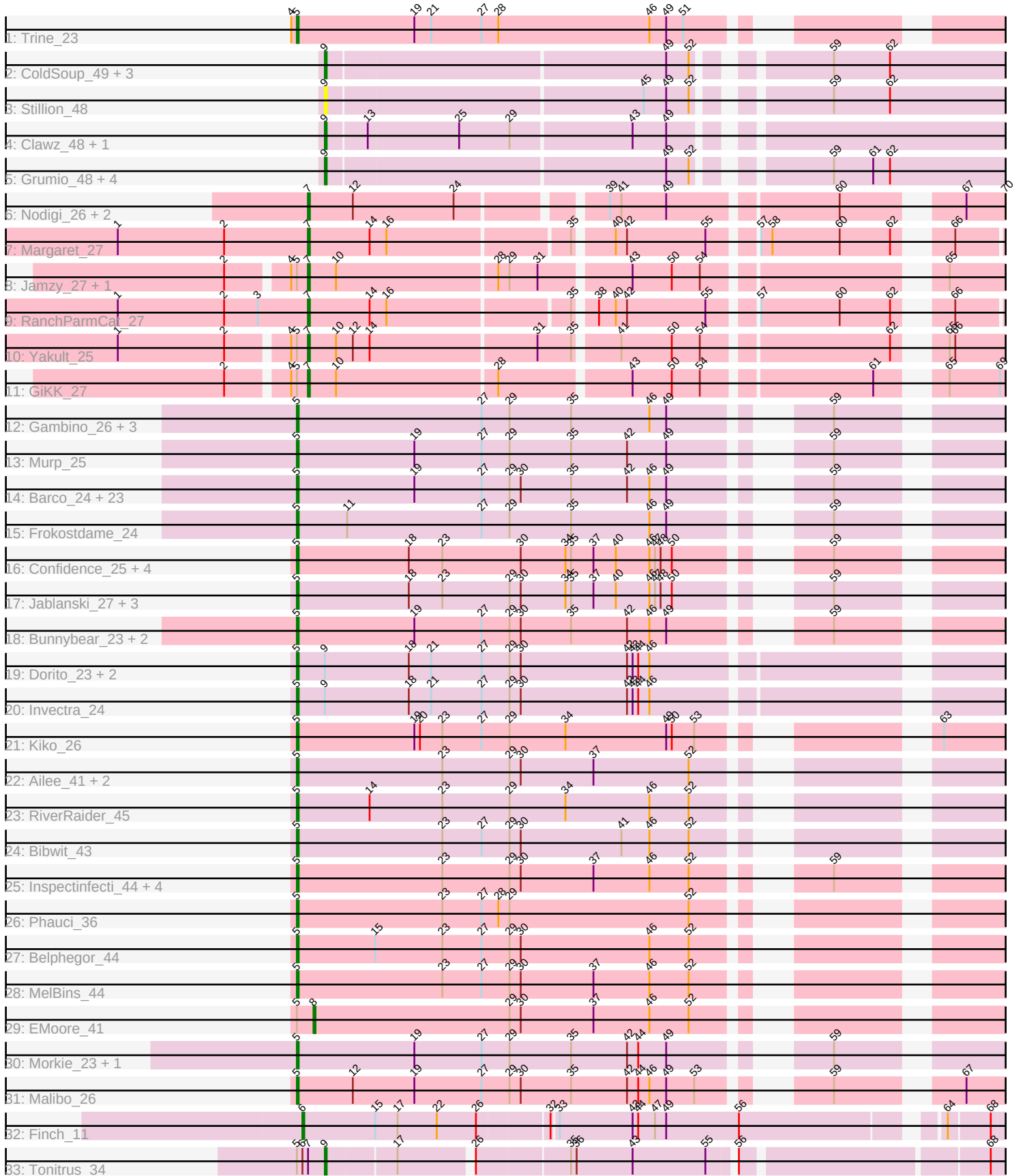


Zoomed Pham 280321



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 280321 Report

This analysis was run 02/07/26 on database version 634.

Pham number 280321 has 88 members, 12 are drafts.

Phages represented in each track:

- Track 1 : Trine_23
- Track 2 : ColdSoup_49, Jollymon_48, Purplicious_47, Amo99_49
- Track 3 : Stillion_48
- Track 4 : Clawz_48, Makar_49
- Track 5 : Grumio_48, Sting_47, DonTron_48, Soos_44, KingstonB_49
- Track 6 : Nodigi_26, Hexbug_26, Orla_26
- Track 7 : Margaret_27
- Track 8 : Jamzy_27, Button_25
- Track 9 : RanchParmCat_27
- Track 10 : Yakult_25
- Track 11 : GiKK_27
- Track 12 : Gambino_26, MissRona_26, Blueberry_26, Azula_26
- Track 13 : Murp_25
- Track 14 : Barco_24, Zarbodnamra_24, Malachai_25, Jalammah_26, Wisp_23, Mellie_23, UmaThurman_24, JasperJr_24, Zilla_24, Archis_25, Samba_24, BlingBling_24, PhrostedPhlake_26, Utz_24, Begonia_25, Guacamole_24, Lysidious_25, CaptainKirk2_24, Delian_24, Fenry_23, Melba_24, Hitter_24, MintFen_24, Walrus_26
- Track 15 : Frokostdame_24
- Track 16 : Confidence_25, Cashline_25, BeeGee_25, ODay_31, Denise_21
- Track 17 : Jablanski_27, Posh_27, Pytheas_27, Wrigley_27
- Track 18 : Bunnybear_23, Pipp_24, CheeseSpider_28
- Track 19 : Dorito_23, Tuti_28, PhriskyACE_23
- Track 20 : Invectra_24
- Track 21 : Kiko_26
- Track 22 : Ailee_41, Keitabear_44, Sedona_44
- Track 23 : RiverRaider_45
- Track 24 : Bibwit_43
- Track 25 : Inspectinfecti_44, Phinally_43, Leonard_43, Hans_45, Ali17_41
- Track 26 : Phauci_36
- Track 27 : Belphegor_44
- Track 28 : MelBins_44
- Track 29 : EMoore_41
- Track 30 : Morkie_23, PhorbesPhlower_23
- Track 31 : Malibo_26
- Track 32 : Finch_11
- Track 33 : Tonitrus_34

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

The start number called the most often in the published annotations is 5, it was called in 59 of the 76 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Ailee_41, Ali17_41, Archis_25, Azula_26, Barco_24, BeeGee_25, Begonia_25, Belphegor_44, Bibwit_43, BlingBling_24, Blueberry_26, Bunnybear_23, CaptainKirk2_24, Cashline_25, CheeseSpider_28, Confidence_25, Delian_24, Denise_21, Dorito_23, Fenry_23, Frokostdame_24, Gambino_26, Guacamole_24, Hans_45, Hitter_24, Inspectinfecti_44, Invectra_24, Jablanski_27, Jalammah_26, JasperJr_24, Keitabear_44, Kiko_26, Leonard_43, Lysidious_25, Malachai_25, Malibo_26, MelBins_44, Melba_24, Mellie_23, MintFen_24, MissRona_26, Morkie_23, Murp_25, ODay_31, Phauci_36, Phinally_43, PhorbesPhlower_23, PhriskyACE_23, PhrostedPhlake_26, Pipp_24, Posh_27, Pytheas_27, RiverRaider_45, Samba_24, Sedona_44, Trine_23, Tuti_28, UmaThurman_24, Utz_24, Walrus_26, Wisp_23, Wrigley_27, Zarbodnamra_24, Zilla_24,

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

- Button_25, EMoore_41, GiKK_27, Jamzy_27, Tonitrus_34, Yakult_25,

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

- Amo99_49, Clawz_48, ColdSoup_49, DonTron_48, Finch_11, Grumio_48, Hexbug_26, Jollymon_48, KingstonB_49, Makar_49, Margaret_27, Nodigi_26, Orla_26, Purplicious_47, RanchParmCat_27, Soos_44, Stillion_48, Sting_47,

Summary by start number:

Start 5:

- Found in 70 of 88 (79.5%) of genes in pham
- Manual Annotations of this start: 59 of 76
- Called 91.4% of time when present
- Phage (with cluster) where this start called: Ailee_41 (DE1), Ali17_41 (DE2), Archis_25 (CV), Azula_26 (CV), Barco_24 (CV), BeeGee_25 (CY5), Begonia_25 (CV), Belphegor_44 (DE2), Bibwit_43 (DE1), BlingBling_24 (CV), Blueberry_26 (CV), Bunnybear_23 (CZ), CaptainKirk2_24 (CV), Cashline_25 (CY6), CheeseSpider_28 (CV), Confidence_25 (CY1), Delian_24 (CV), Denise_21 (CZ5), Dorito_23 (CZ4), Fenry_23 (CV), Frokostdame_24 (CV), Gambino_26 (CV), Guacamole_24 (CV), Hans_45 (DE2), Hitter_24 (CV), Inspectinfecti_44 (DE2), Invectra_24 (CZ4), Jablanski_27 (CY3), Jalammah_26 (CV), JasperJr_24 (CV), Keitabear_44 (DE1), Kiko_26 (DB), Leonard_43 (DE2), Lysidious_25 (CV), Malachai_25 (CV), Malibo_26 (DW), MelBins_44 (DE2), Melba_24 (CV), Mellie_23 (CV), MintFen_24 (CV), MissRona_26 (CV), Morkie_23 (DH), Murp_25 (CV), ODay_31 (DN), Phauci_36 (DE2), Phinally_43 (DE2), PhorbesPhlower_23 (DH), PhriskyACE_23 (CZ4), PhrostedPhlake_26 (CV), Pipp_24 (CV), Posh_27 (CY4), Pytheas_27 (CY3), RiverRaider_45 (DE1), Samba_24 (CV), Sedona_44 (DE1), Trine_23 (CD), Tuti_28 (CZ4), UmaThurman_24 (CV), Utz_24 (CV), Walrus_26 (CV), Wisp_23 (CV), Wrigley_27 (CY4), Zarbodnamra_24 (CV), Zilla_24 (CV),

Start 6:

- Found in 2 of 88 (2.3%) of genes in pham
- Manual Annotations of this start: 1 of 76
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Finch_11 (singleton),

Start 7:

- Found in 10 of 88 (11.4%) of genes in pham
- Manual Annotations of this start: 9 of 76
- Called 90.0% of time when present
- Phage (with cluster) where this start called: Button_25 (CT), GiKK_27 (CT), Hexbug_26 (CT), Jamzy_27 (CT), Margaret_27 (CT), Nodigi_26 (CT), Orla_26 (CT), RanchParmCat_27 (CT), Yakult_25 (CT),

Start 8:

- Found in 1 of 88 (1.1%) of genes in pham
- Manual Annotations of this start: 1 of 76
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EMoore_41 (DE2),

Start 9:

- Found in 17 of 88 (19.3%) of genes in pham
- Manual Annotations of this start: 6 of 76
- Called 76.5% of time when present
- Phage (with cluster) where this start called: Amo99_49 (CP), Clawz_48 (CP), ColdSoup_49 (CP), DonTron_48 (CP), Grumio_48 (CP), Jollymon_48 (CP), KingstonB_49 (CP), Makar_49 (CP), Purplicious_47 (CP), Soos_44 (CP), Stillion_48 (CP), Sting_47 (CP), Tonitrus_34 (singleton),

Summary by clusters:

There are 19 clusters represented in this pham: CY3, DN, CY1, CY6, CY5, CY4, DE1, DE2, DB, singleton, CZ4, CD, CZ, DH, DW, CP, CZ5, CV, CT,

Info for manual annotations of cluster CD:

- Start number 5 was manually annotated 1 time for cluster CD.

Info for manual annotations of cluster CP:

- Start number 9 was manually annotated 5 times for cluster CP.

Info for manual annotations of cluster CT:

- Start number 7 was manually annotated 9 times for cluster CT.

Info for manual annotations of cluster CV:

- Start number 5 was manually annotated 29 times for cluster CV.

Info for manual annotations of cluster CY1:

- Start number 5 was manually annotated 1 time for cluster CY1.

Info for manual annotations of cluster CY3:

- Start number 5 was manually annotated 2 times for cluster CY3.

Info for manual annotations of cluster CY4:

- Start number 5 was manually annotated 2 times for cluster CY4.

Info for manual annotations of cluster CY5:

- Start number 5 was manually annotated 1 time for cluster CY5.

Info for manual annotations of cluster CY6:

- Start number 5 was manually annotated 1 time for cluster CY6.

Info for manual annotations of cluster CZ:

- Start number 5 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ4:

- Start number 5 was manually annotated 2 times for cluster CZ4.

Info for manual annotations of cluster CZ5:

- Start number 5 was manually annotated 1 time for cluster CZ5.

Info for manual annotations of cluster DB:

- Start number 5 was manually annotated 1 time for cluster DB.

Info for manual annotations of cluster DE1:

- Start number 5 was manually annotated 5 times for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 5 was manually annotated 8 times for cluster DE2.
- Start number 8 was manually annotated 1 time for cluster DE2.

Info for manual annotations of cluster DH:

- Start number 5 was manually annotated 2 times for cluster DH.

Info for manual annotations of cluster DN:

- Start number 5 was manually annotated 1 time for cluster DN.

Info for manual annotations of cluster DW:

- Start number 5 was manually annotated 1 time for cluster DW.

Gene Information:

Gene: Ailee_41 Start: 38585, Stop: 39043, Start Num: 5

Candidate Starts for Ailee_41:

(Start: 5 @38585 has 59 MA's), (23, 38663), (29, 38699), (30, 38705), (37, 38744), (52, 38795), (71, 38930),

Gene: Ali17_41 Start: 37879, Stop: 38337, Start Num: 5

Candidate Starts for Ali17_41:

(Start: 5 @37879 has 59 MA's), (23, 37957), (29, 37993), (30, 37999), (37, 38038), (46, 38068), (52, 38089), (59, 38137),

Gene: Amo99_49 Start: 26503, Stop: 26979, Start Num: 9

Candidate Starts for Amo99_49:

(Start: 9 @26503 has 6 MA's), (49, 26680), (52, 26692), (59, 26749), (62, 26779), (79, 26914), (81, 26917),

Gene: Archis_25 Start: 20911, Stop: 21369, Start Num: 5

Candidate Starts for Archis_25:

(Start: 5 @20911 has 59 MA's), (19, 20974), (27, 21010), (29, 21025), (30, 21031), (35, 21058), (42, 21088), (46, 21100), (49, 21109), (59, 21169), (71, 21256), (72, 21262),

Gene: Azula_26 Start: 21012, Stop: 21470, Start Num: 5

Candidate Starts for Azula_26:

(Start: 5 @21012 has 59 MA's), (27, 21111), (29, 21126), (35, 21159), (46, 21201), (49, 21210), (59, 21270), (71, 21357), (72, 21363),

Gene: Barco_24 Start: 20700, Stop: 21158, Start Num: 5

Candidate Starts for Barco_24:

(Start: 5 @20700 has 59 MA's), (19, 20763), (27, 20799), (29, 20814), (30, 20820), (35, 20847), (42, 20877), (46, 20889), (49, 20898), (59, 20958), (71, 21045), (72, 21051),

Gene: BeeGee_25 Start: 21331, Stop: 21789, Start Num: 5

Candidate Starts for BeeGee_25:

(Start: 5 @21331 has 59 MA's), (18, 21391), (23, 21409), (30, 21451), (34, 21475), (35, 21478), (37, 21490), (40, 21502), (46, 21520), (47, 21523), (48, 21526), (50, 21532), (59, 21589), (73, 21688), (78, 21727),

Gene: Begonia_25 Start: 21181, Stop: 21639, Start Num: 5

Candidate Starts for Begonia_25:

(Start: 5 @21181 has 59 MA's), (19, 21244), (27, 21280), (29, 21295), (30, 21301), (35, 21328), (42, 21358), (46, 21370), (49, 21379), (59, 21439), (71, 21526), (72, 21532),

Gene: Belphegor_44 Start: 39930, Stop: 40388, Start Num: 5

Candidate Starts for Belphegor_44:

(Start: 5 @39930 has 59 MA's), (15, 39972), (23, 40008), (27, 40029), (29, 40044), (30, 40050), (46, 40119), (52, 40140),

Gene: Bibwit_43 Start: 38519, Stop: 38980, Start Num: 5

Candidate Starts for Bibwit_43:

(Start: 5 @38519 has 59 MA's), (23, 38597), (27, 38618), (29, 38633), (30, 38639), (41, 38693), (46, 38708), (52, 38729),

Gene: BlingBling_24 Start: 20700, Stop: 21158, Start Num: 5

Candidate Starts for BlingBling_24:

(Start: 5 @20700 has 59 MA's), (19, 20763), (27, 20799), (29, 20814), (30, 20820), (35, 20847), (42, 20877), (46, 20889), (49, 20898), (59, 20958), (71, 21045), (72, 21051),

Gene: Blueberry_26 Start: 21012, Stop: 21470, Start Num: 5

Candidate Starts for Blueberry_26:

(Start: 5 @21012 has 59 MA's), (27, 21111), (29, 21126), (35, 21159), (46, 21201), (49, 21210), (59, 21270), (71, 21357), (72, 21363),

Gene: Bunnybear_23 Start: 21777, Stop: 22235, Start Num: 5

Candidate Starts for Bunnybear_23:

(Start: 5 @21777 has 59 MA's), (19, 21840), (27, 21876), (29, 21891), (30, 21897), (35, 21924), (42, 21954), (46, 21966), (49, 21975), (59, 22035), (72, 22128),

Gene: Button_25 Start: 19038, Stop: 19490, Start Num: 7

Candidate Starts for Button_25:

(2, 18999), (4, 19029), (Start: 5 @19032 has 59 MA's), (Start: 7 @19038 has 9 MA's), (10, 19053), (28, 19137), (29, 19143), (31, 19158), (43, 19203), (50, 19224), (54, 19239), (65, 19347), (83, 19446),

Gene: CaptainKirk2_24 Start: 20721, Stop: 21179, Start Num: 5

Candidate Starts for CaptainKirk2_24:

(Start: 5 @20721 has 59 MA's), (19, 20784), (27, 20820), (29, 20835), (30, 20841), (35, 20868), (42, 20898), (46, 20910), (49, 20919), (59, 20979), (71, 21066), (72, 21072),

Gene: Cashline_25 Start: 21198, Stop: 21656, Start Num: 5

Candidate Starts for Cashline_25:

(Start: 5 @21198 has 59 MA's), (18, 21258), (23, 21276), (30, 21318), (34, 21342), (35, 21345), (37, 21357), (40, 21369), (46, 21387), (47, 21390), (48, 21393), (50, 21399), (59, 21456), (73, 21555), (78, 21594),

Gene: CheeseSpider_28 Start: 21266, Stop: 21724, Start Num: 5

Candidate Starts for CheeseSpider_28:

(Start: 5 @21266 has 59 MA's), (19, 21329), (27, 21365), (29, 21380), (30, 21386), (35, 21413), (42, 21443), (46, 21455), (49, 21464), (59, 21524), (72, 21617),

Gene: Clawz_48 Start: 26409, Stop: 26885, Start Num: 9

Candidate Starts for Clawz_48:

(Start: 9 @26409 has 6 MA's), (13, 26430), (25, 26478), (29, 26505), (43, 26568), (49, 26586), (71, 26760), (79, 26820),

Gene: ColdSoup_49 Start: 26503, Stop: 26979, Start Num: 9

Candidate Starts for ColdSoup_49:

(Start: 9 @26503 has 6 MA's), (49, 26680), (52, 26692), (59, 26749), (62, 26779), (79, 26914), (81, 26917),

Gene: Confidence_25 Start: 21361, Stop: 21819, Start Num: 5

Candidate Starts for Confidence_25:

(Start: 5 @21361 has 59 MA's), (18, 21421), (23, 21439), (30, 21481), (34, 21505), (35, 21508), (37, 21520), (40, 21532), (46, 21550), (47, 21553), (48, 21556), (50, 21562), (59, 21619), (73, 21718), (78, 21757),

Gene: Delian_24 Start: 20721, Stop: 21179, Start Num: 5

Candidate Starts for Delian_24:

(Start: 5 @20721 has 59 MA's), (19, 20784), (27, 20820), (29, 20835), (30, 20841), (35, 20868), (42, 20898), (46, 20910), (49, 20919), (59, 20979), (71, 21066), (72, 21072),

Gene: Denise_21 Start: 18426, Stop: 18884, Start Num: 5

Candidate Starts for Denise_21:

(Start: 5 @18426 has 59 MA's), (18, 18486), (23, 18504), (30, 18546), (34, 18570), (35, 18573), (37, 18585), (40, 18597), (46, 18615), (47, 18618), (48, 18621), (50, 18627), (59, 18684), (73, 18783), (78, 18822),

Gene: DonTron_48 Start: 26543, Stop: 27019, Start Num: 9

Candidate Starts for DonTron_48:

(Start: 9 @26543 has 6 MA's), (49, 26720), (52, 26732), (59, 26789), (61, 26810), (62, 26819), (79, 26954),

Gene: Dorito_23 Start: 20203, Stop: 20682, Start Num: 5

Candidate Starts for Dorito_23:

(Start: 5 @20203 has 59 MA's), (Start: 9 @20218 has 6 MA's), (18, 20263), (21, 20275), (27, 20302), (29, 20317), (30, 20323), (42, 20380), (43, 20383), (44, 20386), (46, 20392), (71, 20569), (78, 20620),

Gene: EMoore_41 Start: 39068, Stop: 39517, Start Num: 8

Candidate Starts for EMoore_41:

(Start: 5 @39059 has 59 MA's), (Start: 8 @39068 has 1 MA's), (29, 39173), (30, 39179), (37, 39218), (46, 39248), (52, 39269),

Gene: Fenry_23 Start: 20419, Stop: 20877, Start Num: 5

Candidate Starts for Fenry_23:

(Start: 5 @20419 has 59 MA's), (19, 20482), (27, 20518), (29, 20533), (30, 20539), (35, 20566), (42, 20596), (46, 20608), (49, 20617), (59, 20677), (71, 20764), (72, 20770),

Gene: Finch_11 Start: 5519, Stop: 6019, Start Num: 6

Candidate Starts for Finch_11:

(Start: 6 @5519 has 1 MA's), (15, 5558), (17, 5570), (22, 5591), (26, 5612), (32, 5648), (33, 5651), (43, 5690), (44, 5693), (47, 5702), (49, 5708), (56, 5747), (64, 5843), (68, 5864), (75, 5909), (78, 5936), (80, 5945), (85, 6011),

Gene: Frokostdame_24 Start: 20666, Stop: 21124, Start Num: 5

Candidate Starts for Frokostdame_24:

(Start: 5 @20666 has 59 MA's), (11, 20693), (27, 20765), (29, 20780), (35, 20813), (46, 20855), (49, 20864), (59, 20924), (71, 21011), (72, 21017),

Gene: Gambino_26 Start: 21012, Stop: 21470, Start Num: 5

Candidate Starts for Gambino_26:

(Start: 5 @21012 has 59 MA's), (27, 21111), (29, 21126), (35, 21159), (46, 21201), (49, 21210), (59, 21270), (71, 21357), (72, 21363),

Gene: GiKK_27 Start: 19337, Stop: 19789, Start Num: 7

Candidate Starts for GiKK_27:

(2, 19298), (4, 19328), (Start: 5 @19331 has 59 MA's), (Start: 7 @19337 has 9 MA's), (10, 19352), (28, 19436), (43, 19502), (50, 19523), (54, 19538), (61, 19622), (65, 19646), (69, 19673), (82, 19739), (83, 19745),

Gene: Grumio_48 Start: 25981, Stop: 26457, Start Num: 9

Candidate Starts for Grumio_48:

(Start: 9 @25981 has 6 MA's), (49, 26158), (52, 26170), (59, 26227), (61, 26248), (62, 26257), (79, 26392),

Gene: Guacamole_24 Start: 20704, Stop: 21162, Start Num: 5

Candidate Starts for Guacamole_24:

(Start: 5 @20704 has 59 MA's), (19, 20767), (27, 20803), (29, 20818), (30, 20824), (35, 20851), (42, 20881), (46, 20893), (49, 20902), (59, 20962), (71, 21049), (72, 21055),

Gene: Hans_45 Start: 38519, Stop: 38977, Start Num: 5

Candidate Starts for Hans_45:

(Start: 5 @38519 has 59 MA's), (23, 38597), (29, 38633), (30, 38639), (37, 38678), (46, 38708), (52, 38729), (59, 38777),

Gene: Hexbug_26 Start: 20025, Stop: 20471, Start Num: 7

Candidate Starts for Hexbug_26:

(Start: 7 @20025 has 9 MA's), (12, 20049), (24, 20103), (39, 20172), (41, 20178), (49, 20202), (60, 20286), (67, 20337), (70, 20358), (73, 20379), (83, 20427), (84, 20430),

Gene: Hitter_24 Start: 20700, Stop: 21158, Start Num: 5

Candidate Starts for Hitter_24:

(Start: 5 @20700 has 59 MA's), (19, 20763), (27, 20799), (29, 20814), (30, 20820), (35, 20847), (42, 20877), (46, 20889), (49, 20898), (59, 20958), (71, 21045), (72, 21051),

Gene: Inspectinfecti_44 Start: 38965, Stop: 39423, Start Num: 5

Candidate Starts for Inspectinfecti_44:

(Start: 5 @38965 has 59 MA's), (23, 39043), (29, 39079), (30, 39085), (37, 39124), (46, 39154), (52, 39175), (59, 39223),

Gene: Invectra_24 Start: 21068, Stop: 21547, Start Num: 5

Candidate Starts for Invectra_24:

(Start: 5 @21068 has 59 MA's), (Start: 9 @21083 has 6 MA's), (18, 21128), (21, 21140), (27, 21167), (29, 21182), (30, 21188), (42, 21245), (43, 21248), (44, 21251), (46, 21257), (78, 21485),

Gene: Jablanski_27 Start: 22440, Stop: 22898, Start Num: 5

Candidate Starts for Jablanski_27:

(Start: 5 @22440 has 59 MA's), (18, 22500), (23, 22518), (29, 22554), (30, 22560), (34, 22584), (35, 22587), (37, 22599), (40, 22611), (46, 22629), (47, 22632), (48, 22635), (50, 22641), (59, 22698), (72, 22791), (73, 22797),

Gene: Jalammah_26 Start: 21494, Stop: 21952, Start Num: 5

Candidate Starts for Jalammah_26:

(Start: 5 @21494 has 59 MA's), (19, 21557), (27, 21593), (29, 21608), (30, 21614), (35, 21641), (42, 21671), (46, 21683), (49, 21692), (59, 21752), (71, 21839), (72, 21845),

Gene: Jamzy_27 Start: 19351, Stop: 19803, Start Num: 7

Candidate Starts for Jamzy_27:

(2, 19312), (4, 19342), (Start: 5 @19345 has 59 MA's), (Start: 7 @19351 has 9 MA's), (10, 19366), (28, 19450), (29, 19456), (31, 19471), (43, 19516), (50, 19537), (54, 19552), (65, 19660), (83, 19759),

Gene: JasperJr_24 Start: 20704, Stop: 21162, Start Num: 5

Candidate Starts for JasperJr_24:

(Start: 5 @20704 has 59 MA's), (19, 20767), (27, 20803), (29, 20818), (30, 20824), (35, 20851), (42, 20881), (46, 20893), (49, 20902), (59, 20962), (71, 21049), (72, 21055),

Gene: Jollymon_48 Start: 26503, Stop: 26979, Start Num: 9

Candidate Starts for Jollymon_48:

(Start: 9 @26503 has 6 MA's), (49, 26680), (52, 26692), (59, 26749), (62, 26779), (79, 26914), (81, 26917),

Gene: Keitabear_44 Start: 40216, Stop: 40674, Start Num: 5

Candidate Starts for Keitabear_44:

(Start: 5 @40216 has 59 MA's), (23, 40294), (29, 40330), (30, 40336), (37, 40375), (52, 40426), (71, 40561),

Gene: Kiko_26 Start: 20953, Stop: 21411, Start Num: 5

Candidate Starts for Kiko_26:

(Start: 5 @20953 has 59 MA's), (19, 21016), (20, 21019), (23, 21031), (27, 21052), (29, 21067), (34, 21097), (49, 21151), (50, 21154), (53, 21166), (63, 21253), (78, 21349),

Gene: KingstonB_49 Start: 25981, Stop: 26457, Start Num: 9

Candidate Starts for KingstonB_49:

(Start: 9 @25981 has 6 MA's), (49, 26158), (52, 26170), (59, 26227), (61, 26248), (62, 26257), (79, 26392),

Gene: Leonard_43 Start: 38604, Stop: 39062, Start Num: 5

Candidate Starts for Leonard_43:

(Start: 5 @38604 has 59 MA's), (23, 38682), (29, 38718), (30, 38724), (37, 38763), (46, 38793), (52, 38814), (59, 38862),

Gene: Lysidious_25 Start: 21224, Stop: 21682, Start Num: 5

Candidate Starts for Lysidious_25:

(Start: 5 @21224 has 59 MA's), (19, 21287), (27, 21323), (29, 21338), (30, 21344), (35, 21371), (42, 21401), (46, 21413), (49, 21422), (59, 21482), (71, 21569), (72, 21575),

Gene: Makar_49 Start: 26436, Stop: 26912, Start Num: 9

Candidate Starts for Makar_49:

(Start: 9 @26436 has 6 MA's), (13, 26457), (25, 26505), (29, 26532), (43, 26595), (49, 26613), (71, 26787), (79, 26847),

Gene: Malachai_25 Start: 21181, Stop: 21639, Start Num: 5

Candidate Starts for Malachai_25:

(Start: 5 @21181 has 59 MA's), (19, 21244), (27, 21280), (29, 21295), (30, 21301), (35, 21328), (42, 21358), (46, 21370), (49, 21379), (59, 21439), (71, 21526), (72, 21532),

Gene: Malibo_26 Start: 20919, Stop: 21377, Start Num: 5

Candidate Starts for Malibo_26:

(Start: 5 @20919 has 59 MA's), (12, 20949), (19, 20982), (27, 21018), (29, 21033), (30, 21039), (35, 21066), (42, 21096), (44, 21102), (46, 21108), (49, 21117), (53, 21132), (59, 21177), (67, 21231), (77, 21312),

Gene: Margaret_27 Start: 19721, Stop: 20167, Start Num: 7

Candidate Starts for Margaret_27:

(1, 19619), (2, 19676), (Start: 7 @19721 has 9 MA's), (14, 19754), (16, 19763), (35, 19856), (40, 19874), (42, 19880), (55, 19922), (57, 19943), (58, 19949), (60, 19985), (62, 20012), (66, 20030), (74, 20084),

Gene: MelBins_44 Start: 38751, Stop: 39209, Start Num: 5

Candidate Starts for MelBins_44:

(Start: 5 @38751 has 59 MA's), (23, 38829), (27, 38850), (29, 38865), (30, 38871), (37, 38910), (46, 38940), (52, 38961),

Gene: Melba_24 Start: 20700, Stop: 21158, Start Num: 5

Candidate Starts for Melba_24:

(Start: 5 @20700 has 59 MA's), (19, 20763), (27, 20799), (29, 20814), (30, 20820), (35, 20847), (42, 20877), (46, 20889), (49, 20898), (59, 20958), (71, 21045), (72, 21051),

Gene: Mellie_23 Start: 20461, Stop: 20919, Start Num: 5

Candidate Starts for Mellie_23:

(Start: 5 @20461 has 59 MA's), (19, 20524), (27, 20560), (29, 20575), (30, 20581), (35, 20608), (42, 20638), (46, 20650), (49, 20659), (59, 20719), (71, 20806), (72, 20812),

Gene: MintFen_24 Start: 20700, Stop: 21158, Start Num: 5

Candidate Starts for MintFen_24:

(Start: 5 @20700 has 59 MA's), (19, 20763), (27, 20799), (29, 20814), (30, 20820), (35, 20847), (42, 20877), (46, 20889), (49, 20898), (59, 20958), (71, 21045), (72, 21051),

Gene: MissRona_26 Start: 21012, Stop: 21470, Start Num: 5

Candidate Starts for MissRona_26:

(Start: 5 @21012 has 59 MA's), (27, 21111), (29, 21126), (35, 21159), (46, 21201), (49, 21210), (59, 21270), (71, 21357), (72, 21363),

Gene: Morkie_23 Start: 18982, Stop: 19440, Start Num: 5

Candidate Starts for Morkie_23:

(Start: 5 @18982 has 59 MA's), (19, 19045), (27, 19081), (29, 19096), (35, 19129), (42, 19159), (44, 19165), (49, 19180), (59, 19240), (73, 19339), (78, 19378),

Gene: Murp_25 Start: 20968, Stop: 21426, Start Num: 5

Candidate Starts for Murp_25:

(Start: 5 @20968 has 59 MA's), (19, 21031), (27, 21067), (29, 21082), (35, 21115), (42, 21145), (49, 21166), (59, 21226), (71, 21313), (72, 21319),

Gene: Nodigi_26 Start: 19994, Stop: 20440, Start Num: 7

Candidate Starts for Nodigi_26:

(Start: 7 @19994 has 9 MA's), (12, 20018), (24, 20072), (39, 20141), (41, 20147), (49, 20171), (60, 20255), (67, 20306), (70, 20327), (73, 20348), (83, 20396), (84, 20399),

Gene: ODay_31 Start: 22917, Stop: 23375, Start Num: 5

Candidate Starts for ODay_31:

(Start: 5 @22917 has 59 MA's), (18, 22977), (23, 22995), (30, 23037), (34, 23061), (35, 23064), (37, 23076), (40, 23088), (46, 23106), (47, 23109), (48, 23112), (50, 23118), (59, 23175), (73, 23274), (78, 23313),

Gene: Orla_26 Start: 19998, Stop: 20444, Start Num: 7

Candidate Starts for Orla_26:

(Start: 7 @19998 has 9 MA's), (12, 20022), (24, 20076), (39, 20145), (41, 20151), (49, 20175), (60, 20259), (67, 20310), (70, 20331), (73, 20352), (83, 20400), (84, 20403),

Gene: Phauci_36 Start: 35454, Stop: 35912, Start Num: 5

Candidate Starts for Phauci_36:

(Start: 5 @35454 has 59 MA's), (23, 35532), (27, 35553), (28, 35562), (29, 35568), (52, 35664),

Gene: Phinally_43 Start: 38601, Stop: 39059, Start Num: 5

Candidate Starts for Phinally_43:

(Start: 5 @38601 has 59 MA's), (23, 38679), (29, 38715), (30, 38721), (37, 38760), (46, 38790), (52, 38811), (59, 38859),

Gene: PhorbesPhlower_23 Start: 18982, Stop: 19440, Start Num: 5

Candidate Starts for PhorbesPhlower_23:

(Start: 5 @18982 has 59 MA's), (19, 19045), (27, 19081), (29, 19096), (35, 19129), (42, 19159), (44, 19165), (49, 19180), (59, 19240), (73, 19339), (78, 19378),

Gene: PhriskyACE_23 Start: 20203, Stop: 20682, Start Num: 5

Candidate Starts for PhriskyACE_23:

(Start: 5 @20203 has 59 MA's), (Start: 9 @20218 has 6 MA's), (18, 20263), (21, 20275), (27, 20302), (29, 20317), (30, 20323), (42, 20380), (43, 20383), (44, 20386), (46, 20392), (71, 20569), (78, 20620),

Gene: PhrostedPhlake_26 Start: 21393, Stop: 21851, Start Num: 5

Candidate Starts for PhrostedPhlake_26:

(Start: 5 @21393 has 59 MA's), (19, 21456), (27, 21492), (29, 21507), (30, 21513), (35, 21540), (42, 21570), (46, 21582), (49, 21591), (59, 21651), (71, 21738), (72, 21744),

Gene: Pipp_24 Start: 20694, Stop: 21152, Start Num: 5

Candidate Starts for Pipp_24:

(Start: 5 @20694 has 59 MA's), (19, 20757), (27, 20793), (29, 20808), (30, 20814), (35, 20841), (42, 20871), (46, 20883), (49, 20892), (59, 20952), (72, 21045),

Gene: Posh_27 Start: 22293, Stop: 22751, Start Num: 5

Candidate Starts for Posh_27:

(Start: 5 @22293 has 59 MA's), (18, 22353), (23, 22371), (29, 22407), (30, 22413), (34, 22437), (35, 22440), (37, 22452), (40, 22464), (46, 22482), (47, 22485), (48, 22488), (50, 22494), (59, 22551), (72, 22644), (73, 22650),

Gene: Purplicious_47 Start: 25749, Stop: 26225, Start Num: 9

Candidate Starts for Purplicious_47:

(Start: 9 @25749 has 6 MA's), (49, 25926), (52, 25938), (59, 25995), (62, 26025), (79, 26160), (81, 26163),

Gene: Pytheas_27 Start: 22439, Stop: 22897, Start Num: 5

Candidate Starts for Pytheas_27:

(Start: 5 @22439 has 59 MA's), (18, 22499), (23, 22517), (29, 22553), (30, 22559), (34, 22583), (35, 22586), (37, 22598), (40, 22610), (46, 22628), (47, 22631), (48, 22634), (50, 22640), (59, 22697), (72, 22790), (73, 22796),

Gene: RanchParmCat_27 Start: 19721, Stop: 20167, Start Num: 7

Candidate Starts for RanchParmCat_27:

(1, 19619), (2, 19676), (3, 19694), (Start: 7 @19721 has 9 MA's), (14, 19754), (16, 19763), (35, 19856), (38, 19865), (40, 19874), (42, 19880), (55, 19922), (57, 19943), (60, 19985), (62, 20012), (66, 20030), (74, 20084),

Gene: RiverRaider_45 Start: 38134, Stop: 38592, Start Num: 5

Candidate Starts for RiverRaider_45:

(Start: 5 @38134 has 59 MA's), (14, 38173), (23, 38212), (29, 38248), (34, 38278), (46, 38323), (52, 38344), (77, 38527),

Gene: Samba_24 Start: 20778, Stop: 21236, Start Num: 5

Candidate Starts for Samba_24:

(Start: 5 @20778 has 59 MA's), (19, 20841), (27, 20877), (29, 20892), (30, 20898), (35, 20925), (42, 20955), (46, 20967), (49, 20976), (59, 21036), (71, 21123), (72, 21129),

Gene: Sedona_44 Start: 39952, Stop: 40410, Start Num: 5

Candidate Starts for Sedona_44:

(Start: 5 @39952 has 59 MA's), (23, 40030), (29, 40066), (30, 40072), (37, 40111), (52, 40162), (71, 40297),

Gene: Soos_44 Start: 25710, Stop: 26186, Start Num: 9

Candidate Starts for Soos_44:

(Start: 9 @25710 has 6 MA's), (49, 25887), (52, 25899), (59, 25956), (61, 25977), (62, 25986), (79, 26121),

Gene: Stillion_48 Start: 26295, Stop: 26771, Start Num: 9

Candidate Starts for Stillion_48:

(Start: 9 @26295 has 6 MA's), (45, 26460), (49, 26472), (52, 26484), (59, 26541), (62, 26571), (79, 26706),

Gene: Sting_47 Start: 26149, Stop: 26625, Start Num: 9

Candidate Starts for Sting_47:

(Start: 9 @26149 has 6 MA's), (49, 26326), (52, 26338), (59, 26395), (61, 26416), (62, 26425), (79, 26560),

Gene: Tonitrus_34 Start: 22668, Stop: 23153, Start Num: 9

Candidate Starts for Tonitrus_34:

(Start: 5 @22653 has 59 MA's), (Start: 6 @22656 has 1 MA's), (Start: 7 @22659 has 9 MA's), (Start: 9 @22668 has 6 MA's), (17, 22704), (26, 22740), (35, 22788), (36, 22791), (43, 22821), (55, 22860), (56, 22872), (68, 22995), (76, 23052),

Gene: Trine_23 Start: 18593, Stop: 19054, Start Num: 5

Candidate Starts for Trine_23:

(4, 18590), (Start: 5 @18593 has 59 MA's), (19, 18656), (21, 18665), (27, 18692), (28, 18701), (46, 18782), (49, 18791), (51, 18800),

Gene: Tuti_28 Start: 21090, Stop: 21569, Start Num: 5

Candidate Starts for Tuti_28:

(Start: 5 @21090 has 59 MA's), (Start: 9 @21105 has 6 MA's), (18, 21150), (21, 21162), (27, 21189), (29, 21204), (30, 21210), (42, 21267), (43, 21270), (44, 21273), (46, 21279), (71, 21456), (78, 21507),

Gene: UmaThurman_24 Start: 20825, Stop: 21283, Start Num: 5

Candidate Starts for UmaThurman_24:

(Start: 5 @20825 has 59 MA's), (19, 20888), (27, 20924), (29, 20939), (30, 20945), (35, 20972), (42, 21002), (46, 21014), (49, 21023), (59, 21083), (71, 21170), (72, 21176),

Gene: Utz_24 Start: 20695, Stop: 21153, Start Num: 5

Candidate Starts for Utz_24:

(Start: 5 @20695 has 59 MA's), (19, 20758), (27, 20794), (29, 20809), (30, 20815), (35, 20842), (42, 20872), (46, 20884), (49, 20893), (59, 20953), (71, 21040), (72, 21046),

Gene: Walrus_26 Start: 21240, Stop: 21698, Start Num: 5

Candidate Starts for Walrus_26:

(Start: 5 @21240 has 59 MA's), (19, 21303), (27, 21339), (29, 21354), (30, 21360), (35, 21387), (42, 21417), (46, 21429), (49, 21438), (59, 21498), (71, 21585), (72, 21591),

Gene: Wisp_23 Start: 20410, Stop: 20868, Start Num: 5

Candidate Starts for Wisp_23:

(Start: 5 @20410 has 59 MA's), (19, 20473), (27, 20509), (29, 20524), (30, 20530), (35, 20557), (42, 20587), (46, 20599), (49, 20608), (59, 20668), (71, 20755), (72, 20761),

Gene: Wrigley_27 Start: 22190, Stop: 22648, Start Num: 5

Candidate Starts for Wrigley_27:

(Start: 5 @22190 has 59 MA's), (18, 22250), (23, 22268), (29, 22304), (30, 22310), (34, 22334), (35, 22337), (37, 22349), (40, 22361), (46, 22379), (47, 22382), (48, 22385), (50, 22391), (59, 22448), (72, 22541), (73, 22547),

Gene: Yakult_25 Start: 19569, Stop: 20021, Start Num: 7

Candidate Starts for Yakult_25:

(1, 19473), (2, 19530), (4, 19560), (Start: 5 @19563 has 59 MA's), (Start: 7 @19569 has 9 MA's), (10, 19584), (12, 19593), (14, 19602), (31, 19689), (35, 19707), (41, 19728), (50, 19755), (54, 19770), (62, 19863), (65, 19878), (66, 19881), (83, 19977),

Gene: Zarbodnamra_24 Start: 20699, Stop: 21157, Start Num: 5

Candidate Starts for Zarbodnamra_24:

(Start: 5 @20699 has 59 MA's), (19, 20762), (27, 20798), (29, 20813), (30, 20819), (35, 20846), (42, 20876), (46, 20888), (49, 20897), (59, 20957), (71, 21044), (72, 21050),

Gene: Zilla_24 Start: 20717, Stop: 21175, Start Num: 5

Candidate Starts for Zilla_24:

(Start: 5 @20717 has 59 MA's), (19, 20780), (27, 20816), (29, 20831), (30, 20837), (35, 20864), (42, 20894), (46, 20906), (49, 20915), (59, 20975), (71, 21062), (72, 21068),