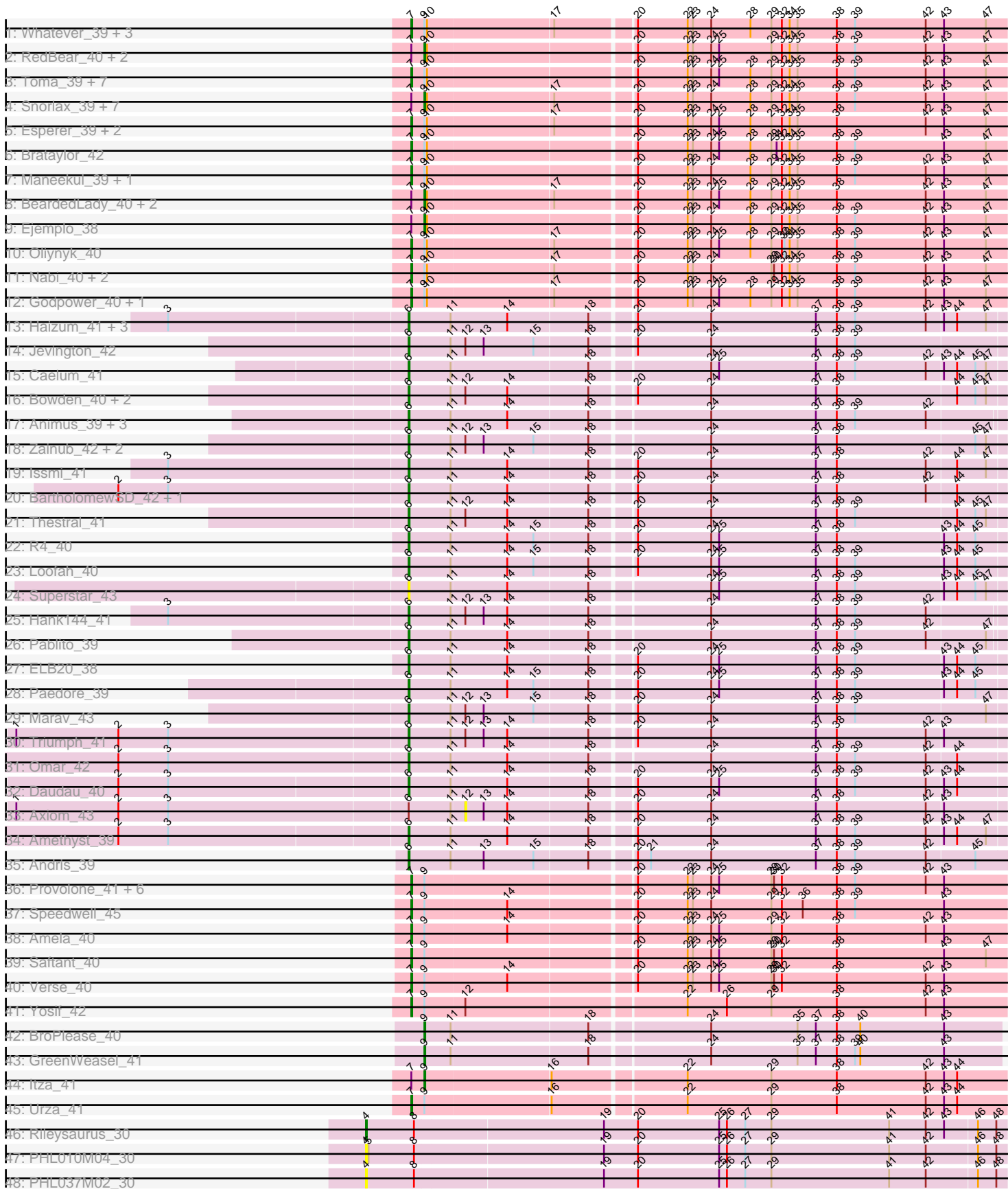


Pham 216055



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 216055 Report

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

Pham number 216055 has 92 members, 4 are drafts.

Phages represented in each track:

- Track 1 : Whatever_39, OzzyJ_40, Dwayne_39, Hippo_39
- Track 2 : RedBear_40, South40_39, Katalie_39
- Track 3 : Toma_39, Sujidade_40, Goby_39, Celeste_40, Danzina_41, Dattran_41, Nanodon_41, Zemlya_41
- Track 4 : Snorlax_39, Werner_39, Chucky_39, Emaanora_42, Triste_39, SarahRose_39, BarryBee_42, TagePhighter_41
- Track 5 : Esperer_39, Phettuccine_39, Indigo_38
- Track 6 : Brataylor_42
- Track 7 : Maneekul_39, Yasdnil_39
- Track 8 : BeardedLady_40, Bovely_39, Ozzie_39
- Track 9 : Ejemplo_38
- Track 10 : Oliynyk_40
- Track 11 : Nabi_40, Rana_40, Lorelei_40
- Track 12 : Godpower_40, Lika_39
- Track 13 : Haizum_41, Diane_39, Tefunt_41, Nishikigoi_41
- Track 14 : Jevington_42
- Track 15 : Caelum_41
- Track 16 : Bowden_40, TrvxScott_39, TinaBelcher_40
- Track 17 : Animus_39, SqueakyClean_39, Janus_40, GirlDinner_39
- Track 18 : Zainub_42, Puginator_42, Paolo_42
- Track 19 : Issmi_41
- Track 20 : BartholomewSD_42, Alvy_42
- Track 21 : Thestral_41
- Track 22 : R4_40
- Track 23 : Loofah_40
- Track 24 : Superstar_43
- Track 25 : Hank144_41
- Track 26 : Pablito_39
- Track 27 : ELB20_38
- Track 28 : Paedore_39
- Track 29 : Marav_43
- Track 30 : Triumph_41
- Track 31 : Omar_42
- Track 32 : Daudau_40
- Track 33 : Axiom_43
- Track 34 : Amethyst_39
- Track 35 : Andris_39

- Track 36 : Provolone_41, Alsaber_41, Dexers_39, Pavo_41, Kaine_40, ElGato_41, Conan_41
- Track 37 : Speedwell_45
- Track 38 : Amela_40
- Track 39 : Saftant_40
- Track 40 : Verse_40
- Track 41 : Yosif_42
- Track 42 : BroPlease_40
- Track 43 : GreenWeasel_41
- Track 44 : Itza_41
- Track 45 : Urza_41
- Track 46 : Rileysaurus_30
- Track 47 : PHL010M04_30
- Track 48 : PHL037M02_30

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

The start number called the most often in the published annotations is 7, it was called in 37 of the 88 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alsaber_41, Amela_40, Brataylor_42, Celeste_40, Conan_41, Danzina_41, Dattran_41, Dexers_39, Dwayne_39, ElGato_41, Esperer_39, Goby_39, Godpower_40, Hippo_39, Indigo_38, Kaine_40, Lika_39, Lorelei_40, Maneekul_39, Nabi_40, Nanodon_41, Oliynyk_40, OzzyJ_40, Pavo_41, Phettuccine_39, Provolone_41, Rana_40, Saftant_40, Speedwell_45, Sujidade_40, Toma_39, Urza_41, Verse_40, Whatever_39, Yasdnil_39, Yosif_42, Zemlya_41,

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

- BarryBee_42, BeardedLady_40, Bovely_39, Chucky_39, Ejemplo_38, Emaanora_42, Itza_41, Katalie_39, Ozzie_39, RedBear_40, SarahRose_39, Snorlax_39, South40_39, TagePhighter_41, Triste_39, Werner_39,

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

- Alvy_42, Amethyst_39, Andris_39, Animus_39, Axiom_43, BartholomewSD_42, Bowden_40, BroPlease_40, Caelum_41, Daudau_40, Diane_39, ELB20_38, GirlDinner_39, GreenWeasel_41, Haizum_41, Hank144_41, Issmi_41, Janus_40, Jevington_42, Loofah_40, Marav_43, Nishikigoi_41, Omar_42, PHL010M04_30, PHL037M02_30, Pablito_39, Paedore_39, Paolo_42, Puginator_42, R4_40, Rileysaurus_30, SqueakyClean_39, Superstar_43, Tefunt_41, Thestral_41, TinaBelcher_40, Triumph_41, TrvxScott_39, Zainub_42,

Summary by start number:

Start 4:

- Found in 3 of 92 (3.3%) of genes in pham
- Manual Annotations of this start: 1 of 88
- Called 100.0% of time when present
- Phage (with cluster) where this start called: PHL010M04_30 (BU), PHL037M02_30 (BU), Rileysaurus_30 (BU),

Start 6:

- Found in 34 of 92 (37.0%) of genes in pham
- Manual Annotations of this start: 32 of 88
- Called 97.1% of time when present
- Phage (with cluster) where this start called: Alvy_42 (BD2), Amethyst_39 (BD2), Andris_39 (BD2), Animus_39 (BD2), BartholomewSD_42 (BD2), Bowden_40 (BD2), Caelum_41 (BD2), Daudau_40 (BD2), Diane_39 (BD2), ELB20_38 (BD2), GirlDinner_39 (BD2), Haizum_41 (BD2), Hank144_41 (BD2), Issmi_41 (BD2), Janus_40 (BD2), Jevington_42 (BD2), Loofah_40 (BD2), Marav_43 (BD2), Nishikigoi_41 (BD2), Omar_42 (BD2), Pablito_39 (BD2), Paedore_39 (BD2), Paolo_42 (BD2), Puginator_42 (BD2), R4_40 (BD2), SqueakyClean_39 (BD2), Superstar_43 (BD2), Tefunt_41 (BD2), Thestral_41 (BD2), TinaBelcher_40 (BD2), Triumph_41 (BD2), TrvxScott_39 (BD2), Zainub_42 (BD2),

Start 7:

- Found in 53 of 92 (57.6%) of genes in pham
- Manual Annotations of this start: 37 of 88
- Called 69.8% of time when present
- Phage (with cluster) where this start called: Alsaber_41 (BD3), Amela_40 (BD3), Brataylor_42 (BD1), Celeste_40 (BD1), Conan_41 (BD3), Danzina_41 (BD1), Dattran_41 (BD1), Dexers_39 (BD3), Dwayne_39 (BD1), ElGato_41 (BD3), Esperer_39 (BD1), Goby_39 (BD1), Godpower_40 (BD1), Hippo_39 (BD1), Indigo_38 (BD1), Kaine_40 (BD3), Lika_39 (BD1), Lorelei_40 (BD1), Maneekul_39 (BD1), Nabi_40 (BD1), Nanodon_41 (BD1), Oliynyk_40 (BD1), OzzyJ_40 (BD1), Pavo_41 (BD3), Phettuccine_39 (BD1), Provolone_41 (BD3), Rana_40 (BD1), Saftant_40 (BD3), Speedwell_45 (BD3), Sujidade_40 (BD1), Toma_39 (BD1), Urza_41 (BD6), Verse_40 (BD3), Whatever_39 (BD1), Yasdni_39 (BD1), Yosif_42 (BD3), Zemlya_41 (BD1),

Start 9:

- Found in 55 of 92 (59.8%) of genes in pham
- Manual Annotations of this start: 18 of 88
- Called 32.7% of time when present
- Phage (with cluster) where this start called: BarryBee_42 (BD1), BeardedLady_40 (BD1), Bovely_39 (BD1), BroPlease_40 (BD4), Chucky_39 (BD1), Ejemplo_38 (BD1), Emaanora_42 (BD1), GreenWeasel_41 (BD4), Itza_41 (BD6), Katalie_39 (BD1), Ozzie_39 (BD1), RedBear_40 (BD1), SarahRose_39 (BD1), Snorlax_39 (BD1), South40_39 (BD1), TagePfighter_41 (BD1), Triste_39 (BD1), Werner_39 (BD1),

Start 12:

- Found in 13 of 92 (14.1%) 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_43 (BD2),

Summary by clusters:

There are 6 clusters represented in this pham: BD4, BU, BD6, BD1, BD3, BD2,

Info for manual annotations of cluster BD1:

- Start number 7 was manually annotated 24 times for cluster BD1.
- Start number 9 was manually annotated 15 times for cluster BD1.

Info for manual annotations of cluster BD2:

- Start number 6 was manually annotated 32 times for cluster BD2.

Info for manual annotations of cluster BD3:

- Start number 7 was manually annotated 12 times for cluster BD3.

Info for manual annotations of cluster BD4:

- Start number 9 was manually annotated 2 times for cluster BD4.

Info for manual annotations of cluster BD6:

- Start number 7 was manually annotated 1 time for cluster BD6.
- Start number 9 was manually annotated 1 time for cluster BD6.

Info for manual annotations of cluster BU:

- Start number 4 was manually annotated 1 time for cluster BU.

Gene Information:

Gene: Alsaber_41 Start: 29707, Stop: 30372, Start Num: 7

Candidate Starts for Alsaber_41:

(Start: 7 @29707 has 37 MA's), (Start: 9 @29722 has 18 MA's), (20, 29950), (22, 30007), (23, 30013), (24, 30034), (25, 30043), (29, 30103), (30, 30106), (32, 30115), (38, 30178), (39, 30199), (42, 30280), (43, 30301),

Gene: Alvy_42 Start: 29365, Stop: 30027, Start Num: 6

Candidate Starts for Alvy_42:

(2, 29038), (3, 29095), (Start: 6 @29365 has 32 MA's), (11, 29413), (14, 29476), (18, 29566), (20, 29611), (24, 29695), (37, 29815), (38, 29839), (42, 29941), (44, 29974),

Gene: Amela_40 Start: 30514, Stop: 31179, Start Num: 7

Candidate Starts for Amela_40:

(Start: 7 @30514 has 37 MA's), (Start: 9 @30529 has 18 MA's), (14, 30622), (20, 30757), (22, 30814), (23, 30820), (24, 30841), (25, 30850), (29, 30910), (32, 30922), (38, 30985), (42, 31087), (43, 31108),

Gene: Amethyst_39 Start: 28730, Stop: 29392, Start Num: 6

Candidate Starts for Amethyst_39:

(2, 28406), (3, 28463), (Start: 6 @28730 has 32 MA's), (11, 28778), (14, 28841), (18, 28931), (20, 28976), (24, 29060), (37, 29180), (38, 29204), (39, 29225), (42, 29306), (43, 29324), (44, 29339), (47, 29372),

Gene: Andris_39 Start: 28789, Stop: 29460, Start Num: 6

Candidate Starts for Andris_39:

(Start: 6 @28789 has 32 MA's), (11, 28837), (13, 28873), (15, 28930), (18, 28990), (20, 29035), (21, 29050), (24, 29119), (37, 29239), (38, 29263), (39, 29284), (42, 29365), (45, 29419),

Gene: Animus_39 Start: 29205, Stop: 29864, Start Num: 6

Candidate Starts for Animus_39:

(Start: 6 @29205 has 32 MA's), (11, 29253), (14, 29316), (18, 29406), (24, 29535), (37, 29655), (38, 29679), (39, 29700), (42, 29781),

Gene: Axiom_43 Start: 29014, Stop: 29613, Start Num: 12

Candidate Starts for Axiom_43:

(1, 28507), (2, 28624), (3, 28681), (Start: 6 @28951 has 32 MA's), (11, 28999), (12, 29014), (13, 29035), (14, 29062), (18, 29152), (20, 29197), (24, 29281), (37, 29401), (38, 29425), (42, 29527), (43, 29545),

Gene: BarryBee_42 Start: 28204, Stop: 28854, Start Num: 9

Candidate Starts for BarryBee_42:

(Start: 7 @28189 has 37 MA's), (Start: 9 @28204 has 18 MA's), (10, 28207), (17, 28348), (20, 28432), (22, 28489), (23, 28495), (24, 28516), (28, 28561), (29, 28585), (32, 28597), (34, 28606), (35, 28615), (38, 28660), (39, 28681), (42, 28762), (43, 28783), (47, 28831),

Gene: BartholomewSD_42 Start: 29364, Stop: 30026, Start Num: 6

Candidate Starts for BartholomewSD_42:

(2, 29037), (3, 29094), (Start: 6 @29364 has 32 MA's), (11, 29412), (14, 29475), (18, 29565), (20, 29610), (24, 29694), (37, 29814), (38, 29838), (42, 29940), (44, 29973),

Gene: BeardedLady_40 Start: 28085, Stop: 28735, Start Num: 9

Candidate Starts for BeardedLady_40:

(Start: 7 @28070 has 37 MA's), (Start: 9 @28085 has 18 MA's), (10, 28088), (17, 28229), (20, 28313), (22, 28370), (23, 28376), (24, 28397), (25, 28406), (28, 28442), (29, 28466), (32, 28478), (34, 28487), (35, 28496), (38, 28541), (42, 28643), (43, 28664), (47, 28712),

Gene: Bovely_39 Start: 27838, Stop: 28488, Start Num: 9

Candidate Starts for Bovely_39:

(Start: 7 @27823 has 37 MA's), (Start: 9 @27838 has 18 MA's), (10, 27841), (17, 27982), (20, 28066), (22, 28123), (23, 28129), (24, 28150), (25, 28159), (28, 28195), (29, 28219), (32, 28231), (34, 28240), (35, 28249), (38, 28294), (42, 28396), (43, 28417), (47, 28465),

Gene: Bowden_40 Start: 29279, Stop: 29941, Start Num: 6

Candidate Starts for Bowden_40:

(Start: 6 @29279 has 32 MA's), (11, 29327), (12, 29342), (14, 29390), (18, 29480), (20, 29525), (24, 29609), (37, 29729), (38, 29753), (44, 29888), (45, 29909), (47, 29921),

Gene: Brataylor_42 Start: 29162, Stop: 29827, Start Num: 7

Candidate Starts for Brataylor_42:

(Start: 7 @29162 has 37 MA's), (Start: 9 @29177 has 18 MA's), (10, 29180), (20, 29405), (22, 29462), (23, 29468), (24, 29489), (25, 29498), (28, 29534), (29, 29558), (31, 29564), (32, 29570), (34, 29579), (35, 29588), (38, 29633), (39, 29654), (43, 29756), (47, 29804),

Gene: BroPlease_40 Start: 28319, Stop: 28963, Start Num: 9

Candidate Starts for BroPlease_40:

(Start: 9 @28319 has 18 MA's), (11, 28349), (18, 28502), (24, 28631), (35, 28730), (37, 28751), (38, 28775), (40, 28802), (43, 28898),

Gene: Caelum_41 Start: 28977, Stop: 29639, Start Num: 6

Candidate Starts for Caelum_41:

(Start: 6 @28977 has 32 MA's), (11, 29025), (18, 29178), (24, 29307), (25, 29316), (37, 29427), (38, 29451), (39, 29472), (42, 29553), (43, 29571), (44, 29586), (45, 29607), (47, 29619),

Gene: Celeste_40 Start: 28631, Stop: 29296, Start Num: 7

Candidate Starts for Celeste_40:

(Start: 7 @28631 has 37 MA's), (Start: 9 @28646 has 18 MA's), (10, 28649), (20, 28874), (22, 28931), (23, 28937), (24, 28958), (25, 28967), (28, 29003), (29, 29027), (32, 29039), (34, 29048), (35, 29057), (38, 29102), (39, 29123), (42, 29204), (43, 29225), (47, 29273),

Gene: Chucky_39 Start: 28208, Stop: 28858, Start Num: 9

Candidate Starts for Chucky_39:

(Start: 7 @28193 has 37 MA's), (Start: 9 @28208 has 18 MA's), (10, 28211), (17, 28352), (20, 28436), (22, 28493), (23, 28499), (24, 28520), (28, 28565), (29, 28589), (32, 28601), (34, 28610), (35, 28619), (38, 28664), (39, 28685), (42, 28766), (43, 28787), (47, 28835),

Gene: Conan_41 Start: 29601, Stop: 30266, Start Num: 7

Candidate Starts for Conan_41:

(Start: 7 @29601 has 37 MA's), (Start: 9 @29616 has 18 MA's), (20, 29844), (22, 29901), (23, 29907), (24, 29928), (25, 29937), (29, 29997), (30, 30000), (32, 30009), (38, 30072), (39, 30093), (42, 30174), (43, 30195),

Gene: Danzina_41 Start: 28932, Stop: 29597, Start Num: 7

Candidate Starts for Danzina_41:

(Start: 7 @28932 has 37 MA's), (Start: 9 @28947 has 18 MA's), (10, 28950), (20, 29175), (22, 29232), (23, 29238), (24, 29259), (25, 29268), (28, 29304), (29, 29328), (32, 29340), (34, 29349), (35, 29358), (38, 29403), (39, 29424), (42, 29505), (43, 29526), (47, 29574),

Gene: Dattran_41 Start: 28738, Stop: 29403, Start Num: 7

Candidate Starts for Dattran_41:

(Start: 7 @28738 has 37 MA's), (Start: 9 @28753 has 18 MA's), (10, 28756), (20, 28981), (22, 29038), (23, 29044), (24, 29065), (25, 29074), (28, 29110), (29, 29134), (32, 29146), (34, 29155), (35, 29164), (38, 29209), (39, 29230), (42, 29311), (43, 29332), (47, 29380),

Gene: Daudau_40 Start: 29122, Stop: 29784, Start Num: 6

Candidate Starts for Daudau_40:

(2, 28798), (3, 28855), (Start: 6 @29122 has 32 MA's), (11, 29170), (14, 29233), (18, 29323), (20, 29368), (24, 29452), (25, 29461), (37, 29572), (38, 29596), (39, 29617), (42, 29698), (43, 29716), (44, 29731),

Gene: Dexers_39 Start: 29625, Stop: 30290, Start Num: 7

Candidate Starts for Dexers_39:

(Start: 7 @29625 has 37 MA's), (Start: 9 @29640 has 18 MA's), (20, 29868), (22, 29925), (23, 29931), (24, 29952), (25, 29961), (29, 30021), (30, 30024), (32, 30033), (38, 30096), (39, 30117), (42, 30198), (43, 30219),

Gene: Diane_39 Start: 28959, Stop: 29621, Start Num: 6

Candidate Starts for Diane_39:

(3, 28692), (Start: 6 @28959 has 32 MA's), (11, 29007), (14, 29070), (18, 29160), (20, 29205), (24, 29289), (37, 29409), (38, 29433), (39, 29454), (42, 29535), (43, 29553), (44, 29568), (47, 29601),

Gene: Dwayne_39 Start: 28180, Stop: 28845, Start Num: 7

Candidate Starts for Dwayne_39:

(Start: 7 @28180 has 37 MA's), (Start: 9 @28195 has 18 MA's), (10, 28198), (17, 28339), (20, 28423), (22, 28480), (23, 28486), (24, 28507), (28, 28552), (29, 28576), (32, 28588), (34, 28597), (35, 28606), (38, 28651), (39, 28672), (42, 28753), (43, 28774), (47, 28822),

Gene: ELB20_38 Start: 29365, Stop: 30027, Start Num: 6

Candidate Starts for ELB20_38:

(Start: 6 @29365 has 32 MA's), (11, 29413), (14, 29476), (18, 29566), (20, 29611), (24, 29695), (25, 29704), (37, 29815), (38, 29839), (39, 29860), (43, 29959), (44, 29974), (45, 29995),

Gene: Ejemplo_38 Start: 28139, Stop: 28789, Start Num: 9

Candidate Starts for Ejemplo_38:

(Start: 7 @28124 has 37 MA's), (Start: 9 @28139 has 18 MA's), (10, 28142), (20, 28367), (22, 28424), (23, 28430), (24, 28451), (28, 28496), (29, 28520), (32, 28532), (34, 28541), (35, 28550), (38, 28595), (39, 28616), (42, 28697), (43, 28718), (47, 28766),

Gene: ElGato_41 Start: 29265, Stop: 29930, Start Num: 7

Candidate Starts for ElGato_41:

(Start: 7 @29265 has 37 MA's), (Start: 9 @29280 has 18 MA's), (20, 29508), (22, 29565), (23, 29571), (24, 29592), (25, 29601), (29, 29661), (30, 29664), (32, 29673), (38, 29736), (39, 29757), (42, 29838), (43, 29859),

Gene: Emaanora_42 Start: 28153, Stop: 28803, Start Num: 9

Candidate Starts for Emaanora_42:

(Start: 7 @28138 has 37 MA's), (Start: 9 @28153 has 18 MA's), (10, 28156), (17, 28297), (20, 28381), (22, 28438), (23, 28444), (24, 28465), (28, 28510), (29, 28534), (32, 28546), (34, 28555), (35, 28564), (38, 28609), (39, 28630), (42, 28711), (43, 28732), (47, 28780),

Gene: Esperer_39 Start: 27636, Stop: 28301, Start Num: 7

Candidate Starts for Esperer_39:

(Start: 7 @27636 has 37 MA's), (Start: 9 @27651 has 18 MA's), (10, 27654), (17, 27795), (20, 27879), (22, 27936), (23, 27942), (24, 27963), (25, 27972), (28, 28008), (29, 28032), (32, 28044), (34, 28053), (35, 28062), (38, 28107), (42, 28209), (43, 28230), (47, 28278),

Gene: GirlDinner_39 Start: 28706, Stop: 29365, Start Num: 6

Candidate Starts for GirlDinner_39:

(Start: 6 @28706 has 32 MA's), (11, 28754), (14, 28817), (18, 28907), (24, 29036), (37, 29156), (38, 29180), (39, 29201), (42, 29282),

Gene: Goby_39 Start: 28637, Stop: 29302, Start Num: 7

Candidate Starts for Goby_39:

(Start: 7 @28637 has 37 MA's), (Start: 9 @28652 has 18 MA's), (10, 28655), (20, 28880), (22, 28937), (23, 28943), (24, 28964), (25, 28973), (28, 29009), (29, 29033), (32, 29045), (34, 29054), (35, 29063), (38, 29108), (39, 29129), (42, 29210), (43, 29231), (47, 29279),

Gene: Godpower_40 Start: 28632, Stop: 29297, Start Num: 7

Candidate Starts for Godpower_40:

(Start: 7 @28632 has 37 MA's), (Start: 9 @28647 has 18 MA's), (10, 28650), (17, 28791), (20, 28875), (22, 28932), (23, 28938), (24, 28959), (25, 28968), (28, 29004), (29, 29028), (32, 29040), (34, 29049), (35, 29058), (38, 29103), (39, 29124), (42, 29205), (43, 29226), (47, 29274),

Gene: GreenWeasel_41 Start: 28326, Stop: 28970, Start Num: 9

Candidate Starts for GreenWeasel_41:

(Start: 9 @28326 has 18 MA's), (11, 28356), (18, 28509), (24, 28638), (35, 28737), (37, 28758), (38, 28782), (39, 28803), (40, 28809), (43, 28905),

Gene: Haizum_41 Start: 29074, Stop: 29736, Start Num: 6

Candidate Starts for Haizum_41:

(3, 28807), (Start: 6 @29074 has 32 MA's), (11, 29122), (14, 29185), (18, 29275), (20, 29320), (24, 29404), (37, 29524), (38, 29548), (39, 29569), (42, 29650), (43, 29668), (44, 29683), (47, 29716),

Gene: Hank144_41 Start: 29070, Stop: 29729, Start Num: 6

Candidate Starts for Hank144_41:

(3, 28800), (Start: 6 @29070 has 32 MA's), (11, 29118), (12, 29133), (13, 29154), (14, 29181), (18, 29271), (24, 29400), (37, 29520), (38, 29544), (39, 29565), (42, 29646),

Gene: Hippo_39 Start: 28192, Stop: 28857, Start Num: 7

Candidate Starts for Hippo_39:

(Start: 7 @28192 has 37 MA's), (Start: 9 @28207 has 18 MA's), (10, 28210), (17, 28351), (20, 28435), (22, 28492), (23, 28498), (24, 28519), (28, 28564), (29, 28588), (32, 28600), (34, 28609), (35, 28618), (38, 28663), (39, 28684), (42, 28765), (43, 28786), (47, 28834),

Gene: Indigo_38 Start: 27816, Stop: 28481, Start Num: 7

Candidate Starts for Indigo_38:

(Start: 7 @27816 has 37 MA's), (Start: 9 @27831 has 18 MA's), (10, 27834), (17, 27975), (20, 28059), (22, 28116), (23, 28122), (24, 28143), (25, 28152), (28, 28188), (29, 28212), (32, 28224), (34, 28233), (35, 28242), (38, 28287), (42, 28389), (43, 28410), (47, 28458),

Gene: Issmi_41 Start: 29674, Stop: 30336, Start Num: 6

Candidate Starts for Issmi_41:

(3, 29404), (Start: 6 @29674 has 32 MA's), (11, 29722), (14, 29785), (18, 29875), (20, 29920), (24, 30004), (37, 30124), (38, 30148), (42, 30250), (44, 30283), (47, 30316),

Gene: Itza_41 Start: 28661, Stop: 29311, Start Num: 9

Candidate Starts for Itza_41:

(Start: 7 @28646 has 37 MA's), (Start: 9 @28661 has 18 MA's), (16, 28802), (22, 28946), (29, 29042), (38, 29117), (42, 29219), (43, 29240), (44, 29255),

Gene: Janus_40 Start: 29046, Stop: 29705, Start Num: 6

Candidate Starts for Janus_40:

(Start: 6 @29046 has 32 MA's), (11, 29094), (14, 29157), (18, 29247), (24, 29376), (37, 29496), (38, 29520), (39, 29541), (42, 29622),

Gene: Jevington_42 Start: 29464, Stop: 30126, Start Num: 6

Candidate Starts for Jevington_42:

(Start: 6 @29464 has 32 MA's), (11, 29512), (12, 29527), (13, 29548), (15, 29605), (18, 29665), (20, 29710), (24, 29794), (37, 29914), (38, 29938), (39, 29959),

Gene: Kaine_40 Start: 29416, Stop: 30081, Start Num: 7

Candidate Starts for Kaine_40:

(Start: 7 @29416 has 37 MA's), (Start: 9 @29431 has 18 MA's), (20, 29659), (22, 29716), (23, 29722), (24, 29743), (25, 29752), (29, 29812), (30, 29815), (32, 29824), (38, 29887), (39, 29908), (42, 29989), (43, 30010),

Gene: Katalie_39 Start: 28378, Stop: 29028, Start Num: 9

Candidate Starts for Katalie_39:

(Start: 7 @28363 has 37 MA's), (Start: 9 @28378 has 18 MA's), (10, 28381), (20, 28606), (22, 28663), (23, 28669), (24, 28690), (25, 28699), (29, 28759), (32, 28771), (34, 28780), (35, 28789), (38, 28834), (39, 28855), (42, 28936), (43, 28957), (47, 29005),

Gene: Lika_39 Start: 28635, Stop: 29300, Start Num: 7

Candidate Starts for Lika_39:

(Start: 7 @28635 has 37 MA's), (Start: 9 @28650 has 18 MA's), (10, 28653), (17, 28794), (20, 28878), (22, 28935), (23, 28941), (24, 28962), (25, 28971), (28, 29007), (29, 29031), (32, 29043), (34, 29052), (35, 29061), (38, 29106), (39, 29127), (42, 29208), (43, 29229), (47, 29277),

Gene: Loofah_40 Start: 29235, Stop: 29897, Start Num: 6

Candidate Starts for Loofah_40:

(Start: 6 @29235 has 32 MA's), (11, 29283), (14, 29346), (15, 29376), (18, 29436), (20, 29481), (24, 29565), (25, 29574), (37, 29685), (38, 29709), (39, 29730), (43, 29829), (44, 29844), (45, 29865),

Gene: Lorelei_40 Start: 28695, Stop: 29360, Start Num: 7

Candidate Starts for Lorelei_40:

(Start: 7 @28695 has 37 MA's), (Start: 9 @28710 has 18 MA's), (10, 28713), (17, 28854), (20, 28938), (22, 28995), (23, 29001), (24, 29022), (29, 29091), (30, 29094), (32, 29103), (34, 29112), (35, 29121), (38, 29166), (39, 29187), (42, 29268), (43, 29289), (47, 29337),

Gene: Maneekul_39 Start: 28214, Stop: 28879, Start Num: 7

Candidate Starts for Maneekul_39:

(Start: 7 @28214 has 37 MA's), (Start: 9 @28229 has 18 MA's), (10, 28232), (20, 28457), (22, 28514), (23, 28520), (24, 28541), (28, 28586), (29, 28610), (32, 28622), (34, 28631), (35, 28640), (38, 28685), (39, 28706), (42, 28787), (43, 28808), (47, 28856),

Gene: Marav_43 Start: 29789, Stop: 30451, Start Num: 6

Candidate Starts for Marav_43:

(Start: 6 @29789 has 32 MA's), (11, 29837), (12, 29852), (13, 29873), (15, 29930), (18, 29990), (20, 30035), (24, 30119), (37, 30239), (38, 30263), (39, 30284), (47, 30431),

Gene: Nabi_40 Start: 28695, Stop: 29360, Start Num: 7

Candidate Starts for Nabi_40:

(Start: 7 @28695 has 37 MA's), (Start: 9 @28710 has 18 MA's), (10, 28713), (17, 28854), (20, 28938), (22, 28995), (23, 29001), (24, 29022), (29, 29091), (30, 29094), (32, 29103), (34, 29112), (35, 29121), (38, 29166), (39, 29187), (42, 29268), (43, 29289), (47, 29337),

Gene: Nanodon_41 Start: 28466, Stop: 29131, Start Num: 7

Candidate Starts for Nanodon_41:

(Start: 7 @28466 has 37 MA's), (Start: 9 @28481 has 18 MA's), (10, 28484), (20, 28709), (22, 28766), (23, 28772), (24, 28793), (25, 28802), (28, 28838), (29, 28862), (32, 28874), (34, 28883), (35, 28892), (38, 28937), (39, 28958), (42, 29039), (43, 29060), (47, 29108),

Gene: Nishikigoi_41 Start: 29074, Stop: 29736, Start Num: 6

Candidate Starts for Nishikigoi_41:

(3, 28807), (Start: 6 @29074 has 32 MA's), (11, 29122), (14, 29185), (18, 29275), (20, 29320), (24, 29404), (37, 29524), (38, 29548), (39, 29569), (42, 29650), (43, 29668), (44, 29683), (47, 29716),

Gene: Oliynyk_40 Start: 28177, Stop: 28842, Start Num: 7

Candidate Starts for Oliynyk_40:

(Start: 7 @28177 has 37 MA's), (Start: 9 @28192 has 18 MA's), (10, 28195), (17, 28336), (20, 28420), (22, 28477), (23, 28483), (24, 28504), (25, 28513), (28, 28549), (29, 28573), (32, 28585), (33, 28588), (34, 28594), (35, 28603), (38, 28648), (39, 28669), (42, 28750), (43, 28771), (47, 28819),

Gene: Omar_42 Start: 29302, Stop: 29964, Start Num: 6

Candidate Starts for Omar_42:

(2, 28975), (3, 29032), (Start: 6 @29302 has 32 MA's), (11, 29350), (14, 29413), (18, 29503), (24, 29632), (37, 29752), (38, 29776), (39, 29797), (42, 29878), (44, 29911),

Gene: Ozzie_39 Start: 27815, Stop: 28465, Start Num: 9

Candidate Starts for Ozzie_39:

(Start: 7 @27800 has 37 MA's), (Start: 9 @27815 has 18 MA's), (10, 27818), (17, 27959), (20, 28043), (22, 28100), (23, 28106), (24, 28127), (25, 28136), (28, 28172), (29, 28196), (32, 28208), (34, 28217), (35, 28226), (38, 28271), (42, 28373), (43, 28394), (47, 28442),

Gene: OzzyJ_40 Start: 28180, Stop: 28845, Start Num: 7

Candidate Starts for OzzyJ_40:

(Start: 7 @28180 has 37 MA's), (Start: 9 @28195 has 18 MA's), (10, 28198), (17, 28339), (20, 28423), (22, 28480), (23, 28486), (24, 28507), (28, 28552), (29, 28576), (32, 28588), (34, 28597), (35, 28606), (38, 28651), (39, 28672), (42, 28753), (43, 28774), (47, 28822),

Gene: PHL010M04_30 Start: 21406, Stop: 20681, Start Num: 4

Candidate Starts for PHL010M04_30:

(Start: 4 @21406 has 1 MA's), (5, 21403), (8, 21352), (19, 21139), (20, 21100), (25, 21007), (26, 20998), (27, 20977), (29, 20947), (41, 20812), (42, 20770), (46, 20713), (48, 20692),

Gene: PHL037M02_30 Start: 21390, Stop: 20665, Start Num: 4

Candidate Starts for PHL037M02_30:

(Start: 4 @21390 has 1 MA's), (8, 21336), (19, 21123), (20, 21084), (25, 20991), (26, 20982), (27, 20961), (29, 20931), (41, 20796), (42, 20754), (46, 20697), (48, 20676),

Gene: Pablito_39 Start: 28612, Stop: 29271, Start Num: 6

Candidate Starts for Pablito_39:

(Start: 6 @28612 has 32 MA's), (11, 28660), (14, 28723), (18, 28813), (24, 28942), (37, 29062), (38, 29086), (39, 29107), (42, 29188), (47, 29254),

Gene: Paedore_39 Start: 29220, Stop: 29882, Start Num: 6

Candidate Starts for Paedore_39:

(Start: 6 @29220 has 32 MA's), (11, 29268), (14, 29331), (15, 29361), (18, 29421), (20, 29466), (24, 29550), (25, 29559), (37, 29670), (38, 29694), (39, 29715), (43, 29814), (44, 29829), (45, 29850),

Gene: Paolo_42 Start: 29646, Stop: 30308, Start Num: 6

Candidate Starts for Paolo_42:

(Start: 6 @29646 has 32 MA's), (11, 29694), (12, 29709), (13, 29730), (15, 29787), (18, 29847), (24, 29976), (37, 30096), (38, 30120), (45, 30276), (47, 30288),

Gene: Pavo_41 Start: 29874, Stop: 30539, Start Num: 7

Candidate Starts for Pavo_41:

(Start: 7 @29874 has 37 MA's), (Start: 9 @29889 has 18 MA's), (20, 30117), (22, 30174), (23, 30180), (24, 30201), (25, 30210), (29, 30270), (30, 30273), (32, 30282), (38, 30345), (39, 30366), (42, 30447), (43, 30468),

Gene: Phettuccine_39 Start: 27816, Stop: 28481, Start Num: 7

Candidate Starts for Phettuccine_39:

(Start: 7 @27816 has 37 MA's), (Start: 9 @27831 has 18 MA's), (10, 27834), (17, 27975), (20, 28059), (22, 28116), (23, 28122), (24, 28143), (25, 28152), (28, 28188), (29, 28212), (32, 28224), (34, 28233), (35, 28242), (38, 28287), (42, 28389), (43, 28410), (47, 28458),

Gene: Provolone_41 Start: 29256, Stop: 29921, Start Num: 7

Candidate Starts for Provolone_41:

(Start: 7 @29256 has 37 MA's), (Start: 9 @29271 has 18 MA's), (20, 29499), (22, 29556), (23, 29562), (24, 29583), (25, 29592), (29, 29652), (30, 29655), (32, 29664), (38, 29727), (39, 29748), (42, 29829), (43, 29850),

Gene: Puginator_42 Start: 29667, Stop: 30329, Start Num: 6

Candidate Starts for Puginator_42:

(Start: 6 @29667 has 32 MA's), (11, 29715), (12, 29730), (13, 29751), (15, 29808), (18, 29868), (24, 29997), (37, 30117), (38, 30141), (45, 30297), (47, 30309),

Gene: R4_40 Start: 29375, Stop: 30037, Start Num: 6

Candidate Starts for R4_40:

(Start: 6 @29375 has 32 MA's), (11, 29423), (14, 29486), (15, 29516), (18, 29576), (20, 29621), (24, 29705), (25, 29714), (37, 29825), (38, 29849), (43, 29969), (44, 29984), (45, 30005),

Gene: Rana_40 Start: 28695, Stop: 29360, Start Num: 7

Candidate Starts for Rana_40:

(Start: 7 @28695 has 37 MA's), (Start: 9 @28710 has 18 MA's), (10, 28713), (17, 28854), (20, 28938), (22, 28995), (23, 29001), (24, 29022), (29, 29091), (30, 29094), (32, 29103), (34, 29112), (35, 29121), (38, 29166), (39, 29187), (42, 29268), (43, 29289), (47, 29337),

Gene: RedBear_40 Start: 28378, Stop: 29028, Start Num: 9

Candidate Starts for RedBear_40:

(Start: 7 @28363 has 37 MA's), (Start: 9 @28378 has 18 MA's), (10, 28381), (20, 28606), (22, 28663), (23, 28669), (24, 28690), (25, 28699), (29, 28759), (32, 28771), (34, 28780), (35, 28789), (38, 28834), (39, 28855), (42, 28936), (43, 28957), (47, 29005),

Gene: Rileysaurus_30 Start: 21416, Stop: 20691, Start Num: 4

Candidate Starts for Rileysaurus_30:

(Start: 4 @21416 has 1 MA's), (8, 21362), (19, 21149), (20, 21110), (25, 21017), (26, 21008), (27, 20987), (29, 20957), (41, 20822), (42, 20780), (43, 20759), (46, 20723), (48, 20702),

Gene: Saftant_40 Start: 29828, Stop: 30493, Start Num: 7

Candidate Starts for Saftant_40:

(Start: 7 @29828 has 37 MA's), (Start: 9 @29843 has 18 MA's), (20, 30071), (22, 30128), (23, 30134), (24, 30155), (25, 30164), (29, 30224), (30, 30227), (32, 30236), (38, 30299), (43, 30422), (47, 30470),

Gene: SarahRose_39 Start: 28203, Stop: 28853, Start Num: 9

Candidate Starts for SarahRose_39:

(Start: 7 @28188 has 37 MA's), (Start: 9 @28203 has 18 MA's), (10, 28206), (17, 28347), (20, 28431), (22, 28488), (23, 28494), (24, 28515), (28, 28560), (29, 28584), (32, 28596), (34, 28605), (35, 28614), (38, 28659), (39, 28680), (42, 28761), (43, 28782), (47, 28830),

Gene: Snorlax_39 Start: 28207, Stop: 28857, Start Num: 9

Candidate Starts for Snorlax_39:

(Start: 7 @28192 has 37 MA's), (Start: 9 @28207 has 18 MA's), (10, 28210), (17, 28351), (20, 28435), (22, 28492), (23, 28498), (24, 28519), (28, 28564), (29, 28588), (32, 28600), (34, 28609), (35, 28618), (38, 28663), (39, 28684), (42, 28765), (43, 28786), (47, 28834),

Gene: South40_39 Start: 28378, Stop: 29028, Start Num: 9

Candidate Starts for South40_39:

(Start: 7 @28363 has 37 MA's), (Start: 9 @28378 has 18 MA's), (10, 28381), (20, 28606), (22, 28663), (23, 28669), (24, 28690), (25, 28699), (29, 28759), (32, 28771), (34, 28780), (35, 28789), (38, 28834), (39, 28855), (42, 28936), (43, 28957), (47, 29005),

Gene: Speedwell_45 Start: 31124, Stop: 31789, Start Num: 7

Candidate Starts for Speedwell_45:

(Start: 7 @31124 has 37 MA's), (Start: 9 @31139 has 18 MA's), (14, 31232), (20, 31367), (22, 31424), (23, 31430), (24, 31451), (29, 31520), (32, 31532), (36, 31556), (38, 31595), (39, 31616), (43, 31718),

Gene: SqueakyClean_39 Start: 29137, Stop: 29796, Start Num: 6

Candidate Starts for SqueakyClean_39:

(Start: 6 @29137 has 32 MA's), (11, 29185), (14, 29248), (18, 29338), (24, 29467), (37, 29587), (38, 29611), (39, 29632), (42, 29713),

Gene: Sujidade_40 Start: 28920, Stop: 29585, Start Num: 7

Candidate Starts for Sujidade_40:

(Start: 7 @28920 has 37 MA's), (Start: 9 @28935 has 18 MA's), (10, 28938), (20, 29163), (22, 29220), (23, 29226), (24, 29247), (25, 29256), (28, 29292), (29, 29316), (32, 29328), (34, 29337), (35, 29346), (38, 29391), (39, 29412), (42, 29493), (43, 29514), (47, 29562),

Gene: Superstar_43 Start: 30182, Stop: 30844, Start Num: 6

Candidate Starts for Superstar_43:

(Start: 6 @30182 has 32 MA's), (11, 30230), (14, 30293), (18, 30383), (24, 30512), (25, 30521), (37, 30632), (38, 30656), (39, 30677), (43, 30776), (44, 30791), (45, 30812), (47, 30824),

Gene: TagePhighter_41 Start: 28207, Stop: 28857, Start Num: 9

Candidate Starts for TagePhighter_41:

(Start: 7 @28192 has 37 MA's), (Start: 9 @28207 has 18 MA's), (10, 28210), (17, 28351), (20, 28435), (22, 28492), (23, 28498), (24, 28519), (28, 28564), (29, 28588), (32, 28600), (34, 28609), (35, 28618), (38, 28663), (39, 28684), (42, 28765), (43, 28786), (47, 28834),

Gene: Tefunt_41 Start: 29076, Stop: 29738, Start Num: 6

Candidate Starts for Tefunt_41:

(3, 28809), (Start: 6 @29076 has 32 MA's), (11, 29124), (14, 29187), (18, 29277), (20, 29322), (24, 29406), (37, 29526), (38, 29550), (39, 29571), (42, 29652), (43, 29670), (44, 29685), (47, 29718),

Gene: Thestral_41 Start: 29271, Stop: 29933, Start Num: 6

Candidate Starts for Thestral_41:

(Start: 6 @29271 has 32 MA's), (11, 29319), (12, 29334), (14, 29382), (18, 29472), (20, 29517), (24, 29601), (37, 29721), (38, 29745), (39, 29766), (44, 29880), (45, 29901), (47, 29913),

Gene: TinaBelcher_40 Start: 29218, Stop: 29880, Start Num: 6

Candidate Starts for TinaBelcher_40:

(Start: 6 @29218 has 32 MA's), (11, 29266), (12, 29281), (14, 29329), (18, 29419), (20, 29464), (24, 29548), (37, 29668), (38, 29692), (44, 29827), (45, 29848), (47, 29860),

Gene: Toma_39 Start: 28637, Stop: 29302, Start Num: 7

Candidate Starts for Toma_39:

(Start: 7 @28637 has 37 MA's), (Start: 9 @28652 has 18 MA's), (10, 28655), (20, 28880), (22, 28937), (23, 28943), (24, 28964), (25, 28973), (28, 29009), (29, 29033), (32, 29045), (34, 29054), (35, 29063), (38, 29108), (39, 29129), (42, 29210), (43, 29231), (47, 29279),

Gene: Triste_39 Start: 28195, Stop: 28845, Start Num: 9

Candidate Starts for Triste_39:

(Start: 7 @28180 has 37 MA's), (Start: 9 @28195 has 18 MA's), (10, 28198), (17, 28339), (20, 28423), (22, 28480), (23, 28486), (24, 28507), (28, 28552), (29, 28576), (32, 28588), (34, 28597), (35, 28606),

(38, 28651), (39, 28672), (42, 28753), (43, 28774), (47, 28822),

Gene: Triumph_41 Start: 28968, Stop: 29630, Start Num: 6

Candidate Starts for Triumph_41:

(1, 28524), (2, 28641), (3, 28698), (Start: 6 @28968 has 32 MA's), (11, 29016), (12, 29031), (13, 29052), (14, 29079), (18, 29169), (20, 29214), (24, 29298), (37, 29418), (38, 29442), (42, 29544), (43, 29562),

Gene: TrvxScott_39 Start: 29264, Stop: 29926, Start Num: 6

Candidate Starts for TrvxScott_39:

(Start: 6 @29264 has 32 MA's), (11, 29312), (12, 29327), (14, 29375), (18, 29465), (20, 29510), (24, 29594), (37, 29714), (38, 29738), (44, 29873), (45, 29894), (47, 29906),

Gene: Urza_41 Start: 28667, Stop: 29332, Start Num: 7

Candidate Starts for Urza_41:

(Start: 7 @28667 has 37 MA's), (Start: 9 @28682 has 18 MA's), (16, 28823), (22, 28967), (29, 29063), (38, 29138), (42, 29240), (43, 29261), (44, 29276),

Gene: Verse_40 Start: 30508, Stop: 31173, Start Num: 7

Candidate Starts for Verse_40:

(Start: 7 @30508 has 37 MA's), (Start: 9 @30523 has 18 MA's), (14, 30616), (20, 30751), (22, 30808), (23, 30814), (24, 30835), (25, 30844), (29, 30904), (30, 30907), (32, 30916), (38, 30979), (42, 31081), (43, 31102),

Gene: Werner_39 Start: 28205, Stop: 28855, Start Num: 9

Candidate Starts for Werner_39:

(Start: 7 @28190 has 37 MA's), (Start: 9 @28205 has 18 MA's), (10, 28208), (17, 28349), (20, 28433), (22, 28490), (23, 28496), (24, 28517), (28, 28562), (29, 28586), (32, 28598), (34, 28607), (35, 28616), (38, 28661), (39, 28682), (42, 28763), (43, 28784), (47, 28832),

Gene: Whatever_39 Start: 28190, Stop: 28855, Start Num: 7

Candidate Starts for Whatever_39:

(Start: 7 @28190 has 37 MA's), (Start: 9 @28205 has 18 MA's), (10, 28208), (17, 28349), (20, 28433), (22, 28490), (23, 28496), (24, 28517), (28, 28562), (29, 28586), (32, 28598), (34, 28607), (35, 28616), (38, 28661), (39, 28682), (42, 28763), (43, 28784), (47, 28832),

Gene: Yasdnil_39 Start: 28242, Stop: 28907, Start Num: 7

Candidate Starts for Yasdnil_39:

(Start: 7 @28242 has 37 MA's), (Start: 9 @28257 has 18 MA's), (10, 28260), (20, 28485), (22, 28542), (23, 28548), (24, 28569), (28, 28614), (29, 28638), (32, 28650), (34, 28659), (35, 28668), (38, 28713), (39, 28734), (42, 28815), (43, 28836), (47, 28884),

Gene: Yosif_42 Start: 30304, Stop: 30969, Start Num: 7

Candidate Starts for Yosif_42:

(Start: 7 @30304 has 37 MA's), (Start: 9 @30319 has 18 MA's), (12, 30364), (22, 30604), (26, 30649), (29, 30700), (38, 30775), (42, 30877), (43, 30898),

Gene: Zainub_42 Start: 29607, Stop: 30269, Start Num: 6

Candidate Starts for Zainub_42:

(Start: 6 @29607 has 32 MA's), (11, 29655), (12, 29670), (13, 29691), (15, 29748), (18, 29808), (24, 29937), (37, 30057), (38, 30081), (45, 30237), (47, 30249),

Gene: Zemlya_41 Start: 28738, Stop: 29403, Start Num: 7

Candidate Starts for Zemlya_41:

(Start: 7 @28738 has 37 MA's), (Start: 9 @28753 has 18 MA's), (10, 28756), (20, 28981), (22, 29038), (23, 29044), (24, 29065), (25, 29074), (28, 29110), (29, 29134), (32, 29146), (34, 29155), (35, 29164), (38, 29209), (39, 29230), (42, 29311), (43, 29332), (47, 29380),