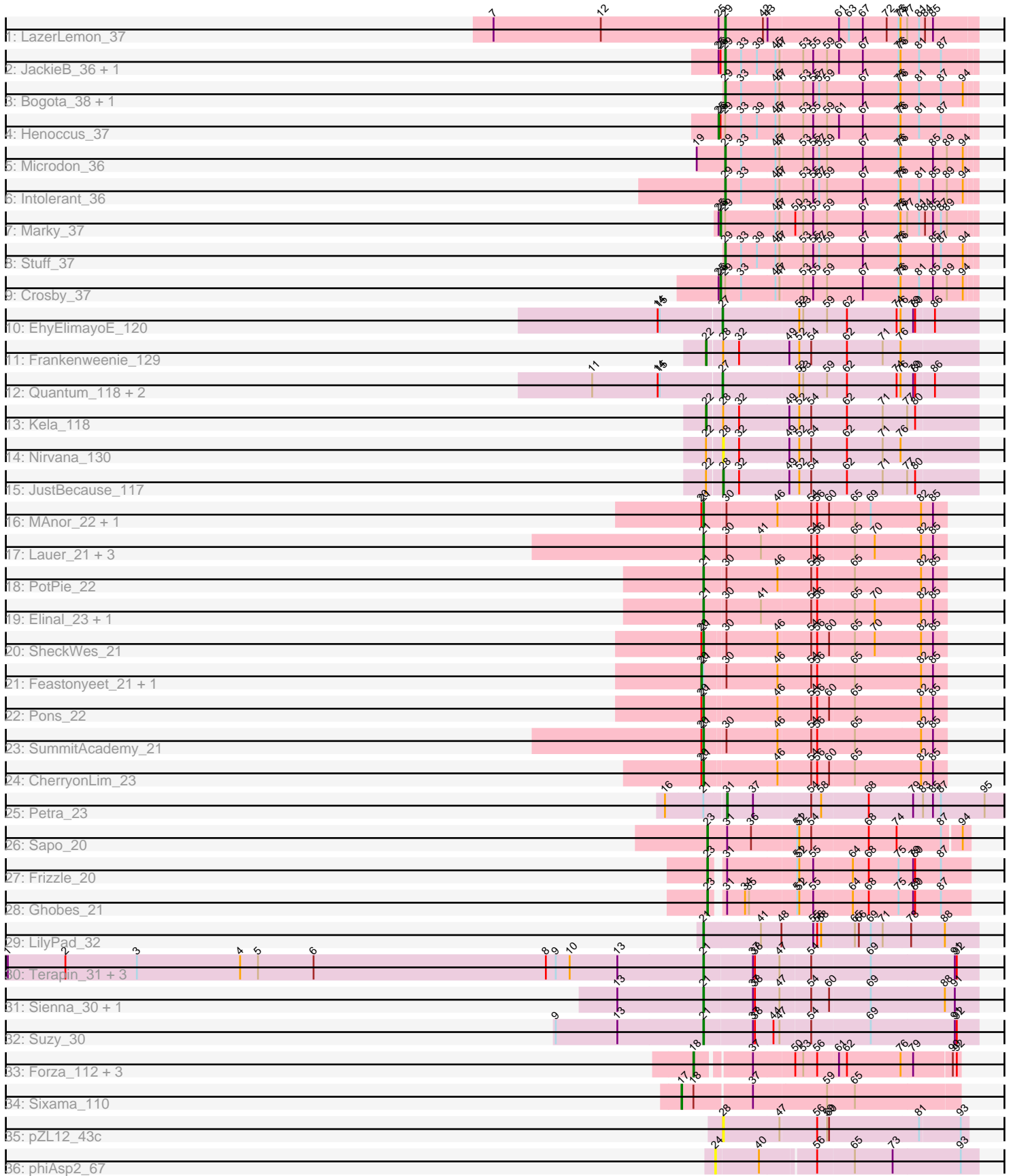


Pham 218008



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 218008 Report

This analysis was run 03/28/25 on database version 593.

Pham number 218008 has 53 members, 5 are drafts.

Phages represented in each track:

- Track 1 : LazerLemon\_37
- Track 2 : JackieB\_36, Araceli\_37
- Track 3 : Bogota\_38, UNTPL\_38
- Track 4 : Henoccus\_37
- Track 5 : Microdon\_36
- Track 6 : Intolerant\_36
- Track 7 : Marky\_37
- Track 8 : Stuff\_37
- Track 9 : Crosby\_37
- Track 10 : EhyElimayoE\_120
- Track 11 : Frankenweenie\_129
- Track 12 : Quantum\_118, Kradal\_119, Satis\_119
- Track 13 : Kela\_118
- Track 14 : Nirvana\_130
- Track 15 : JustBecause\_117
- Track 16 : MAnor\_22, Mayweather\_23
- Track 17 : Lauer\_21, Vine\_23, Yucky\_24, Bavidard\_22
- Track 18 : PotPie\_22
- Track 19 : Elinal\_23, KayGee\_22
- Track 20 : SheckWes\_21
- Track 21 : Feastonyeet\_21, BigChungus\_21
- Track 22 : Pons\_22
- Track 23 : SummitAcademy\_21
- Track 24 : CherryonLim\_23
- Track 25 : Petra\_23
- Track 26 : Sapo\_20
- Track 27 : Frizzle\_20
- Track 28 : Ghobes\_21
- Track 29 : LilyPad\_32
- Track 30 : Terapin\_31, Djokovic\_30, BiteSize\_30, Beyoncage\_30
- Track 31 : Sienna\_30, Madi\_30
- Track 32 : Suzy\_30
- Track 33 : Forza\_112, BlueNGold\_111, Boopy\_112, Mareelih\_110
- Track 34 : Sixama\_110
- Track 35 : pZL12\_43c
- Track 36 : phiAsp2\_67

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

The start number called the most often in the published annotations is 21, it was called in 19 of the 48 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Bavidard\_22, Beyoncage\_30, BiteSize\_30, CherryonLim\_23, Djokovic\_30, Elinal\_23, KayGee\_22, Lauer\_21, LilyPad\_32, MAnor\_22, Madi\_30, Mayweather\_23, Pons\_22, PotPie\_22, SheckWes\_21, Sienna\_30, SummitAcademy\_21, Suzy\_30, Terapin\_31, Vine\_23, Yucky\_24,

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

- BigChungus\_21, Feastonyeet\_21, Petra\_23,

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

- Araceli\_37, BlueNGGold\_111, Bogota\_38, Boopy\_112, Crosby\_37, EhyElimayoE\_120, Forza\_112, Frankenweenie\_129, Frizzle\_20, Ghobes\_21, Henoccus\_37, Intolerant\_36, JackieB\_36, JustBecause\_117, Kela\_118, Kradal\_119, LazerLemon\_37, Mareelih\_110, Marky\_37, Microdon\_36, Nirvana\_130, Quantum\_118, Sapo\_20, Satis\_119, Sixama\_110, Stuff\_37, UNTPL\_38, pZL12\_43c, phiAsp2\_67,

### **Summary by start number:**

Start 17:

- Found in 1 of 53 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sixama\_110 (DS),

Start 18:

- Found in 5 of 53 ( 9.4% ) of genes in pham
- Manual Annotations of this start: 4 of 48
- Called 80.0% of time when present
- Phage (with cluster) where this start called: BlueNGGold\_111 (DS), Boopy\_112 (DS), Forza\_112 (DS), Mareelih\_110 (DS),

Start 20:

- Found in 8 of 53 ( 15.1% ) of genes in pham
- Manual Annotations of this start: 2 of 48
- Called 25.0% of time when present
- Phage (with cluster) where this start called: BigChungus\_21 (CT), Feastonyeet\_21 (CT),

Start 21:

- Found in 24 of 53 ( 45.3% ) of genes in pham
- Manual Annotations of this start: 19 of 48
- Called 87.5% of time when present
- Phage (with cluster) where this start called: Bavidard\_22 (CT), Beyoncage\_30 (DG1), BiteSize\_30 (DG1), CherryonLim\_23 (CT), Djokovic\_30 (DG1), Elinal\_23 (CT),

KayGee\_22 (CT), Lauer\_21 (CT), LilyPad\_32 (DG1), MAnor\_22 (CT), Madi\_30 (DG1), Mayweather\_23 (CT), Pons\_22 (CT), PotPie\_22 (CT), SheckWes\_21 (CT), Sienna\_30 (DG1), SummitAcademy\_21 (CT), Suzy\_30 (DG1), Terapin\_31 (DG1), Vine\_23 (CT), Yucky\_24 (CT),

Start 22:

- Found in 4 of 53 ( 7.5% ) of genes in pham
- Manual Annotations of this start: 2 of 48
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Frankenweenie\_129 (BM), Kela\_118 (BM),

Start 23:

- Found in 3 of 53 ( 5.7% ) of genes in pham
- Manual Annotations of this start: 3 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Frizzle\_20 (DA), Ghobes\_21 (DA), Sapo\_20 (DA),

Start 24:

- Found in 1 of 53 ( 1.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: phiAsp2\_67 (singleton),

Start 25:

- Found in 6 of 53 ( 11.3% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Henoccus\_37 (BH),

Start 26:

- Found in 5 of 53 ( 9.4% ) of genes in pham
- Manual Annotations of this start: 2 of 48
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Crosby\_37 (BH), Marky\_37 (BH),

Start 27:

- Found in 4 of 53 ( 7.5% ) of genes in pham
- Manual Annotations of this start: 4 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EhyElimayoE\_120 (BM), Kradal\_119 (BM), Quantum\_118 (BM), Satis\_119 (BM),

Start 28:

- Found in 5 of 53 ( 9.4% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 60.0% of time when present
- Phage (with cluster) where this start called: JustBecause\_117 (BM), Nirvana\_130 (BM), pZL12\_43c (singleton),

Start 29:

- Found in 11 of 53 ( 20.8% ) of genes in pham

- Manual Annotations of this start: 8 of 48
- Called 72.7% of time when present
- Phage (with cluster) where this start called: Araceli\_37 (BH), Bogota\_38 (BH), Intolerant\_36 (BH), JackieB\_36 (BH), LazerLemon\_37 (BH), Microdon\_36 (BH), Stuff\_37 (BH), UNTPL\_38 (BH),

Start 31:

- Found in 4 of 53 ( 7.5% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Petra\_23 (CV),

### **Summary by clusters:**

There are 8 clusters represented in this pham: singleton, BM, BH, CV, DG1, DA, DS, CT,

Info for manual annotations of cluster BH:

- Start number 25 was manually annotated 1 time for cluster BH.
- Start number 26 was manually annotated 2 times for cluster BH.
- Start number 29 was manually annotated 8 times for cluster BH.

Info for manual annotations of cluster BM:

- Start number 22 was manually annotated 2 times for cluster BM.
- Start number 27 was manually annotated 4 times for cluster BM.
- Start number 28 was manually annotated 1 time for cluster BM.

Info for manual annotations of cluster CT:

- Start number 20 was manually annotated 2 times for cluster CT.
- Start number 21 was manually annotated 11 times for cluster CT.

Info for manual annotations of cluster CV:

- Start number 31 was manually annotated 1 time for cluster CV.

Info for manual annotations of cluster DA:

- Start number 23 was manually annotated 3 times for cluster DA.

Info for manual annotations of cluster DG1:

- Start number 21 was manually annotated 8 times for cluster DG1.

Info for manual annotations of cluster DS:

- Start number 17 was manually annotated 1 time for cluster DS.
- Start number 18 was manually annotated 4 times for cluster DS.

### **Gene Information:**

Gene: Araceli\_37 Start: 28758, Stop: 29129, Start Num: 29

Candidate Starts for Araceli\_37:

(Start: 25 @28749 has 1 MA's), (Start: 26 @28752 has 2 MA's), (Start: 29 @28758 has 8 MA's), (33, 28782), (39, 28806), (45, 28833), (47, 28839), (53, 28872), (55, 28887), (59, 28908), (61, 28926), (67, 28962), (75, 29016), (76, 29019), (81, 29046), (87, 29079),

Gene: Bavilard\_22 Start: 19839, Stop: 20192, Start Num: 21

Candidate Starts for Bavilard\_22:

(Start: 21 @19839 has 19 MA's), (30, 19869), (41, 19920), (54, 19992), (56, 20001), (65, 20055), (70, 20085), (82, 20154), (85, 20172),

Gene: Beyoncage\_30 Start: 27124, Stop: 27528, Start Num: 21

Candidate Starts for Beyoncage\_30:

(1, 26074), (2, 26161), (3, 26269), (4, 26425), (5, 26452), (6, 26536), (8, 26887), (9, 26902), (10, 26923), (13, 26995), (Start: 21 @27124 has 19 MA's), (37, 27196), (38, 27199), (47, 27235), (54, 27280), (69, 27367), (91, 27493), (92, 27496),

Gene: BigChungus\_21 Start: 19097, Stop: 19450, Start Num: 20

Candidate Starts for BigChungus\_21:

(Start: 20 @19097 has 2 MA's), (Start: 21 @19100 has 19 MA's), (30, 19127), (46, 19202), (54, 19250), (56, 19259), (65, 19313), (82, 19412), (85, 19430),

Gene: BiteSize\_30 Start: 27124, Stop: 27528, Start Num: 21

Candidate Starts for BiteSize\_30:

(1, 26074), (2, 26161), (3, 26269), (4, 26425), (5, 26452), (6, 26536), (8, 26887), (9, 26902), (10, 26923), (13, 26995), (Start: 21 @27124 has 19 MA's), (37, 27196), (38, 27199), (47, 27235), (54, 27280), (69, 27367), (91, 27493), (92, 27496),

Gene: BlueNGold\_111 Start: 69226, Stop: 69600, Start Num: 18

Candidate Starts for BlueNGold\_111:

(Start: 18 @69226 has 4 MA's), (37, 69301), (50, 69361), (53, 69373), (56, 69394), (61, 69424), (62, 69436), (76, 69517), (79, 69535), (90, 69589), (92, 69595),

Gene: Bogota\_38 Start: 29151, Stop: 29522, Start Num: 29

Candidate Starts for Bogota\_38:

(Start: 29 @29151 has 8 MA's), (33, 29175), (45, 29226), (47, 29232), (53, 29265), (55, 29280), (57, 29289), (59, 29301), (67, 29355), (75, 29409), (76, 29412), (81, 29439), (87, 29472), (94, 29505),

Gene: Boopy\_112 Start: 69238, Stop: 69612, Start Num: 18

Candidate Starts for Boopy\_112:

(Start: 18 @69238 has 4 MA's), (37, 69313), (50, 69373), (53, 69385), (56, 69406), (61, 69436), (62, 69448), (76, 69529), (79, 69547), (90, 69601), (92, 69607),

Gene: CherryonLim\_23 Start: 19809, Stop: 20159, Start Num: 21

Candidate Starts for CherryonLim\_23:

(Start: 20 @19806 has 2 MA's), (Start: 21 @19809 has 19 MA's), (46, 19911), (54, 19959), (56, 19968), (60, 19986), (65, 20022), (82, 20121), (85, 20139),

Gene: Crosby\_37 Start: 28891, Stop: 29268, Start Num: 26

Candidate Starts for Crosby\_37:

(Start: 25 @28888 has 1 MA's), (Start: 26 @28891 has 2 MA's), (Start: 29 @28897 has 8 MA's), (33, 28921), (45, 28972), (47, 28978), (53, 29011), (55, 29026), (59, 29047), (67, 29101), (75, 29155), (76, 29158), (81, 29185), (85, 29206), (89, 29227), (94, 29251),

Gene: Djokovic\_30 Start: 27123, Stop: 27527, Start Num: 21

Candidate Starts for Djokovic\_30:

(1, 26073), (2, 26160), (3, 26268), (4, 26424), (5, 26451), (6, 26535), (8, 26886), (9, 26901), (10, 26922), (13, 26994), (Start: 21 @27123 has 19 MA's), (37, 27195), (38, 27198), (47, 27234), (54,

27279), (69, 27366), (91, 27492), (92, 27495),

Gene: EhyElimayoE\_120 Start: 78634, Stop: 79011, Start Num: 27

Candidate Starts for EhyElimayoE\_120:

(14, 78541), (15, 78544), (Start: 27 @78634 has 4 MA's), (52, 78745), (53, 78751), (59, 78787), (62, 78817), (74, 78892), (76, 78898), (79, 78916), (80, 78919), (86, 78946),

Gene: Elinal\_23 Start: 19050, Stop: 19403, Start Num: 21

Candidate Starts for Elinal\_23:

(Start: 21 @19050 has 19 MA's), (30, 19080), (41, 19131), (54, 19203), (56, 19212), (65, 19266), (70, 19296), (82, 19365), (85, 19383),

Gene: Feastonyeet\_21 Start: 19097, Stop: 19450, Start Num: 20

Candidate Starts for Feastonyeet\_21:

(Start: 20 @19097 has 2 MA's), (Start: 21 @19100 has 19 MA's), (30, 19127), (46, 19202), (54, 19250), (56, 19259), (65, 19313), (82, 19412), (85, 19430),

Gene: Forza\_112 Start: 69154, Stop: 69528, Start Num: 18

Candidate Starts for Forza\_112:

(Start: 18 @69154 has 4 MA's), (37, 69229), (50, 69289), (53, 69301), (56, 69322), (61, 69352), (62, 69364), (76, 69445), (79, 69463), (90, 69517), (92, 69523),

Gene: Frankenweenie\_129 Start: 83529, Stop: 83927, Start Num: 22

Candidate Starts for Frankenweenie\_129:

(Start: 22 @83529 has 2 MA's), (Start: 28 @83550 has 1 MA's), (32, 83574), (49, 83646), (52, 83661), (54, 83679), (62, 83733), (71, 83787), (76, 83814),

Gene: Frizzle\_20 Start: 18551, Stop: 18925, Start Num: 23

Candidate Starts for Frizzle\_20:

(Start: 23 @18551 has 3 MA's), (Start: 31 @18566 has 1 MA's), (51, 18668), (52, 18671), (55, 18692), (64, 18749), (68, 18773), (75, 18818), (79, 18839), (80, 18842), (87, 18881),

Gene: Ghobes\_21 Start: 18551, Stop: 18925, Start Num: 23

Candidate Starts for Ghobes\_21:

(Start: 23 @18551 has 3 MA's), (Start: 31 @18566 has 1 MA's), (34, 18593), (35, 18599), (51, 18668), (52, 18671), (55, 18692), (64, 18749), (68, 18773), (75, 18818), (79, 18839), (80, 18842), (87, 18881),

Gene: Henoccus\_37 Start: 28765, Stop: 29145, Start Num: 25

Candidate Starts for Henoccus\_37:

(Start: 25 @28765 has 1 MA's), (Start: 26 @28768 has 2 MA's), (Start: 29 @28774 has 8 MA's), (33, 28798), (39, 28822), (45, 28849), (47, 28855), (53, 28888), (55, 28903), (59, 28924), (61, 28942), (67, 28978), (75, 29032), (76, 29035), (81, 29062), (87, 29095),

Gene: Intolerant\_36 Start: 28786, Stop: 29157, Start Num: 29

Candidate Starts for Intolerant\_36:

(Start: 29 @28786 has 8 MA's), (33, 28810), (45, 28861), (47, 28867), (53, 28900), (55, 28915), (57, 28924), (59, 28936), (67, 28990), (75, 29044), (76, 29047), (81, 29074), (85, 29095), (89, 29116), (94, 29140),

Gene: JackieB\_36 Start: 28612, Stop: 28983, Start Num: 29

Candidate Starts for JackieB\_36:

(Start: 25 @28603 has 1 MA's), (Start: 26 @28606 has 2 MA's), (Start: 29 @28612 has 8 MA's), (33, 28636), (39, 28660), (45, 28687), (47, 28693), (53, 28726), (55, 28741), (59, 28762), (61, 28780), (67,

28816), (75, 28870), (76, 28873), (81, 28900), (87, 28933),

Gene: JustBecause\_117 Start: 77702, Stop: 78079, Start Num: 28

Candidate Starts for JustBecause\_117:

(Start: 22 @77681 has 2 MA's), (Start: 28 @77702 has 1 MA's), (32, 77726), (49, 77798), (52, 77813), (54, 77831), (62, 77885), (71, 77939), (77, 77975), (80, 77987),

Gene: KayGee\_22 Start: 19050, Stop: 19403, Start Num: 21

Candidate Starts for KayGee\_22:

(Start: 21 @19050 has 19 MA's), (30, 19080), (41, 19131), (54, 19203), (56, 19212), (65, 19266), (70, 19296), (82, 19365), (85, 19383),

Gene: Kela\_118 Start: 77561, Stop: 77959, Start Num: 22

Candidate Starts for Kela\_118:

(Start: 22 @77561 has 2 MA's), (Start: 28 @77582 has 1 MA's), (32, 77606), (49, 77678), (52, 77693), (54, 77711), (62, 77765), (71, 77819), (77, 77855), (80, 77867),

Gene: Kradal\_119 Start: 78631, Stop: 79008, Start Num: 27

Candidate Starts for Kradal\_119:

(11, 78439), (14, 78538), (15, 78541), (Start: 27 @78631 has 4 MA's), (52, 78742), (53, 78748), (59, 78784), (62, 78814), (74, 78889), (76, 78895), (79, 78913), (80, 78916), (86, 78943),

Gene: Lauer\_21 Start: 19099, Stop: 19452, Start Num: 21

Candidate Starts for Lauer\_21:

(Start: 21 @19099 has 19 MA's), (30, 19129), (41, 19180), (54, 19252), (56, 19261), (65, 19315), (70, 19345), (82, 19414), (85, 19432),

Gene: LazerLemon\_37 Start: 29273, Stop: 29647, Start Num: 29

Candidate Starts for LazerLemon\_37:

(7, 28925), (12, 29087), (Start: 25 @29264 has 1 MA's), (Start: 29 @29273 has 8 MA's), (42, 29330), (43, 29336), (61, 29441), (63, 29456), (67, 29477), (72, 29513), (75, 29531), (76, 29534), (77, 29543), (81, 29561), (84, 29570), (85, 29582),

Gene: LilyPad\_32 Start: 27930, Stop: 28334, Start Num: 21

Candidate Starts for LilyPad\_32:

(Start: 21 @27930 has 19 MA's), (41, 28014), (48, 28041), (55, 28089), (56, 28095), (58, 28101), (65, 28149), (66, 28155), (69, 28173), (71, 28191), (78, 28233), (88, 28284),

Gene: MAnor\_22 Start: 19067, Stop: 19420, Start Num: 21

Candidate Starts for MAnor\_22:

(Start: 20 @19064 has 2 MA's), (Start: 21 @19067 has 19 MA's), (30, 19097), (46, 19172), (54, 19220), (56, 19229), (60, 19247), (65, 19283), (69, 19307), (82, 19382), (85, 19400),

Gene: Madi\_30 Start: 27124, Stop: 27528, Start Num: 21

Candidate Starts for Madi\_30:

(13, 26995), (Start: 21 @27124 has 19 MA's), (37, 27196), (38, 27199), (47, 27235), (54, 27280), (60, 27307), (69, 27367), (88, 27478), (91, 27493),

Gene: Mareelih\_110 Start: 68656, Stop: 69030, Start Num: 18

Candidate Starts for Mareelih\_110:

(Start: 18 @68656 has 4 MA's), (37, 68731), (50, 68791), (53, 68803), (56, 68824), (61, 68854), (62, 68866), (76, 68947), (79, 68965), (90, 69019), (92, 69025),



Gene: Marky\_37 Start: 28616, Stop: 28993, Start Num: 26

Candidate Starts for Marky\_37:

(Start: 25 @28613 has 1 MA's), (Start: 26 @28616 has 2 MA's), (Start: 29 @28622 has 8 MA's), (45, 28697), (47, 28703), (50, 28724), (53, 28736), (55, 28751), (59, 28772), (67, 28826), (75, 28880), (76, 28883), (77, 28892), (81, 28910), (84, 28919), (85, 28931), (87, 28943), (89, 28952),

Gene: Mayweather\_23 Start: 19682, Stop: 20035, Start Num: 21

Candidate Starts for Mayweather\_23:

(Start: 20 @19679 has 2 MA's), (Start: 21 @19682 has 19 MA's), (30, 19712), (46, 19787), (54, 19835), (56, 19844), (60, 19862), (65, 19898), (69, 19922), (82, 19997), (85, 20015),

Gene: Microdon\_36 Start: 28594, Stop: 28965, Start Num: 29

Candidate Starts for Microdon\_36:

(19, 28552), (Start: 29 @28594 has 8 MA's), (33, 28618), (45, 28669), (47, 28675), (53, 28708), (55, 28723), (57, 28732), (59, 28744), (67, 28798), (75, 28852), (76, 28855), (85, 28903), (89, 28924), (94, 28948),

Gene: Nirvana\_130 Start: 81947, Stop: 82324, Start Num: 28

Candidate Starts for Nirvana\_130:

(Start: 22 @81926 has 2 MA's), (Start: 28 @81947 has 1 MA's), (32, 81971), (49, 82043), (52, 82058), (54, 82076), (62, 82130), (71, 82184), (76, 82211),

Gene: Petra\_23 Start: 19911, Stop: 20354, Start Num: 31

Candidate Starts for Petra\_23:

(16, 19824), (Start: 21 @19881 has 19 MA's), (Start: 31 @19911 has 1 MA's), (37, 19950), (54, 20034), (58, 20049), (68, 20118), (79, 20184), (83, 20199), (85, 20214), (87, 20226), (95, 20292),

Gene: Pons\_22 Start: 19057, Stop: 19407, Start Num: 21

Candidate Starts for Pons\_22:

(Start: 20 @19054 has 2 MA's), (Start: 21 @19057 has 19 MA's), (46, 19159), (54, 19207), (56, 19216), (60, 19234), (65, 19270), (82, 19369), (85, 19387),

Gene: PotPie\_22 Start: 19916, Stop: 20269, Start Num: 21

Candidate Starts for PotPie\_22:

(Start: 21 @19916 has 19 MA's), (30, 19946), (46, 20021), (54, 20069), (56, 20078), (65, 20132), (82, 20231), (85, 20249),

Gene: Quantum\_118 Start: 78631, Stop: 79008, Start Num: 27

Candidate Starts for Quantum\_118:

(11, 78439), (14, 78538), (15, 78541), (Start: 27 @78631 has 4 MA's), (52, 78742), (53, 78748), (59, 78784), (62, 78814), (74, 78889), (76, 78895), (79, 78913), (80, 78916), (86, 78943),

Gene: Sapo\_20 Start: 18495, Stop: 18878, Start Num: 23

Candidate Starts for Sapo\_20:

(Start: 23 @18495 has 3 MA's), (Start: 31 @18525 has 1 MA's), (36, 18561), (51, 18627), (52, 18630), (54, 18648), (68, 18732), (74, 18774), (87, 18840), (94, 18867),

Gene: Satis\_119 Start: 78627, Stop: 79004, Start Num: 27

Candidate Starts for Satis\_119:

(11, 78435), (14, 78534), (15, 78537), (Start: 27 @78627 has 4 MA's), (52, 78738), (53, 78744), (59, 78780), (62, 78810), (74, 78885), (76, 78891), (79, 78909), (80, 78912), (86, 78939),

Gene: SheckWes\_21 Start: 19054, Stop: 19404, Start Num: 21

Candidate Starts for SheckWes\_21:

(Start: 20 @19051 has 2 MA's), (Start: 21 @19054 has 19 MA's), (30, 19081), (46, 19156), (54, 19204), (56, 19213), (60, 19231), (65, 19267), (70, 19297), (82, 19366), (85, 19384),

Gene: Sienna\_30 Start: 27124, Stop: 27528, Start Num: 21

Candidate Starts for Sienna\_30:

(13, 26995), (Start: 21 @27124 has 19 MA's), (37, 27196), (38, 27199), (47, 27235), (54, 27280), (60, 27307), (69, 27367), (88, 27478), (91, 27493),

Gene: Sixama\_110 Start: 68663, Stop: 69067, Start Num: 17

Candidate Starts for Sixama\_110:

(Start: 17 @68663 has 1 MA's), (Start: 18 @68681 has 4 MA's), (37, 68765), (59, 68873), (65, 68912),

Gene: Stuff\_37 Start: 29069, Stop: 29440, Start Num: 29

Candidate Starts for Stuff\_37:

(Start: 29 @29069 has 8 MA's), (33, 29093), (39, 29117), (45, 29144), (47, 29150), (53, 29183), (55, 29198), (57, 29207), (59, 29219), (67, 29273), (75, 29327), (76, 29330), (85, 29378), (87, 29390), (94, 29423),

Gene: SummitAcademy\_21 Start: 19131, Stop: 19481, Start Num: 21

Candidate Starts for SummitAcademy\_21:

(Start: 20 @19128 has 2 MA's), (Start: 21 @19131 has 19 MA's), (30, 19158), (46, 19233), (54, 19281), (56, 19290), (65, 19344), (82, 19443), (85, 19461),

Gene: Suzy\_30 Start: 28265, Stop: 28669, Start Num: 21

Candidate Starts for Suzy\_30:

(9, 28043), (13, 28136), (Start: 21 @28265 has 19 MA's), (37, 28337), (38, 28340), (44, 28367), (47, 28376), (54, 28421), (69, 28508), (91, 28634), (92, 28637),

Gene: Terapin\_31 Start: 27125, Stop: 27529, Start Num: 21

Candidate Starts for Terapin\_31:

(1, 26075), (2, 26162), (3, 26270), (4, 26426), (5, 26453), (6, 26537), (8, 26888), (9, 26903), (10, 26924), (13, 26996), (Start: 21 @27125 has 19 MA's), (37, 27197), (38, 27200), (47, 27236), (54, 27281), (69, 27368), (91, 27494), (92, 27497),

Gene: UNTPL\_38 Start: 29132, Stop: 29503, Start Num: 29

Candidate Starts for UNTPL\_38:

(Start: 29 @29132 has 8 MA's), (33, 29156), (45, 29207), (47, 29213), (53, 29246), (55, 29261), (57, 29270), (59, 29282), (67, 29336), (75, 29390), (76, 29393), (81, 29420), (87, 29453), (94, 29486),

Gene: Vine\_23 Start: 20063, Stop: 20416, Start Num: 21

Candidate Starts for Vine\_23:

(Start: 21 @20063 has 19 MA's), (30, 20093), (41, 20144), (54, 20216), (56, 20225), (65, 20279), (70, 20309), (82, 20378), (85, 20396),

Gene: Yucky\_24 Start: 19922, Stop: 20275, Start Num: 21

Candidate Starts for Yucky\_24:

(Start: 21 @19922 has 19 MA's), (30, 19952), (41, 20003), (54, 20075), (56, 20084), (65, 20138), (70, 20168), (82, 20237), (85, 20255),

Gene: pZL12\_43c Start: 31467, Stop: 31108, Start Num: 28

Candidate Starts for pZL12\_43c:

(Start: 28 @31467 has 1 MA's), (47, 31383), (56, 31329), (59, 31317), (60, 31314), (81, 31179), (93, 31119),

Gene: phiAsp2\_67 Start: 54403, Stop: 54783, Start Num: 24

Candidate Starts for phiAsp2\_67:

(24, 54403), (40, 54466), (56, 54544), (65, 54598), (73, 54655), (93, 54757),