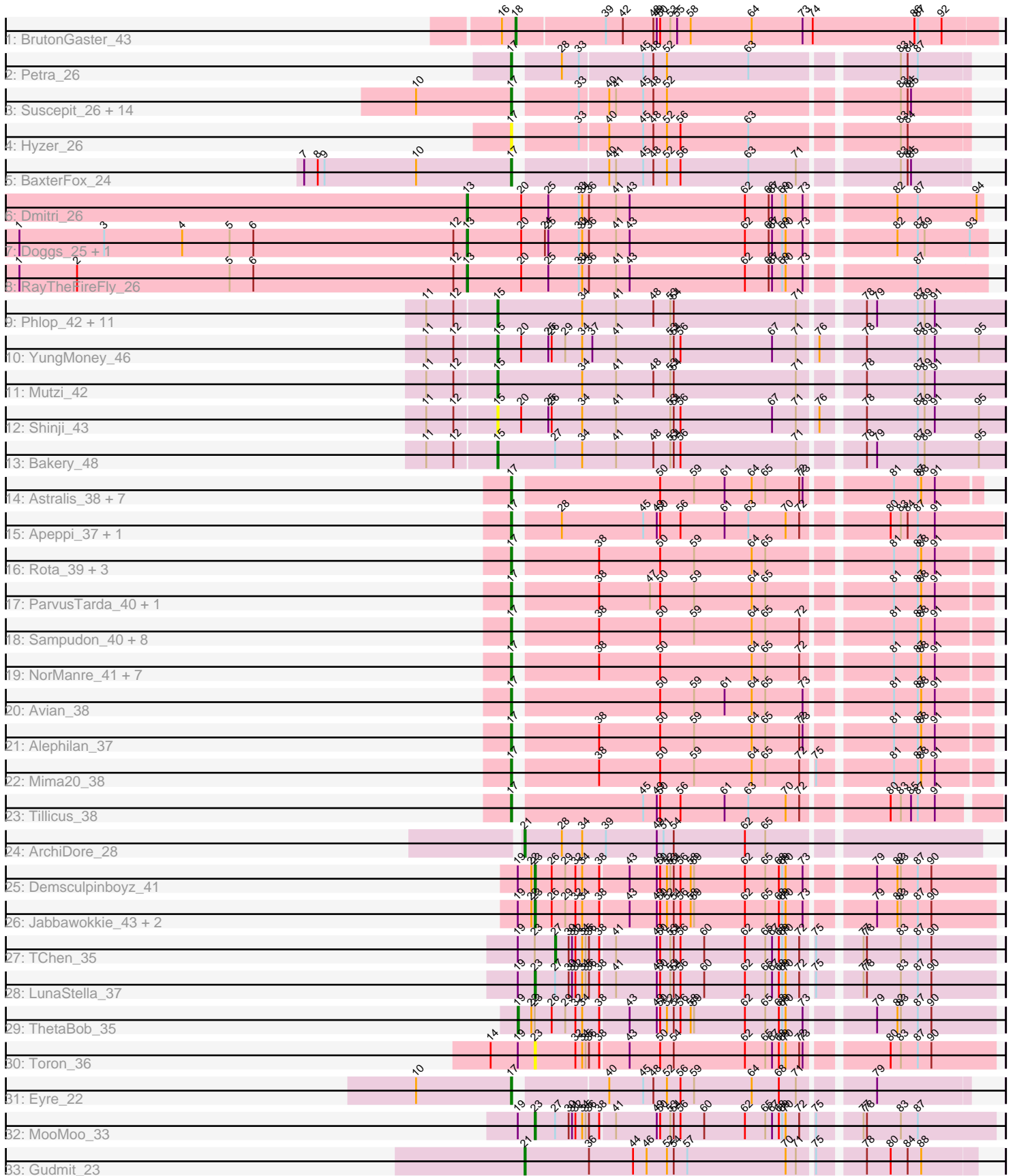


Pham 294629



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 294629 Report

This analysis was run 04/18/26 on database version 643.

Pham number 294629 has 88 members, 5 are drafts.

Phages represented in each track:

- Track 1 : BrutonGaster\_43
- Track 2 : Petra\_26
- Track 3 : Suscepit\_26, Zameen\_26, BoyNamedSue\_25, AlumE\_25, Neobush\_26, Antonio\_26, PantheRoc\_25, Maridalia\_25, Eudoria\_26, Trumpet\_26, Tayonia\_26, Agueybana\_25, Manasvini\_26, Yeezy\_26, Kita\_26
- Track 4 : Hyzer\_26
- Track 5 : BaxterFox\_24
- Track 6 : Dmitri\_26
- Track 7 : Doggs\_25, Coriander\_26
- Track 8 : RayTheFireFly\_26
- Track 9 : Phlop\_42, Egi03\_43, Togo\_42, Fireball\_44, Barb\_45, PullumCavea\_42, PinkCoffee\_45, ClamChowder\_45, SmokingBunny\_43, Fugax\_46, Nubi\_43, TillyBobJoe\_43
- Track 10 : YungMoney\_46
- Track 11 : Mutzi\_42
- Track 12 : Shinji\_43
- Track 13 : Bakery\_48
- Track 14 : Astralis\_38, NovaSharks\_40, Alyssamiracle\_41, Jamemuya19\_38, Stormer\_40, RazorC\_39, Rumi\_40, Genamy16\_41
- Track 15 : Apeppi\_37, LuckyLeo\_39
- Track 16 : Rota\_39, Lila22\_39, Erutan\_40, Wojtek\_39
- Track 17 : ParvusTarda\_40, BirthdayBoy\_41
- Track 18 : Sampudon\_40, MoiGyank\_42, Yikes\_41, OtterstedtS21\_40, Ranch\_40, GretellLyn\_40, Jalebi\_39, Sadboi\_41, Lambo\_40
- Track 19 : NorManre\_41, GOATification\_41, Fulcrum\_41, Gibbin\_41, DoobyDoo\_39, DaviePasture\_40, Patos\_41, Zany\_39
- Track 20 : Avian\_38
- Track 21 : Alephilan\_37
- Track 22 : Mima20\_38
- Track 23 : Tillicus\_38
- Track 24 : ArchiDore\_28
- Track 25 : Demsculpinboyz\_41
- Track 26 : Jabbawokkie\_43, Avani\_40, Zapner\_42
- Track 27 : TChen\_35
- Track 28 : LunaStella\_37
- Track 29 : ThetaBob\_35
- Track 30 : Toron\_36

- Track 31 : Eyre\_22
- Track 32 : MooMoo\_33
- Track 33 : Gudmit\_23

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

The start number called the most often in the published annotations is 17, it was called in 53 of the 83 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Agueybana\_25, Alephilan\_37, AlumE\_25, Alyssamiracle\_41, Antonio\_26, Apeppi\_37, Astralis\_38, Avian\_38, BaxterFox\_24, BirthdayBoy\_41, BoyNamedSue\_25, DaviePasture\_40, DoobyDoo\_39, Erutan\_40, Eudoria\_26, Eyre\_22, Fulcrum\_41, GOATification\_41, Genamy16\_41, Gibbin\_41, Gretellyn\_40, Hyzer\_26, Jalebi\_39, Jamemuya19\_38, Kita\_26, Lambo\_40, Lila22\_39, LuckyLeo\_39, Manasvini\_26, Maridalia\_25, Mima20\_38, MoiGyank\_42, Neobush\_26, NorManre\_41, NovaSharks\_40, OtterstedtS21\_40, PantheRoc\_25, ParvusTarda\_40, Patos\_41, Petra\_26, Ranch\_40, RazorC\_39, Rota\_39, Rumi\_40, Sadboi\_41, Sampudon\_40, Stormer\_40, Suscepit\_26, Tayonia\_26, Tillicus\_38, Trumpet\_26, Wojtek\_39, Yeezy\_26, Yikes\_41, Zameen\_26, Zany\_39,

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

- 

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

- ArchiDore\_28, Avani\_40, Bakery\_48, Barb\_45, BrutonGaster\_43, ClamChowder\_45, Coriander\_26, Demsculpinboyz\_41, Dmitri\_26, Doggs\_25, Egi03\_43, Fireball\_44, Fugax\_46, Gudmit\_23, Jabbawokkie\_43, LunaStella\_37, MooMoo\_33, Mutzi\_42, Nubi\_43, Phlop\_42, PinkCoffee\_45, PullumCavea\_42, RayTheFireFly\_26, Shinji\_43, SmokingBunny\_43, TChen\_35, ThetaBob\_35, TillyBobJoe\_43, Togo\_42, Toron\_36, YungMoney\_46, Zapner\_42,

**Summary by start number:**

Start 13:

- Found in 4 of 88 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 4 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Coriander\_26 (DB), Dmitri\_26 (DB), Doggs\_25 (DB), RayTheFireFly\_26 (DB),

Start 15:

- Found in 16 of 88 ( 18.2% ) of genes in pham
- Manual Annotations of this start: 15 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bakery\_48 (DC1), Barb\_45 (DC1), ClamChowder\_45 (DC1), Egi03\_43 (DC1), Fireball\_44 (DC1), Fugax\_46 (DC1), Mutzi\_42 (DC1), Nubi\_43 (DC1), Phlop\_42 (DC1), PinkCoffee\_45 (DC1), PullumCavea\_42 (DC1), Shinji\_43 (DC1), SmokingBunny\_43 (DC1), TillyBobJoe\_43 (DC1), Togo\_42 (DC1), YungMoney\_46 (DC1),

Start 17:

- Found in 56 of 88 ( 63.6% ) of genes in pham
- Manual Annotations of this start: 53 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Agueybana\_25 (CZ1), Alephilan\_37 (DV), AlumE\_25 (CZ1), Alyssamiracle\_41 (DV), Antonio\_26 (CZ1), Apeppi\_37 (DV), Astralis\_38 (DV), Avian\_38 (DV), BaxterFox\_24 (CZ3), BirthdayBoy\_41 (DV), BoyNamedSue\_25 (CZ1), DaviePasture\_40 (DV), DoobyDoo\_39 (DV), Erutan\_40 (DV), Eudoria\_26 (CZ1), Eyre\_22 (singleton), Fulcrum\_41 (DV), GOATification\_41 (DV), Genamy16\_41 (DV), Gibbin\_41 (DV), Gretellyn\_40 (DV), Hyzer\_26 (CZ1), Jalebi\_39 (DV), Jamemuya19\_38 (DV), Kita\_26 (CZ1), Lambo\_40 (DV), Lila22\_39 (DV), LuckyLeo\_39 (DV), Manasvini\_26 (CZ1), Maridalia\_25 (CZ1), Mima20\_38 (DV), MoiGyank\_42 (DV), Neobush\_26 (CZ1), NorManre\_41 (DV), NovaSharks\_40 (DV), OtterstedtS21\_40 (DV), PantheRoc\_25 (CZ3), ParvusTarda\_40 (DV), Patos\_41 (DV), Petra\_26 (CV), Ranch\_40 (DV), RazorC\_39 (DV), Rota\_39 (DV), Rumi\_40 (DV), Sadboi\_41 (DV), Sampudon\_40 (DV), Stormer\_40 (DV), Suscepit\_26 (CZ1), Tayonia\_26 (CZ1), Tillicus\_38 (DV), Trumpet\_26 (CZ1), Wojtek\_39 (DV), Yeezy\_26 (CZ3), Yikes\_41 (DV), Zameen\_26 (CZ1), Zany\_39 (DV),

Start 18:

- Found in 1 of 88 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BrutonGaster\_43 (CQ2),

Start 19:

- Found in 9 of 88 ( 10.2% ) of genes in pham
- Manual Annotations of this start: 1 of 83
- Called 11.1% of time when present
- Phage (with cluster) where this start called: ThetaBob\_35 (F4),

Start 21:

- Found in 2 of 88 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 2 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ArchiDore\_28 (DW), Gudmit\_23 (singleton),

Start 23:

- Found in 9 of 88 ( 10.2% ) of genes in pham
- Manual Annotations of this start: 6 of 83
- Called 77.8% of time when present
- Phage (with cluster) where this start called: Avani\_40 (F2), Demsculpinboyz\_41 (F2), Jabbawokkie\_43 (F2), LunaStella\_37 (F4), MooMoo\_33 (singleton), Toron\_36 (F6), Zapner\_42 (F2),

Start 27:

- Found in 4 of 88 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 1 of 83
- Called 25.0% of time when present
- Phage (with cluster) where this start called: TChen\_35 (F4),

## Summary by clusters:

There are 12 clusters represented in this pham: F2, F4, F6, CZ3, CZ1, DB, singleton, DW, DV, CQ2, CV, DC1,

Info for manual annotations of cluster CQ2:

- Start number 18 was manually annotated 1 time for cluster CQ2.

Info for manual annotations of cluster CV:

- Start number 17 was manually annotated 1 time for cluster CV.

Info for manual annotations of cluster CZ1:

- Start number 17 was manually annotated 13 times for cluster CZ1.

Info for manual annotations of cluster CZ3:

- Start number 17 was manually annotated 3 times for cluster CZ3.

Info for manual annotations of cluster DB:

- Start number 13 was manually annotated 4 times for cluster DB.

Info for manual annotations of cluster DC1:

- Start number 15 was manually annotated 15 times for cluster DC1.

Info for manual annotations of cluster DV:

- Start number 17 was manually annotated 35 times for cluster DV.

Info for manual annotations of cluster DW:

- Start number 21 was manually annotated 1 time for cluster DW.

Info for manual annotations of cluster F2:

- Start number 23 was manually annotated 4 times for cluster F2.

Info for manual annotations of cluster F4:

- Start number 19 was manually annotated 1 time for cluster F4.
- Start number 23 was manually annotated 1 time for cluster F4.
- Start number 27 was manually annotated 1 time for cluster F4.

## Gene Information:

Gene: Agueybana\_25 Start: 21812, Stop: 22186, Start Num: 17

Candidate Starts for Agueybana\_25:

(10, 21728), (Start: 17 @21812 has 53 MA's), (33, 21860), (40, 21884), (41, 21890), (45, 21914), (48, 21923), (52, 21935), (83, 22127), (84, 22133), (85, 22136),

Gene: Alephilan\_37 Start: 32269, Stop: 32664, Start Num: 17

Candidate Starts for Alephilan\_37:

(Start: 17 @32269 has 53 MA's), (38, 32335), (50, 32389), (59, 32419), (64, 32470), (65, 32482), (72, 32512), (73, 32515), (81, 32581), (87, 32602), (88, 32605), (91, 32617),

Gene: AlumE\_25 Start: 21811, Stop: 22185, Start Num: 17

Candidate Starts for AlumE\_25:

(10, 21727), (Start: 17 @21811 has 53 MA's), (33, 21859), (40, 21883), (41, 21889), (45, 21913), (48, 21922), (52, 21934), (83, 22126), (84, 22132), (85, 22135),

Gene: Alyssamiracle\_41 Start: 31366, Stop: 31752, Start Num: 17

Candidate Starts for Alyssamiracle\_41:

(Start: 17 @31366 has 53 MA's), (50, 31486), (59, 31516), (61, 31543), (64, 31567), (65, 31579), (72, 31609), (73, 31612), (81, 31678), (87, 31699), (88, 31702), (91, 31714),

Gene: Antonio\_26 Start: 21932, Stop: 22306, Start Num: 17

Candidate Starts for Antonio\_26:

(10, 21848), (Start: 17 @21932 has 53 MA's), (33, 21980), (40, 22004), (41, 22010), (45, 22034), (48, 22043), (52, 22055), (83, 22247), (84, 22253), (85, 22256),

Gene: Apeppi\_37 Start: 32448, Stop: 32855, Start Num: 17

Candidate Starts for Apeppi\_37:

(Start: 17 @32448 has 53 MA's), (28, 32481), (45, 32553), (49, 32565), (50, 32568), (56, 32586), (61, 32625), (63, 32646), (70, 32679), (72, 32691), (80, 32757), (83, 32766), (84, 32772), (87, 32781), (91, 32796),

Gene: ArchiDore\_28 Start: 24132, Stop: 24521, Start Num: 21

Candidate Starts for ArchiDore\_28:

(Start: 21 @24132 has 2 MA's), (28, 24165), (34, 24183), (39, 24204), (49, 24249), (51, 24255), (54, 24264), (62, 24327), (65, 24345),

Gene: Astralis\_38 Start: 30956, Stop: 31342, Start Num: 17

Candidate Starts for Astralis\_38:

(Start: 17 @30956 has 53 MA's), (50, 31076), (59, 31106), (61, 31133), (64, 31157), (65, 31169), (72, 31199), (73, 31202), (81, 31268), (87, 31289), (88, 31292), (91, 31304),

Gene: Avani\_40 Start: 28789, Stop: 29178, Start Num: 23

Candidate Starts for Avani\_40:

(Start: 19 @28774 has 1 MA's), (22, 28786), (Start: 23 @28789 has 6 MA's), (26, 28804), (29, 28816), (32, 28825), (34, 28831), (38, 28846), (43, 28870), (49, 28894), (50, 28897), (52, 28903), (54, 28909), (56, 28915), (58, 28924), (59, 28927), (62, 28972), (65, 28990), (68, 29002), (69, 29005), (70, 29008), (73, 29023), (79, 29074), (82, 29092), (83, 29095), (87, 29110), (90, 29122),

Gene: Avian\_38 Start: 31348, Stop: 31743, Start Num: 17

Candidate Starts for Avian\_38:

(Start: 17 @31348 has 53 MA's), (50, 31468), (59, 31498), (61, 31525), (64, 31549), (65, 31561), (73, 31594), (81, 31660), (87, 31681), (88, 31684), (91, 31696),

Gene: Bakery\_48 Start: 37078, Stop: 37512, Start Num: 15

Candidate Starts for Bakery\_48:

(11, 37018), (12, 37042), (Start: 15 @37078 has 15 MA's), (Start: 27 @37129 has 1 MA's), (34, 37153), (41, 37183), (48, 37216), (53, 37231), (54, 37234), (56, 37240), (71, 37342), (78, 37390), (79, 37399), (87, 37435), (89, 37441), (95, 37489),

Gene: Barb\_45 Start: 36050, Stop: 36484, Start Num: 15

Candidate Starts for Barb\_45:

(11, 35990), (12, 36014), (Start: 15 @36050 has 15 MA's), (34, 36125), (41, 36155), (48, 36188), (53, 36203), (54, 36206), (71, 36314), (78, 36362), (79, 36371), (87, 36407), (89, 36413), (91, 36422),

Gene: BaxterFox\_24 Start: 21132, Stop: 21506, Start Num: 17

Candidate Starts for BaxterFox\_24:

(7, 20949), (8, 20961), (9, 20967), (10, 21048), (Start: 17 @21132 has 53 MA's), (40, 21204), (41, 21210), (45, 21234), (48, 21243), (52, 21255), (56, 21267), (63, 21327), (71, 21369), (83, 21447), (84, 21453), (85, 21456),

Gene: BirthdayBoy\_41 Start: 33095, Stop: 33490, Start Num: 17

Candidate Starts for BirthdayBoy\_41:

(Start: 17 @33095 has 53 MA's), (38, 33161), (47, 33206), (50, 33215), (59, 33245), (64, 33296), (65, 33308), (81, 33407), (87, 33428), (88, 33431), (91, 33443),

Gene: BoyNamedSue\_25 Start: 21811, Stop: 22185, Start Num: 17

Candidate Starts for BoyNamedSue\_25:

(10, 21727), (Start: 17 @21811 has 53 MA's), (33, 21859), (40, 21883), (41, 21889), (45, 21913), (48, 21922), (52, 21934), (83, 22126), (84, 22132), (85, 22135),

Gene: BrutonGaster\_43 Start: 30940, Stop: 31359, Start Num: 18

Candidate Starts for BrutonGaster\_43:

(16, 30928), (Start: 18 @30940 has 1 MA's), (39, 31015), (42, 31030), (48, 31057), (49, 31060), (50, 31063), (53, 31072), (55, 31078), (58, 31090), (64, 31144), (73, 31189), (74, 31198), (86, 31288), (87, 31291), (92, 31312),

Gene: ClamChowder\_45 Start: 36050, Stop: 36484, Start Num: 15

Candidate Starts for ClamChowder\_45:

(11, 35990), (12, 36014), (Start: 15 @36050 has 15 MA's), (34, 36125), (41, 36155), (48, 36188), (53, 36203), (54, 36206), (71, 36314), (78, 36362), (79, 36371), (87, 36407), (89, 36413), (91, 36422),

Gene: Coriander\_26 Start: 22098, Stop: 22541, Start Num: 13

Candidate Starts for Coriander\_26:

(1, 21702), (3, 21777), (4, 21846), (5, 21888), (6, 21909), (12, 22086), (Start: 13 @22098 has 4 MA's), (20, 22146), (24, 22167), (25, 22170), (33, 22197), (34, 22200), (36, 22206), (41, 22230), (43, 22242), (62, 22344), (66, 22365), (67, 22368), (69, 22377), (70, 22380), (73, 22395), (82, 22464), (87, 22482), (89, 22488), (93, 22527),

Gene: DaviePasture\_40 Start: 32896, Stop: 33291, Start Num: 17

Candidate Starts for DaviePasture\_40:

(Start: 17 @32896 has 53 MA's), (38, 32962), (50, 33016), (64, 33097), (65, 33109), (72, 33139), (81, 33208), (87, 33229), (88, 33232), (91, 33244),

Gene: Demsculpinboyz\_41 Start: 28731, Stop: 29120, Start Num: 23

Candidate Starts for Demsculpinboyz\_41:

(Start: 19 @28716 has 1 MA's), (22, 28728), (Start: 23 @28731 has 6 MA's), (26, 28746), (29, 28758), (32, 28767), (34, 28773), (38, 28788), (43, 28812), (49, 28836), (50, 28839), (52, 28845), (53, 28848), (54, 28851), (56, 28857), (58, 28866), (59, 28869), (62, 28914), (65, 28932), (68, 28944), (69, 28947), (70, 28950), (73, 28965), (79, 29016), (82, 29034), (83, 29037), (87, 29052), (90, 29064),

Gene: Dmitri\_26 Start: 22153, Stop: 22593, Start Num: 13

Candidate Starts for Dmitri\_26:

(Start: 13 @22153 has 4 MA's), (20, 22201), (25, 22225), (33, 22252), (34, 22255), (36, 22261), (41, 22285), (43, 22297), (62, 22399), (66, 22420), (67, 22423), (69, 22432), (70, 22435), (73, 22450), (82, 22519), (87, 22537), (94, 22588),

Gene: Doggs\_25 Start: 21797, Stop: 22240, Start Num: 13

Candidate Starts for Doggs\_25:

(1, 21401), (3, 21476), (4, 21545), (5, 21587), (6, 21608), (12, 21785), (Start: 13 @21797 has 4 MA's), (20, 21845), (24, 21866), (25, 21869), (33, 21896), (34, 21899), (36, 21905), (41, 21929), (43, 21941), (62, 22043), (66, 22064), (67, 22067), (69, 22076), (70, 22079), (73, 22094), (82, 22163), (87, 22181), (89, 22187), (93, 22226),

Gene: DoobyDoo\_39 Start: 32046, Stop: 32441, Start Num: 17

Candidate Starts for DoobyDoo\_39:

(Start: 17 @32046 has 53 MA's), (38, 32112), (50, 32166), (64, 32247), (65, 32259), (72, 32289), (81, 32358), (87, 32379), (88, 32382), (91, 32394),

Gene: Egi03\_43 Start: 35531, Stop: 35965, Start Num: 15

Candidate Starts for Egi03\_43:

(11, 35471), (12, 35495), (Start: 15 @35531 has 15 MA's), (34, 35606), (41, 35636), (48, 35669), (53, 35684), (54, 35687), (71, 35795), (78, 35843), (79, 35852), (87, 35888), (89, 35894), (91, 35903),

Gene: Erutan\_40 Start: 32554, Stop: 32949, Start Num: 17

Candidate Starts for Erutan\_40:

(Start: 17 @32554 has 53 MA's), (38, 32620), (50, 32674), (59, 32704), (64, 32755), (65, 32767), (81, 32866), (87, 32887), (88, 32890), (91, 32902),

Gene: Eudoria\_26 Start: 21932, Stop: 22306, Start Num: 17

Candidate Starts for Eudoria\_26:

(10, 21848), (Start: 17 @21932 has 53 MA's), (33, 21980), (40, 22004), (41, 22010), (45, 22034), (48, 22043), (52, 22055), (83, 22247), (84, 22253), (85, 22256),

Gene: Eyre\_22 Start: 19166, Stop: 19540, Start Num: 17

Candidate Starts for Eyre\_22:

(10, 19082), (Start: 17 @19166 has 53 MA's), (40, 19238), (45, 19268), (48, 19277), (52, 19289), (56, 19301), (59, 19313), (64, 19364), (68, 19388), (71, 19403), (79, 19460),

Gene: Fireball\_44 Start: 35995, Stop: 36429, Start Num: 15

Candidate Starts for Fireball\_44:

(11, 35935), (12, 35959), (Start: 15 @35995 has 15 MA's), (34, 36070), (41, 36100), (48, 36133), (53, 36148), (54, 36151), (71, 36259), (78, 36307), (79, 36316), (87, 36352), (89, 36358), (91, 36367),

Gene: Fugax\_46 Start: 36042, Stop: 36476, Start Num: 15

Candidate Starts for Fugax\_46:

(11, 35982), (12, 36006), (Start: 15 @36042 has 15 MA's), (34, 36117), (41, 36147), (48, 36180), (53, 36195), (54, 36198), (71, 36306), (78, 36354), (79, 36363), (87, 36399), (89, 36405), (91, 36414),

Gene: Fulcrum\_41 Start: 33075, Stop: 33470, Start Num: 17

Candidate Starts for Fulcrum\_41:

(Start: 17 @33075 has 53 MA's), (38, 33141), (50, 33195), (64, 33276), (65, 33288), (72, 33318), (81, 33387), (87, 33408), (88, 33411), (91, 33423),

Gene: GOATification\_41 Start: 33075, Stop: 33470, Start Num: 17

Candidate Starts for GOATification\_41:

(Start: 17 @33075 has 53 MA's), (38, 33141), (50, 33195), (64, 33276), (65, 33288), (72, 33318), (81, 33387), (87, 33408), (88, 33411), (91, 33423),

Gene: Genamy16\_41 Start: 31366, Stop: 31752, Start Num: 17

Candidate Starts for Genamy16\_41:

(Start: 17 @31366 has 53 MA's), (50, 31486), (59, 31516), (61, 31543), (64, 31567), (65, 31579), (72, 31609), (73, 31612), (81, 31678), (87, 31699), (88, 31702), (91, 31714),

Gene: Gibbin\_41 Start: 33173, Stop: 33559, Start Num: 17

Candidate Starts for Gibbin\_41:

(Start: 17 @33173 has 53 MA's), (38, 33239), (50, 33293), (64, 33374), (65, 33386), (72, 33416), (81, 33485), (87, 33506), (88, 33509), (91, 33521),

Gene: Gretellyn\_40 Start: 33439, Stop: 33834, Start Num: 17

Candidate Starts for Gretellyn\_40:

(Start: 17 @33439 has 53 MA's), (38, 33505), (50, 33559), (59, 33589), (64, 33640), (65, 33652), (72, 33682), (81, 33751), (87, 33772), (88, 33775), (91, 33787),

Gene: Gudmit\_23 Start: 19228, Stop: 19611, Start Num: 21

Candidate Starts for Gudmit\_23:

(Start: 21 @19228 has 2 MA's), (36, 19285), (44, 19324), (46, 19336), (52, 19354), (54, 19360), (57, 19372), (70, 19459), (71, 19468), (75, 19480), (78, 19516), (80, 19537), (84, 19552), (88, 19564),

Gene: Hyzer\_26 Start: 22472, Stop: 22846, Start Num: 17

Candidate Starts for Hyzer\_26:

(Start: 17 @22472 has 53 MA's), (33, 22520), (40, 22544), (45, 22574), (48, 22583), (52, 22595), (56, 22607), (63, 22667), (83, 22787), (84, 22793),

Gene: Jabbawokkie\_43 Start: 30179, Stop: 30568, Start Num: 23

Candidate Starts for Jabbawokkie\_43:

(Start: 19 @30164 has 1 MA's), (22, 30176), (Start: 23 @30179 has 6 MA's), (26, 30194), (29, 30206), (32, 30215), (34, 30221), (38, 30236), (43, 30260), (49, 30284), (50, 30287), (52, 30293), (54, 30299), (56, 30305), (58, 30314), (59, 30317), (62, 30362), (65, 30380), (68, 30392), (69, 30395), (70, 30398), (73, 30413), (79, 30464), (82, 30482), (83, 30485), (87, 30500), (90, 30512),

Gene: Jalebi\_39 Start: 33608, Stop: 34003, Start Num: 17

Candidate Starts for Jalebi\_39:

(Start: 17 @33608 has 53 MA's), (38, 33674), (50, 33728), (59, 33758), (64, 33809), (65, 33821), (72, 33851), (81, 33920), (87, 33941), (88, 33944), (91, 33956),

Gene: Jamemuya19\_38 Start: 30956, Stop: 31342, Start Num: 17

Candidate Starts for Jamemuya19\_38:

(Start: 17 @30956 has 53 MA's), (50, 31076), (59, 31106), (61, 31133), (64, 31157), (65, 31169), (72, 31199), (73, 31202), (81, 31268), (87, 31289), (88, 31292), (91, 31304),

Gene: Kita\_26 Start: 21932, Stop: 22306, Start Num: 17

Candidate Starts for Kita\_26:

(10, 21848), (Start: 17 @21932 has 53 MA's), (33, 21980), (40, 22004), (41, 22010), (45, 22034), (48, 22043), (52, 22055), (83, 22247), (84, 22253), (85, 22256),

Gene: Lambo\_40 Start: 33093, Stop: 33488, Start Num: 17

Candidate Starts for Lambo\_40:

(Start: 17 @33093 has 53 MA's), (38, 33159), (50, 33213), (59, 33243), (64, 33294), (65, 33306), (72, 33336), (81, 33405), (87, 33426), (88, 33429), (91, 33441),

Gene: Lila22\_39 Start: 33048, Stop: 33443, Start Num: 17

Candidate Starts for Lila22\_39:

(Start: 17 @33048 has 53 MA's), (38, 33114), (50, 33168), (59, 33198), (64, 33249), (65, 33261), (81, 33360), (87, 33381), (88, 33384), (91, 33396),

Gene: LuckyLeo\_39 Start: 32448, Stop: 32855, Start Num: 17

Candidate Starts for LuckyLeo\_39:

(Start: 17 @32448 has 53 MA's), (28, 32481), (45, 32553), (49, 32565), (50, 32568), (56, 32586), (61, 32625), (63, 32646), (70, 32679), (72, 32691), (80, 32757), (83, 32766), (84, 32772), (87, 32781), (91, 32796),

Gene: LunaStella\_37 Start: 30071, Stop: 30460, Start Num: 23

Candidate Starts for LunaStella\_37:

(Start: 19 @30056 has 1 MA's), (Start: 23 @30071 has 6 MA's), (Start: 27 @30089 has 1 MA's), (30, 30101), (31, 30104), (32, 30107), (34, 30113), (35, 30116), (36, 30119), (38, 30128), (41, 30140), (49, 30176), (50, 30179), (53, 30188), (54, 30191), (56, 30197), (60, 30218), (62, 30254), (65, 30272), (67, 30278), (68, 30284), (69, 30287), (70, 30290), (72, 30302), (75, 30311), (77, 30344), (78, 30347), (83, 30377), (87, 30392), (90, 30404),

Gene: Manasvini\_26 Start: 21932, Stop: 22306, Start Num: 17

Candidate Starts for Manasvini\_26:

(10, 21848), (Start: 17 @21932 has 53 MA's), (33, 21980), (40, 22004), (41, 22010), (45, 22034), (48, 22043), (52, 22055), (83, 22247), (84, 22253), (85, 22256),

Gene: Maridalia\_25 Start: 21932, Stop: 22306, Start Num: 17

Candidate Starts for Maridalia\_25:

(10, 21848), (Start: 17 @21932 has 53 MA's), (33, 21980), (40, 22004), (41, 22010), (45, 22034), (48, 22043), (52, 22055), (83, 22247), (84, 22253), (85, 22256),

Gene: Mima20\_38 Start: 32797, Stop: 33192, Start Num: 17

Candidate Starts for Mima20\_38:

(Start: 17 @32797 has 53 MA's), (38, 32863), (50, 32917), (59, 32947), (64, 32998), (65, 33010), (72, 33040), (75, 33049), (81, 33109), (87, 33130), (88, 33133), (91, 33145),

Gene: MoiGyank\_42 Start: 33478, Stop: 33873, Start Num: 17

Candidate Starts for MoiGyank\_42:

(Start: 17 @33478 has 53 MA's), (38, 33544), (50, 33598), (59, 33628), (64, 33679), (65, 33691), (72, 33721), (81, 33790), (87, 33811), (88, 33814), (91, 33826),

Gene: MooMoo\_33 Start: 28618, Stop: 29007, Start Num: 23

Candidate Starts for MooMoo\_33:

(Start: 19 @28603 has 1 MA's), (Start: 23 @28618 has 6 MA's), (Start: 27 @28636 has 1 MA's), (30, 28648), (31, 28651), (32, 28654), (34, 28660), (35, 28663), (36, 28666), (38, 28675), (41, 28687), (49, 28723), (50, 28726), (53, 28735), (54, 28738), (56, 28744), (60, 28765), (62, 28801), (65, 28819), (67, 28825), (68, 28831), (69, 28834), (70, 28837), (72, 28849), (75, 28858), (77, 28891), (78, 28894), (83, 28924), (87, 28939),

Gene: Mutzi\_42 Start: 36730, Stop: 37164, Start Num: 15

Candidate Starts for Mutzi\_42:

(11, 36670), (12, 36694), (Start: 15 @36730 has 15 MA's), (34, 36805), (41, 36835), (48, 36868), (53, 36883), (54, 36886), (71, 36994), (78, 37042), (87, 37087), (89, 37093), (91, 37102),

Gene: Neobush\_26 Start: 21932, Stop: 22306, Start Num: 17

Candidate Starts for Neobush\_26:

(10, 21848), (Start: 17 @21932 has 53 MA's), (33, 21980), (40, 22004), (41, 22010), (45, 22034), (48, 22043), (52, 22055), (83, 22247), (84, 22253), (85, 22256),

Gene: NorManre\_41 Start: 32684, Stop: 33079, Start Num: 17

Candidate Starts for NorManre\_41:

(Start: 17 @32684 has 53 MA's), (38, 32750), (50, 32804), (64, 32885), (65, 32897), (72, 32927), (81, 32996), (87, 33017), (88, 33020), (91, 33032),

Gene: NovaSharks\_40 Start: 30956, Stop: 31342, Start Num: 17

Candidate Starts for NovaSharks\_40:

(Start: 17 @30956 has 53 MA's), (50, 31076), (59, 31106), (61, 31133), (64, 31157), (65, 31169), (72, 31199), (73, 31202), (81, 31268), (87, 31289), (88, 31292), (91, 31304),

Gene: Nubi\_43 Start: 35875, Stop: 36309, Start Num: 15

Candidate Starts for Nubi\_43:

(11, 35815), (12, 35839), (Start: 15 @35875 has 15 MA's), (34, 35950), (41, 35980), (48, 36013), (53, 36028), (54, 36031), (71, 36139), (78, 36187), (79, 36196), (87, 36232), (89, 36238), (91, 36247),

Gene: OtterstedtS21\_40 Start: 32755, Stop: 33150, Start Num: 17

Candidate Starts for OtterstedtS21\_40:

(Start: 17 @32755 has 53 MA's), (38, 32821), (50, 32875), (59, 32905), (64, 32956), (65, 32968), (72, 32998), (81, 33067), (87, 33088), (88, 33091), (91, 33103),

Gene: PantheRoc\_25 Start: 21130, Stop: 21504, Start Num: 17

Candidate Starts for PantheRoc\_25:

(10, 21046), (Start: 17 @21130 has 53 MA's), (33, 21178), (40, 21202), (41, 21208), (45, 21232), (48, 21241), (52, 21253), (83, 21445), (84, 21451), (85, 21454),

Gene: ParvusTarda\_40 Start: 32223, Stop: 32618, Start Num: 17

Candidate Starts for ParvusTarda\_40:

(Start: 17 @32223 has 53 MA's), (38, 32289), (47, 32334), (50, 32343), (59, 32373), (64, 32424), (65, 32436), (81, 32535), (87, 32556), (88, 32559), (91, 32571),

Gene: Patos\_41 Start: 32684, Stop: 33079, Start Num: 17

Candidate Starts for Patos\_41:

(Start: 17 @32684 has 53 MA's), (38, 32750), (50, 32804), (64, 32885), (65, 32897), (72, 32927), (81, 32996), (87, 33017), (88, 33020), (91, 33032),

Gene: Petra\_26 Start: 20781, Stop: 21155, Start Num: 17

Candidate Starts for Petra\_26:

(Start: 17 @20781 has 53 MA's), (28, 20814), (33, 20829), (45, 20883), (48, 20892), (52, 20904), (63, 20976), (83, 21096), (84, 21102), (87, 21111),

Gene: Phlop\_42 Start: 35956, Stop: 36390, Start Num: 15

Candidate Starts for Phlop\_42:

(11, 35896), (12, 35920), (Start: 15 @35956 has 15 MA's), (34, 36031), (41, 36061), (48, 36094), (53, 36109), (54, 36112), (71, 36220), (78, 36268), (79, 36277), (87, 36313), (89, 36319), (91, 36328),

Gene: PinkCoffee\_45 Start: 36059, Stop: 36493, Start Num: 15

Candidate Starts for PinkCoffee\_45:

(11, 35999), (12, 36023), (Start: 15 @36059 has 15 MA's), (34, 36134), (41, 36164), (48, 36197), (53, 36212), (54, 36215), (71, 36323), (78, 36371), (79, 36380), (87, 36416), (89, 36422), (91, 36431),

Gene: PullumCavea\_42 Start: 35956, Stop: 36390, Start Num: 15

Candidate Starts for PullumCavea\_42:

(11, 35896), (12, 35920), (Start: 15 @35956 has 15 MA's), (34, 36031), (41, 36061), (48, 36094), (53, 36109), (54, 36112), (71, 36220), (78, 36268), (79, 36277), (87, 36313), (89, 36319), (91, 36328),

Gene: Ranch\_40 Start: 31581, Stop: 31976, Start Num: 17

Candidate Starts for Ranch\_40:

(Start: 17 @31581 has 53 MA's), (38, 31647), (50, 31701), (59, 31731), (64, 31782), (65, 31794), (72, 31824), (81, 31893), (87, 31914), (88, 31917), (91, 31929),

Gene: RayTheFireFly\_26 Start: 22130, Stop: 22573, Start Num: 13

Candidate Starts for RayTheFireFly\_26:

(1, 21734), (2, 21785), (5, 21920), (6, 21941), (12, 22118), (Start: 13 @22130 has 4 MA's), (20, 22178), (25, 22202), (33, 22229), (34, 22232), (36, 22238), (41, 22262), (43, 22274), (62, 22376), (66, 22397), (67, 22400), (69, 22409), (70, 22412), (73, 22427), (87, 22514),

Gene: RazorC\_39 Start: 31348, Stop: 31734, Start Num: 17

Candidate Starts for RazorC\_39:

(Start: 17 @31348 has 53 MA's), (50, 31468), (59, 31498), (61, 31525), (64, 31549), (65, 31561), (72, 31591), (73, 31594), (81, 31660), (87, 31681), (88, 31684), (91, 31696),

Gene: Rota\_39 Start: 32964, Stop: 33359, Start Num: 17

Candidate Starts for Rota\_39:

(Start: 17 @32964 has 53 MA's), (38, 33030), (50, 33084), (59, 33114), (64, 33165), (65, 33177), (81, 33276), (87, 33297), (88, 33300), (91, 33312),

Gene: Rumi\_40 Start: 30959, Stop: 31345, Start Num: 17

Candidate Starts for Rumi\_40:

(Start: 17 @30959 has 53 MA's), (50, 31079), (59, 31109), (61, 31136), (64, 31160), (65, 31172), (72, 31202), (73, 31205), (81, 31271), (87, 31292), (88, 31295), (91, 31307),

Gene: Sadboi\_41 Start: 33440, Stop: 33835, Start Num: 17

Candidate Starts for Sadboi\_41:

(Start: 17 @33440 has 53 MA's), (38, 33506), (50, 33560), (59, 33590), (64, 33641), (65, 33653), (72, 33683), (81, 33752), (87, 33773), (88, 33776), (91, 33788),

Gene: Sampudon\_40 Start: 33608, Stop: 34003, Start Num: 17

Candidate Starts for Sampudon\_40:

(Start: 17 @33608 has 53 MA's), (38, 33674), (50, 33728), (59, 33758), (64, 33809), (65, 33821), (72, 33851), (81, 33920), (87, 33941), (88, 33944), (91, 33956),

Gene: Shinji\_43 Start: 35312, Stop: 35746, Start Num: 15

Candidate Starts for Shinji\_43:

(11, 35252), (12, 35276), (Start: 15 @35312 has 15 MA's), (20, 35333), (25, 35357), (26, 35360), (34, 35387), (41, 35417), (53, 35465), (54, 35468), (56, 35474), (67, 35555), (71, 35576), (76, 35591), (78, 35624), (87, 35669), (89, 35675), (91, 35684), (95, 35723),

Gene: SmokingBunny\_43 Start: 35861, Stop: 36295, Start Num: 15

Candidate Starts for SmokingBunny\_43:

(11, 35801), (12, 35825), (Start: 15 @35861 has 15 MA's), (34, 35936), (41, 35966), (48, 35999), (53, 36014), (54, 36017), (71, 36125), (78, 36173), (79, 36182), (87, 36218), (89, 36224), (91, 36233),

Gene: Stormer\_40 Start: 30962, Stop: 31348, Start Num: 17

Candidate Starts for Stormer\_40:

(Start: 17 @30962 has 53 MA's), (50, 31082), (59, 31112), (61, 31139), (64, 31163), (65, 31175), (72, 31205), (73, 31208), (81, 31274), (87, 31295), (88, 31298), (91, 31310),

Gene: Susceptit\_26 Start: 21932, Stop: 22306, Start Num: 17

Candidate Starts for Susceptit\_26:

(10, 21848), (Start: 17 @21932 has 53 MA's), (33, 21980), (40, 22004), (41, 22010), (45, 22034), (48, 22043), (52, 22055), (83, 22247), (84, 22253), (85, 22256),

Gene: TChen\_35 Start: 30090, Stop: 30461, Start Num: 27

Candidate Starts for TChen\_35:

(Start: 19 @30057 has 1 MA's), (Start: 23 @30072 has 6 MA's), (Start: 27 @30090 has 1 MA's), (30, 30102), (31, 30105), (32, 30108), (34, 30114), (35, 30117), (36, 30120), (38, 30129), (41, 30141), (49, 30177), (50, 30180), (53, 30189), (54, 30192), (56, 30198), (60, 30219), (62, 30255), (65, 30273), (67, 30279), (68, 30285), (69, 30288), (70, 30291), (72, 30303), (75, 30312), (77, 30345), (78, 30348), (83, 30378), (87, 30393), (90, 30405),

Gene: Tayonia\_26 Start: 21932, Stop: 22306, Start Num: 17

Candidate Starts for Tayonia\_26:

(10, 21848), (Start: 17 @21932 has 53 MA's), (33, 21980), (40, 22004), (41, 22010), (45, 22034), (48, 22043), (52, 22055), (83, 22247), (84, 22253), (85, 22256),

Gene: ThetaBob\_35 Start: 29008, Stop: 29412, Start Num: 19

Candidate Starts for ThetaBob\_35:

(Start: 19 @29008 has 1 MA's), (22, 29020), (Start: 23 @29023 has 6 MA's), (26, 29038), (29, 29050), (32, 29059), (34, 29065), (38, 29080), (43, 29104), (49, 29128), (50, 29131), (52, 29137), (54, 29143), (56, 29149), (58, 29158), (59, 29161), (62, 29206), (65, 29224), (68, 29236), (69, 29239), (70, 29242), (73, 29257), (79, 29308), (82, 29326), (83, 29329), (87, 29344), (90, 29356),

Gene: Tillicus\_38 Start: 32042, Stop: 32440, Start Num: 17

Candidate Starts for Tillicus\_38:

(Start: 17 @32042 has 53 MA's), (45, 32147), (49, 32159), (50, 32162), (56, 32180), (61, 32219), (63, 32240), (70, 32273), (72, 32285), (80, 32351), (83, 32360), (85, 32369), (87, 32375), (91, 32390),

Gene: TillyBobJoe\_43 Start: 35665, Stop: 36099, Start Num: 15

Candidate Starts for TillyBobJoe\_43:

(11, 35605), (12, 35629), (Start: 15 @35665 has 15 MA's), (34, 35740), (41, 35770), (48, 35803), (53, 35818), (54, 35821), (71, 35929), (78, 35977), (79, 35986), (87, 36022), (89, 36028), (91, 36037),

Gene: Togo\_42 Start: 35861, Stop: 36295, Start Num: 15

Candidate Starts for Togo\_42:

(11, 35801), (12, 35825), (Start: 15 @35861 has 15 MA's), (34, 35936), (41, 35966), (48, 35999), (53, 36014), (54, 36017), (71, 36125), (78, 36173), (79, 36182), (87, 36218), (89, 36224), (91, 36233),

Gene: Toron\_36 Start: 29915, Stop: 30304, Start Num: 23

Candidate Starts for Toron\_36:

(14, 29876), (Start: 19 @29900 has 1 MA's), (Start: 23 @29915 has 6 MA's), (32, 29951), (34, 29957), (35, 29960), (36, 29963), (38, 29972), (43, 29996), (50, 30023), (54, 30035), (62, 30098), (65, 30116), (67, 30122), (68, 30128), (69, 30131), (70, 30134), (72, 30146), (73, 30149), (80, 30212), (83, 30221), (87, 30236), (90, 30248),

Gene: Trumpet\_26 Start: 21932, Stop: 22306, Start Num: 17

Candidate Starts for Trumpet\_26:

(10, 21848), (Start: 17 @21932 has 53 MA's), (33, 21980), (40, 22004), (41, 22010), (45, 22034), (48, 22043), (52, 22055), (83, 22247), (84, 22253), (85, 22256),

Gene: Wojtek\_39 Start: 32308, Stop: 32703, Start Num: 17

Candidate Starts for Wojtek\_39:

(Start: 17 @32308 has 53 MA's), (38, 32374), (50, 32428), (59, 32458), (64, 32509), (65, 32521), (81, 32620), (87, 32641), (88, 32644), (91, 32656),

Gene: Yeezy\_26 Start: 21154, Stop: 21528, Start Num: 17

Candidate Starts for Yeezy\_26:

(10, 21070), (Start: 17 @21154 has 53 MA's), (33, 21202), (40, 21226), (41, 21232), (45, 21256), (48, 21265), (52, 21277), (83, 21469), (84, 21475), (85, 21478),

Gene: Yikes\_41 Start: 33687, Stop: 34082, Start Num: 17

Candidate Starts for Yikes\_41:

(Start: 17 @33687 has 53 MA's), (38, 33753), (50, 33807), (59, 33837), (64, 33888), (65, 33900), (72, 33930), (81, 33999), (87, 34020), (88, 34023), (91, 34035),

Gene: YungMoney\_46 Start: 38304, Stop: 38738, Start Num: 15

Candidate Starts for YungMoney\_46:

(11, 38244), (12, 38268), (Start: 15 @38304 has 15 MA's), (20, 38325), (25, 38349), (26, 38352), (29, 38364), (34, 38379), (37, 38388), (41, 38409), (53, 38457), (54, 38460), (56, 38466), (67, 38547), (71, 38568), (76, 38583), (78, 38616), (87, 38661), (89, 38667), (91, 38676), (95, 38715),

Gene: Zameen\_26 Start: 21932, Stop: 22306, Start Num: 17

Candidate Starts for Zameen\_26:

(10, 21848), (Start: 17 @21932 has 53 MA's), (33, 21980), (40, 22004), (41, 22010), (45, 22034), (48, 22043), (52, 22055), (83, 22247), (84, 22253), (85, 22256),

Gene: Zany\_39 Start: 33212, Stop: 33607, Start Num: 17

Candidate Starts for Zany\_39:

(Start: 17 @33212 has 53 MA's), (38, 33278), (50, 33332), (64, 33413), (65, 33425), (72, 33455), (81, 33524), (87, 33545), (88, 33548), (91, 33560),

Gene: Zapner\_42 Start: 30180, Stop: 30569, Start Num: 23

Candidate Starts for Zapner\_42:

(Start: 19 @30165 has 1 MA's), (22, 30177), (Start: 23 @30180 has 6 MA's), (26, 30195), (29, 30207), (32, 30216), (34, 30222), (38, 30237), (43, 30261), (49, 30285), (50, 30288), (52, 30294), (54, 30300), (56, 30306), (58, 30315), (59, 30318), (62, 30363), (65, 30381), (68, 30393), (69, 30396), (70, 30399), (73, 30414), (79, 30465), (82, 30483), (83, 30486), (87, 30501), (90, 30513),