD2), BartholomewSD_55 (BD2), Bowden_52 (BD2), Caelum_53 (BD2), Daudau_51 (BD2), Haizum_52 (BD2), Issmi_52 (BD2), Loofah_54 (BD2), Nishikigoi_52 (BD2), Pablito_51 (BD2), Paolo_53 (BD2), Puginator_53 (BD2), Tefunt_52 (BD2), Thestral_54 (BD2), TinaBelcher_52 (BD2), TrvxScott_51 (BD2), Zainub_53 (BD2),

Start 31:

- Found in 13 of 46 (28.3%) of genes in pham
- No Manual Annotations of this start.
- Called 7.7% of time when present
- Phage (with cluster) where this start called: Axiom_55 (BD2),

Start 34:

- Found in 14 of 46 (30.4%) of genes in pham
- Manual Annotations of this start: 2 of 44
- Called 14.3% of time when present
- Phage (with cluster) where this start called: ELB20_51 (BD2), Paedore_53 (BD2),

Summary by clusters:

There are 6 clusters represented in this pham: singleton, BA, BD4, BP, BD2, BB1,

Info for manual annotations of cluster BB1:

- Start number 24 was manually annotated 2 times for cluster BB1.

Info for manual annotations of cluster BD2:

- Start number 18 was manually annotated 1 time for cluster BD2.
- Start number 23 was manually annotated 8 times for cluster BD2.
- Start number 25 was manually annotated 18 times for cluster BD2.
- Start number 34 was manually annotated 2 times for cluster BD2.

Info for manual annotations of cluster BD4:

- Start number 16 was manually annotated 3 times for cluster BD4.

Info for manual annotations of cluster BP:

- Start number 17 was manually annotated 7 times for cluster BP.

Gene Information:

Gene: Alvy_55 Start: 38519, Stop: 37290, Start Num: 25

Candidate Starts for Alvy_55:

(6, 38639), (21, 38534), (Start: 25 @38519 has 18 MA's), (35, 38435), (58, 38261), (62, 38237), (63, 38234), (76, 38096), (88, 38009), (89, 37994), (102, 37916), (103, 37910), (121, 37715), (127, 37640), (130, 37622), (137, 37583), (142, 37556), (144, 37541), (154, 37445), (162, 37388), (165, 37373), (171, 37328), (172, 37319),

Gene: Amethyst_50 Start: 36749, Stop: 35520, Start Num: 25

Candidate Starts for Amethyst_50:

(21, 36764), (Start: 25 @36749 has 18 MA's), (35, 36665), (58, 36491), (62, 36467), (63, 36464), (88, 36239), (89, 36224), (95, 36194), (102, 36146), (103, 36140), (118, 35966), (121, 35945), (127, 35870), (130, 35852), (135, 35831), (137, 35813), (144, 35771), (154, 35675), (162, 35618), (165, 35603), (171, 35558), (172, 35549),

Gene: Andris_51 Start: 36706, Stop: 35495, Start Num: 23

Candidate Starts for Andris_51:

(11, 36790), (15, 36760), (Start: 23 @36706 has 8 MA's), (Start: 34 @36622 has 2 MA's), (35, 36616), (36, 36610), (58, 36439), (60, 36430), (71, 36316), (72, 36310), (77, 36268), (94, 36145), (100, 36103), (112, 35977), (114, 35962), (115, 35959), (119, 35905), (120, 35902), (126, 35836), (133, 35785), (147, 35698), (149, 35686), (153, 35665), (154, 35644), (159, 35617), (160, 35602), (165, 35572), (176, 35506),

Gene: Animus_50 Start: 36998, Stop: 35820, Start Num: 23

Candidate Starts for Animus_50:

(Start: 23 @36998 has 8 MA's), (31, 36947), (48, 36824), (68, 36659), (75, 36587), (82, 36548), (91, 36485), (109, 36335), (117, 36266), (123, 36206), (124, 36200), (128, 36143), (137, 36092), (142, 36065), (149, 36014), (155, 35966), (167, 35888), (171, 35858), (174, 35840), (175, 35837), (177, 35825),

Gene: Attoomi_44 Start: 33458, Stop: 34666, Start Num: 20

Candidate Starts for Attoomi_44:

(14, 33431), (Start: 20 @33458 has 1 MA's), (Start: 23 @33488 has 8 MA's), (33, 33554), (Start: 34 @33572 has 2 MA's), (46, 33644), (48, 33662), (49, 33680), (53, 33719), (66, 33794), (67, 33803), (68, 33827), (69, 33833), (74, 33881), (78, 33911), (87, 33968), (93, 34013), (96, 34025), (103, 34067), (109, 34151), (113, 34193), (116, 34205), (123, 34280), (128, 34343), (135, 34376), (137, 34394), (149, 34472), (154, 34514), (156, 34523), (171, 34628), (176, 34655), (177, 34661),

Gene: AxeJC_24 Start: 18954, Stop: 20204, Start Num: 17

Candidate Starts for AxeJC_24:

(12, 18924), (Start: 17 @18954 has 8 MA's), (28, 19011), (32, 19050), (Start: 34 @19071 has 2 MA's), (37, 19086), (38, 19095), (40, 19116), (43, 19134), (51, 19203), (52, 19215), (76, 19416), (81, 19461), (94, 19548), (100, 19590), (106, 19659), (108, 19683), (110, 19716), (126, 19854), (128, 19878), (132, 19899), (133, 19905), (140, 19944), (165, 20118),

Gene: Axiom_55 Start: 36908, Stop: 35781, Start Num: 31

Candidate Starts for Axiom_55:

(Start: 23 @36959 has 8 MA's), (31, 36908), (41, 36821), (48, 36785), (55, 36710), (68, 36620), (75, 36548), (82, 36509), (91, 36446), (109, 36296), (117, 36227), (123, 36167), (124, 36161), (128, 36104), (137, 36053), (142, 36026), (155, 35927), (166, 35852), (167, 35849), (171, 35819), (177, 35786),

Gene: BartholomewSD_55 Start: 37638, Stop: 36409, Start Num: 25

Candidate Starts for BartholomewSD_55:

(6, 37758), (21, 37653), (Start: 25 @37638 has 18 MA's), (35, 37554), (58, 37380), (62, 37356), (63, 37353), (76, 37215), (88, 37128), (89, 37113), (102, 37035), (103, 37029), (121, 36834), (127, 36759), (130, 36741), (137, 36702), (142, 36675), (144, 36660), (154, 36564), (162, 36507), (165, 36492), (171, 36447), (172, 36438),

Gene: Bowden_52 Start: 38433, Stop: 37204, Start Num: 25

Candidate Starts for Bowden_52:

(21, 38448), (Start: 25 @38433 has 18 MA's), (35, 38349), (58, 38175), (62, 38151), (63, 38148), (85, 37947), (88, 37923), (89, 37908), (95, 37878), (103, 37824), (121, 37629), (127, 37554), (130, 37536), (137, 37497), (142, 37470), (154, 37359), (162, 37302), (165, 37287), (171, 37242), (172, 37233),

Gene: BroPlease_51 Start: 35752, Stop: 34499, Start Num: 16

Candidate Starts for BroPlease_51:

(Start: 16 @35752 has 3 MA's), (Start: 23 @35710 has 8 MA's), (30, 35668), (35, 35620), (57, 35446), (60, 35434), (71, 35320), (77, 35272), (79, 35263), (94, 35149), (95, 35146), (100, 35107), (103, 35092), (112, 34981), (114, 34966), (115, 34963), (119, 34909), (120, 34906), (126, 34840), (131, 34801), (133, 34789), (141, 34744), (149, 34690), (154, 34648), (160, 34606), (163, 34585), (165, 34576), (176, 34510),

Gene: Caelum_53 Start: 36961, Stop: 35732, Start Num: 25

Candidate Starts for Caelum_53:

(9, 37045), (21, 36976), (Start: 25 @36961 has 18 MA's), (58, 36703), (62, 36679), (80, 36502), (89, 36436), (103, 36352), (109, 36268), (121, 36157), (137, 36025), (154, 35887), (162, 35830), (165, 35815), (169, 35782), (171, 35770), (172, 35761),

Gene: Chymera_24 Start: 18154, Stop: 19377, Start Num: 19

Candidate Starts for Chymera_24:

(13, 18124), (Start: 19 @18154 has 1 MA's), (29, 18211), (40, 18310), (42, 18325), (44, 18331), (57, 18448), (70, 18565), (90, 18718), (94, 18739), (99, 18775), (103, 18796), (116, 18925), (132, 19075),

(136, 19090), (152, 19198), (161, 19276), (164, 19288), (168, 19324), (169, 19327), (177, 19372),

Gene: Cumberbatch_25 Start: 18973, Stop: 20223, Start Num: 17

Candidate Starts for Cumberbatch_25:

(12, 18943), (Start: 17 @18973 has 8 MA's), (28, 19030), (32, 19069), (Start: 34 @19090 has 2 MA's), (37, 19105), (38, 19114), (40, 19135), (43, 19153), (48, 19180), (51, 19222), (52, 19234), (76, 19435), (81, 19480), (94, 19567), (100, 19609), (106, 19678), (108, 19702), (110, 19735), (126, 19873), (128, 19897), (132, 19918), (133, 19924), (140, 19963), (165, 20137),

Gene: Daudau_51 Start: 36911, Stop: 35682, Start Num: 25

Candidate Starts for Daudau_51:

(21, 36926), (Start: 25 @36911 has 18 MA's), (35, 36827), (58, 36653), (62, 36629), (63, 36626), (89, 36386), (103, 36302), (111, 36194), (121, 36107), (127, 36032), (130, 36014), (135, 35993), (137, 35975), (142, 35948), (144, 35933), (154, 35837), (162, 35780), (165, 35765), (171, 35720), (172, 35711),

Gene: Diane_50 Start: 36947, Stop: 35769, Start Num: 23

Candidate Starts for Diane_50:

(Start: 23 @36947 has 8 MA's), (Start: 34 @36863 has 2 MA's), (47, 36779), (53, 36716), (55, 36698), (68, 36608), (75, 36536), (78, 36524), (87, 36467), (91, 36434), (109, 36284), (123, 36155), (128, 36092), (133, 36065), (134, 36062), (137, 36041), (139, 36032), (149, 35963), (171, 35807), (175, 35786), (177, 35774),

Gene: ELB20_51 Start: 37357, Stop: 36266, Start Num: 34

Candidate Starts for ELB20_51:

(Start: 23 @37441 has 8 MA's), (31, 37390), (Start: 34 @37357 has 2 MA's), (48, 37267), (58, 37177), (75, 37033), (84, 36985), (91, 36931), (116, 36727), (123, 36652), (128, 36589), (137, 36538), (142, 36511), (155, 36412), (165, 36346), (171, 36304), (177, 36271),

Gene: Eastland_24 Start: 18939, Stop: 20189, Start Num: 17

Candidate Starts for Eastland_24:

(12, 18909), (Start: 17 @18939 has 8 MA's), (28, 18996), (32, 19035), (Start: 34 @19056 has 2 MA's), (37, 19071), (38, 19080), (40, 19101), (43, 19119), (51, 19188), (52, 19200), (76, 19401), (81, 19446), (94, 19533), (100, 19575), (106, 19644), (108, 19668), (110, 19701), (126, 19839), (128, 19863), (132, 19884), (133, 19890), (140, 19929), (165, 20103),

Gene: Eklok_25 Start: 18954, Stop: 20204, Start Num: 17

Candidate Starts for Eklok_25:

(12, 18924), (Start: 17 @18954 has 8 MA's), (28, 19011), (32, 19050), (Start: 34 @19071 has 2 MA's), (37, 19086), (38, 19095), (40, 19116), (43, 19134), (51, 19203), (52, 19215), (76, 19416), (81, 19461), (94, 19548), (100, 19590), (106, 19659), (108, 19683), (110, 19716), (126, 19854), (128, 19878), (132, 19899), (133, 19905), (140, 19944), (165, 20118),

Gene: Euratis_52 Start: 35732, Stop: 36973, Start Num: 24

Candidate Starts for Euratis_52:

(Start: 24 @35732 has 2 MA's), (27, 35744), (31, 35783), (33, 35798), (37, 35831), (47, 35894), (48, 35900), (58, 36002), (63, 36029), (64, 36032), (72, 36131), (80, 36203), (83, 36221), (84, 36224), (85, 36230), (89, 36269), (101, 36344), (103, 36353), (105, 36401), (109, 36437), (121, 36548), (124, 36572), (125, 36587), (129, 36635), (133, 36656), (137, 36680), (146, 36740), (148, 36770), (151, 36791), (156, 36827), (157, 36830), (162, 36875), (165, 36890), (169, 36923), (171, 36935), (172, 36944),

Gene: GirlDinner_50 Start: 36499, Stop: 35321, Start Num: 23

Candidate Starts for GirlDinner_50:

(Start: 23 @36499 has 8 MA's), (31, 36448), (48, 36325), (55, 36250), (68, 36160), (75, 36088), (91, 35986), (109, 35836), (117, 35767), (123, 35707), (124, 35701), (128, 35644), (137, 35593), (142, 35566), (149, 35515), (155, 35467), (166, 35392), (167, 35389), (171, 35359), (174, 35341), (177, 35326),

Gene: GreenWeasel_52 Start: 35757, Stop: 34504, Start Num: 16

Candidate Starts for GreenWeasel_52:

(Start: 16 @35757 has 3 MA's), (Start: 23 @35715 has 8 MA's), (30, 35673), (35, 35625), (57, 35451), (60, 35439), (71, 35325), (77, 35277), (79, 35268), (90, 35175), (94, 35154), (95, 35151), (100, 35112), (103, 35097), (112, 34986), (114, 34971), (115, 34968), (119, 34914), (120, 34911), (126, 34845), (131, 34806), (133, 34794), (141, 34749), (149, 34695), (154, 34653), (160, 34611), (163, 34590), (165, 34581), (176, 34515),

Gene: HFrancette_25 Start: 19616, Stop: 20866, Start Num: 17

Candidate Starts for HFrancette_25:

(1, 19409), (2, 19427), (5, 19499), (12, 19586), (Start: 17 @19616 has 8 MA's), (28, 19673), (32, 19712), (Start: 34 @19733 has 2 MA's), (37, 19748), (38, 19757), (40, 19778), (43, 19796), (48, 19823), (51, 19865), (52, 19877), (59, 19928), (76, 20078), (81, 20123), (94, 20210), (100, 20252), (106, 20321), (108, 20345), (110, 20378), (126, 20516), (128, 20540), (132, 20561), (133, 20567), (140, 20606), (165, 20780),

Gene: Haizum_52 Start: 37022, Stop: 35790, Start Num: 25

Candidate Starts for Haizum_52:

(8, 37109), (21, 37037), (Start: 25 @37022 has 18 MA's), (51, 36818), (58, 36764), (62, 36740), (65, 36719), (66, 36710), (80, 36560), (88, 36509), (89, 36494), (107, 36353), (109, 36326), (112, 36296), (121, 36215), (127, 36140), (137, 36083), (142, 36056), (151, 35972), (152, 35969), (154, 35945), (162, 35888), (165, 35873), (171, 35828), (172, 35819),

Gene: Hank144_53 Start: 37072, Stop: 35861, Start Num: 18

Candidate Starts for Hank144_53:

(Start: 18 @37072 has 1 MA's), (Start: 23 @37036 has 8 MA's), (31, 36985), (48, 36862), (49, 36844), (53, 36805), (68, 36700), (75, 36628), (81, 36595), (82, 36589), (84, 36580), (91, 36526), (109, 36376), (116, 36322), (117, 36307), (124, 36241), (128, 36184), (129, 36178), (133, 36157), (137, 36133), (141, 36112), (149, 36055), (155, 36007), (167, 35929), (171, 35899), (174, 35881), (175, 35878), (177, 35866),

Gene: Ignacio_25 Start: 19616, Stop: 20866, Start Num: 17

Candidate Starts for Ignacio_25:

(1, 19409), (2, 19427), (5, 19499), (12, 19586), (Start: 17 @19616 has 8 MA's), (28, 19673), (32, 19712), (Start: 34 @19733 has 2 MA's), (37, 19748), (38, 19757), (40, 19778), (43, 19796), (48, 19823), (51, 19865), (52, 19877), (59, 19928), (76, 20078), (81, 20123), (94, 20210), (100, 20252), (106, 20321), (108, 20345), (110, 20378), (126, 20516), (128, 20540), (132, 20561), (133, 20567), (140, 20606), (165, 20780),

Gene: Issmi_52 Start: 37451, Stop: 36222, Start Num: 25

Candidate Starts for Issmi_52:

(21, 37466), (Start: 25 @37451 has 18 MA's), (35, 37367), (58, 37193), (62, 37169), (63, 37166), (89, 36926), (95, 36896), (103, 36842), (111, 36734), (121, 36647), (127, 36572), (130, 36554), (137, 36515), (142, 36488), (144, 36473), (154, 36377), (162, 36320), (165, 36305), (171, 36260), (172, 36251),

Gene: Janus_51 Start: 36839, Stop: 35661, Start Num: 23

Candidate Starts for Janus_51:

(Start: 23 @36839 has 8 MA's), (31, 36788), (48, 36665), (55, 36590), (68, 36500), (75, 36428), (82, 36389), (91, 36326), (109, 36176), (117, 36107), (123, 36047), (124, 36041), (128, 35984), (135, 35951), (137, 35933), (142, 35906), (149, 35855), (155, 35807), (167, 35729), (171, 35699), (174, 35681), (175, 35678), (177, 35666),

Gene: Loofah_54 Start: 37605, Stop: 36373, Start Num: 25

Candidate Starts for Loofah_54:

(Start: 25 @37605 has 18 MA's), (Start: 34 @37524 has 2 MA's), (58, 37344), (62, 37320), (89, 37077), (93, 37056), (103, 36993), (121, 36798), (127, 36723), (137, 36666), (142, 36639), (154, 36528), (162, 36471), (165, 36456), (171, 36411), (172, 36402),

Gene: Nishikigoi_52 Start: 37022, Stop: 35790, Start Num: 25

Candidate Starts for Nishikigoi_52:

(8, 37109), (21, 37037), (Start: 25 @37022 has 18 MA's), (51, 36818), (58, 36764), (62, 36740), (65, 36719), (66, 36710), (80, 36560), (88, 36509), (89, 36494), (107, 36353), (109, 36326), (112, 36296), (121, 36215), (127, 36140), (137, 36083), (142, 36056), (151, 35972), (152, 35969), (154, 35945), (162, 35888), (165, 35873), (171, 35828), (172, 35819),

Gene: OnionKnight_26 Start: 19960, Stop: 21210, Start Num: 17

Candidate Starts for OnionKnight_26:

(Start: 17 @19960 has 8 MA's), (Start: 25 @19999 has 18 MA's), (31, 20044), (42, 20137), (43, 20140), (44, 20143), (48, 20167), (50, 20203), (56, 20251), (76, 20422), (87, 20503), (92, 20539), (94, 20554), (113, 20743), (122, 20824), (126, 20860), (128, 20884), (131, 20899), (135, 20917), (138, 20938), (143, 20965), (173, 21184),

Gene: Pablito_51 Start: 36673, Stop: 35438, Start Num: 25

Candidate Starts for Pablito_51:

(7, 36802), (Start: 25 @36673 has 18 MA's), (31, 36625), (35, 36586), (45, 36529), (55, 36433), (58, 36412), (70, 36292), (81, 36202), (89, 36142), (93, 36121), (98, 36082), (103, 36058), (107, 36001), (116, 35920), (117, 35905), (121, 35863), (127, 35788), (137, 35731), (142, 35704), (144, 35689), (148, 35641), (154, 35593), (162, 35536), (165, 35521), (171, 35476), (172, 35467),

Gene: Paedore_53 Start: 37509, Stop: 36358, Start Num: 34

Candidate Starts for Paedore_53:

(Start: 25 @37590 has 18 MA's), (Start: 34 @37509 has 2 MA's), (58, 37329), (62, 37305), (89, 37062), (93, 37041), (103, 36978), (121, 36783), (127, 36708), (137, 36651), (154, 36513), (162, 36456), (165, 36441), (171, 36396), (172, 36387),

Gene: Paolo_53 Start: 37580, Stop: 36351, Start Num: 25

Candidate Starts for Paolo_53:

(21, 37595), (Start: 25 @37580 has 18 MA's), (35, 37496), (58, 37322), (62, 37298), (63, 37295), (89, 37055), (95, 37025), (97, 37001), (103, 36971), (121, 36776), (127, 36701), (130, 36683), (137, 36644), (142, 36617), (154, 36506), (162, 36449), (165, 36434), (171, 36389), (172, 36380),

Gene: Piccadilly_24 Start: 18938, Stop: 20188, Start Num: 17

Candidate Starts for Piccadilly_24:

(12, 18908), (Start: 17 @18938 has 8 MA's), (28, 18995), (32, 19034), (Start: 34 @19055 has 2 MA's), (37, 19070), (38, 19079), (40, 19100), (43, 19118), (51, 19187), (52, 19199), (76, 19400), (81, 19445), (94, 19532), (100, 19574), (106, 19643), (108, 19667), (110, 19700), (126, 19838), (128, 19862), (132, 19883), (133, 19889), (140, 19928), (165, 20102),

Gene: Puginator_53 Start: 37626, Stop: 36397, Start Num: 25

Candidate Starts for Puginator_53:

(21, 37641), (Start: 25 @37626 has 18 MA's), (35, 37542), (58, 37368), (62, 37344), (63, 37341), (88, 37116), (89, 37101), (95, 37071), (97, 37047), (103, 37017), (121, 36822), (127, 36747), (130, 36729), (137, 36690), (142, 36663), (154, 36552), (162, 36495), (165, 36480), (171, 36435), (172, 36426),

Gene: R4_52 Start: 37457, Stop: 36282, Start Num: 23

Candidate Starts for R4_52:

(Start: 23 @37457 has 8 MA's), (31, 37406), (Start: 34 @37373 has 2 MA's), (48, 37283), (58, 37193), (75, 37049), (84, 37001), (91, 36947), (116, 36743), (123, 36668), (128, 36605), (137, 36554), (142, 36527), (155, 36428), (165, 36362), (171, 36320), (177, 36287),

Gene: SPB78_26 Start: 21757, Stop: 22989, Start Num: 22

Candidate Starts for SPB78_26:

(3, 21550), (4, 21595), (10, 21673), (Start: 17 @21727 has 8 MA's), (22, 21757), (26, 21775), (39, 21889), (42, 21913), (54, 22015), (72, 22171), (73, 22174), (82, 22255), (86, 22279), (94, 22336), (117, 22543), (128, 22657), (129, 22663), (131, 22672), (138, 22711), (142, 22735), (145, 22753), (149, 22792), (150, 22795), (155, 22840), (158, 22855), (165, 22906), (167, 22918), (170, 22939), (175, 22972), (176, 22978),

Gene: SqueakyClean_50 Start: 36929, Stop: 35751, Start Num: 23

Candidate Starts for SqueakyClean_50:

(Start: 23 @36929 has 8 MA's), (31, 36878), (48, 36755), (55, 36680), (68, 36590), (75, 36518), (82, 36479), (91, 36416), (109, 36266), (117, 36197), (123, 36137), (124, 36131), (128, 36074), (137, 36023), (142, 35996), (149, 35945), (155, 35897), (166, 35822), (167, 35819), (171, 35789), (174, 35771), (177, 35756),

Gene: Tefunt_52 Start: 37024, Stop: 35792, Start Num: 25

Candidate Starts for Tefunt_52:

(8, 37111), (21, 37039), (Start: 25 @37024 has 18 MA's), (58, 36766), (62, 36742), (65, 36721), (66, 36712), (80, 36562), (88, 36511), (89, 36496), (107, 36355), (109, 36328), (112, 36298), (121, 36217), (137, 36085), (142, 36058), (151, 35974), (152, 35971), (154, 35947), (162, 35890), (165, 35875), (171, 35830), (172, 35821),

Gene: Thestral_54 Start: 38424, Stop: 37195, Start Num: 25

Candidate Starts for Thestral_54:

(6, 38544), (21, 38439), (Start: 25 @38424 has 18 MA's), (35, 38340), (58, 38166), (62, 38142), (63, 38139), (88, 37914), (89, 37899), (95, 37869), (103, 37815), (121, 37620), (127, 37545), (130, 37527), (137, 37488), (142, 37461), (154, 37350), (162, 37293), (165, 37278), (171, 37233), (172, 37224),

Gene: TinaBelcher_52 Start: 38372, Stop: 37143, Start Num: 25

Candidate Starts for TinaBelcher_52:

(21, 38387), (Start: 25 @38372 has 18 MA's), (35, 38288), (58, 38114), (62, 38090), (63, 38087), (88, 37862), (89, 37847), (95, 37817), (103, 37763), (121, 37568), (127, 37493), (130, 37475), (137, 37436), (142, 37409), (154, 37298), (162, 37241), (165, 37226), (171, 37181), (172, 37172),

Gene: Triumph_53 Start: 36977, Stop: 35799, Start Num: 23

Candidate Starts for Triumph_53:

(Start: 23 @36977 has 8 MA's), (31, 36926), (41, 36839), (48, 36803), (55, 36728), (68, 36638), (75, 36566), (82, 36527), (91, 36464), (109, 36314), (116, 36260), (117, 36245), (123, 36185), (124, 36179), (128, 36122), (137, 36071), (142, 36044), (149, 35993), (155, 35945), (166, 35870), (167, 35867), (171, 35837), (174, 35819), (177, 35804),

Gene: TrvxScott_51 Start: 38418, Stop: 37189, Start Num: 25

Candidate Starts for TrvxScott_51:

(6, 38538), (21, 38433), (Start: 25 @38418 has 18 MA's), (35, 38334), (58, 38160), (62, 38136), (63, 38133), (88, 37908), (89, 37893), (95, 37863), (103, 37809), (121, 37614), (127, 37539), (130, 37521), (137, 37482), (142, 37455), (154, 37344), (162, 37287), (165, 37272), (171, 37227), (172, 37218),

Gene: Vash_50 Start: 36353, Stop: 37594, Start Num: 24

Candidate Starts for Vash_50:

(Start: 24 @36353 has 2 MA's), (27, 36365), (31, 36404), (33, 36419), (48, 36521), (58, 36623), (61, 36638), (63, 36650), (72, 36752), (74, 36764), (80, 36824), (83, 36842), (85, 36851), (89, 36890), (103, 36974), (104, 36986), (105, 37022), (109, 37058), (112, 37088), (116, 37112), (121, 37169), (124, 37193), (125, 37208), (129, 37256), (133, 37277), (137, 37301), (146, 37361), (148, 37391), (151, 37412), (157, 37451), (162, 37496), (165, 37511), (171, 37556), (172, 37565),

Gene: Zainub_53 Start: 37555, Stop: 36326, Start Num: 25

Candidate Starts for Zainub_53:

(21, 37570), (Start: 25 @37555 has 18 MA's), (35, 37471), (58, 37297), (62, 37273), (63, 37270), (88, 37045), (89, 37030), (95, 37000), (97, 36976), (103, 36946), (121, 36751), (127, 36676), (130, 36658), (137, 36619), (142, 36592), (154, 36481), (162, 36424), (165, 36409), (171, 36364), (172, 36355),

Gene: phiHau3_52 Start: 35720, Stop: 34467, Start Num: 16

Candidate Starts for phiHau3_52:

(Start: 16 @35720 has 3 MA's), (Start: 23 @35678 has 8 MA's), (30, 35636), (35, 35588), (57, 35414), (60, 35402), (71, 35288), (94, 35117), (100, 35075), (103, 35060), (112, 34949), (114, 34934), (115, 34931), (119, 34877), (120, 34874), (126, 34808), (128, 34784), (133, 34757), (141, 34712), (149, 34658), (154, 34616), (160, 34574), (165, 34544), (176, 34478),