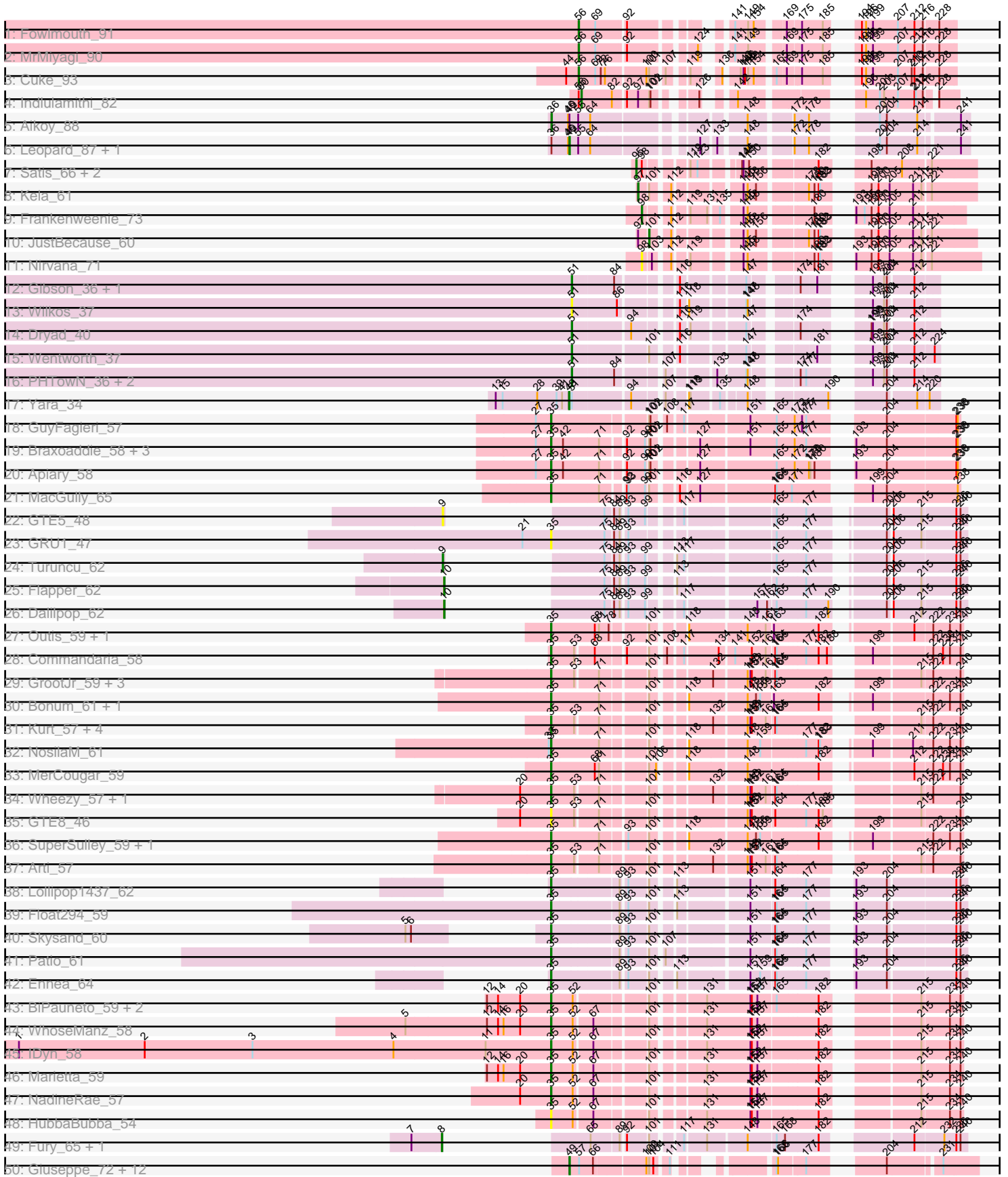


Pham 163352







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 163352 Report

This analysis was run 04/28/24 on database version 559.

Pham number 163352 has 207 members, 31 are drafts.

Phages represented in each track:

- Track 1 : Fowlmouth\_91
- Track 2 : MrMiyagi\_90
- Track 3 : Cuke\_93
- Track 4 : Indlulamithi\_82
- Track 5 : Aikoy\_88
- Track 6 : Leopard\_87, Onyinye\_87
- Track 7 : Satis\_66, EhyElimayoE\_66, Kradal\_66
- Track 8 : Kela\_61
- Track 9 : Frankenweenie\_73
- Track 10 : JustBecause\_60
- Track 11 : Nirvana\_71
- Track 12 : Gibson\_36, Rooney\_36
- Track 13 : Wilkos\_37
- Track 14 : Dryad\_40
- Track 15 : Wentworth\_37
- Track 16 : PHTown\_36, Lizz\_36, ShakeNBake\_36
- Track 17 : Yara\_34
- Track 18 : GuyFagieri\_57
- Track 19 : Braxoaddie\_58, Polyyuki\_58, Maselop\_58, CoffeeBean\_59
- Track 20 : Apiary\_58
- Track 21 : MacGully\_65
- Track 22 : GTE5\_48
- Track 23 : GRU1\_47
- Track 24 : Turuncu\_62
- Track 25 : Flapper\_62
- Track 26 : Dalilpop\_62
- Track 27 : Outis\_59, StarStruck\_59
- Track 28 : Commandaria\_58
- Track 29 : GrootJr\_59, NovumRegina\_57, NatB6\_57, Foxboro\_58
- Track 30 : Bonum\_61, Kabluna\_61
- Track 31 : Kurt\_57, KidneyBean\_57, Jifall16\_56, Emianna\_57, Phomeo\_56
- Track 32 : NosilaM\_61
- Track 33 : MerCougar\_59
- Track 34 : Wheezy\_57, Tracker\_57
- Track 35 : GTE8\_46
- Track 36 : SuperSulley\_59, Buggaboo\_59
- Track 37 : Arti\_57

- Track 38 : Lollipop1437\_62
- Track 39 : Float294\_59
- Track 40 : Skysand\_60
- Track 41 : Patio\_61
- Track 42 : Ennea\_64
- Track 43 : BiPauneto\_59, Sukkupi\_58, Yndexa\_58
- Track 44 : WhoseManz\_58
- Track 45 : IDyn\_58
- Track 46 : Marietta\_59
- Track 47 : NadineRae\_57
- Track 48 : HubbaBubba\_54
- Track 49 : Fury\_65, Pleakley\_65
- Track 50 : Giuseppe\_72, Mopey\_72, Visconti\_71, Adjutor\_68, Nova\_70, Butterscotch\_68, Thoth\_70, SirHarley\_72, Delton\_70, BigMama\_68, Penelope2018\_70, Helpful\_73, Prager\_70
- Track 51 : Erk16\_70, WaldoWhy\_72, Chill\_72
- Track 52 : Gumball\_70, Troll4\_70
- Track 53 : PBI1\_66
- Track 54 : KandZ\_68, PLOT\_70
- Track 55 : Hawkeye\_82
- Track 56 : Djokovic\_80, Terapin\_81, BiteSize\_80, Beyoncage\_80
- Track 57 : Madi\_79
- Track 58 : Suzy\_77
- Track 59 : LilyPad\_77
- Track 60 : Sienna\_80
- Track 61 : LittleFella\_79
- Track 62 : LuckyLeo\_83, Apeppi\_81
- Track 63 : Lila22\_90
- Track 64 : Erutan\_85
- Track 65 : Penjamin420\_86
- Track 66 : Genamy16\_86, Rumi\_84, Avian\_83, Alyssmiracle\_86, NovaSharks\_85
- Track 67 : Xenia2\_88, DumpTruck\_88
- Track 68 : Ranch\_89
- Track 69 : Sadboi\_85
- Track 70 : Gibbin\_87, GretelLyn\_85
- Track 71 : Lambo\_85
- Track 72 : ParvusTarda\_85
- Track 73 : Wojtek\_78
- Track 74 : Tillicus\_81
- Track 75 : Patos\_90, NorManre\_90
- Track 76 : Zany\_84
- Track 77 : Jalebi\_85, Sampudon\_87
- Track 78 : DoobyDoo\_83
- Track 79 : MoiGyank\_90
- Track 80 : GOATification\_84, Fulcrum\_84
- Track 81 : Yikes\_86
- Track 82 : OtterstedtS21\_86
- Track 83 : BirthdayBoy\_88
- Track 84 : Ajin\_79, RikSengupta\_77, Sparcetus\_77
- Track 85 : Kate\_73, Krampus\_73, NarutoRun\_73, Anakin\_73, AnnaSerena\_73
- Track 86 : PhunaPhoke\_73, Gilda\_73, Karate\_72, Rachella\_73
- Track 87 : JingleBells\_74, JDawG\_72
- Track 88 : OverHedge\_73, Pharpay\_72

- Track 89 : FreddieHg\_74, Chivey\_74, Hiddenleaf\_74
- Track 90 : Aesir\_72
- Track 91 : Potty\_72, Neptune\_73
- Track 92 : Crestdrop\_76
- Track 93 : Poultruss\_73
- Track 94 : Tedro\_73
- Track 95 : Cybele\_73
- Track 96 : MortySmith\_71, Dauntless\_73, Erudite\_72, Snakehole\_74
- Track 97 : CoolCookie\_78
- Track 98 : DannyDe\_74
- Track 99 : TinyMiny\_77
- Track 100 : Haunter\_74
- Track 101 : Rie18\_73
- Track 102 : Hager\_75
- Track 103 : Kors\_78
- Track 104 : PotatoChip\_45, Darwin\_46, Kimchi1738\_42, PeteyPab\_44, Zion\_45
- Track 105 : C3PO\_42, Cruella\_42
- Track 106 : Stickynote\_44
- Track 107 : Oaker\_79
- Track 108 : Damien\_79, Cborch11\_80
- Track 109 : Puissant\_80
- Track 110 : Predator\_79
- Track 111 : Megatron06\_82, Beckerton\_78
- Track 112 : Thumb\_80
- Track 113 : Phreeze\_78
- Track 114 : Konstantine\_82
- Track 115 : Barnyard\_88
- Track 116 : DrLupo\_91
- Track 117 : MontyDev\_83, Papyrus\_82, Riparian\_85, Candle\_81, Weiss13\_83, Zenon\_85, Yelo\_82, Nilo\_86
- Track 118 : Send513\_83, Rope\_83
- Track 119 : Madruga\_91, Patience\_93
- Track 120 : Labelle\_92
- Track 121 : P1201\_57
- Track 122 : ChewyVIII\_69

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

The start number called the most often in the published annotations is 35, it was called in 39 of the 176 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Apiary\_58, Arti\_57, BiPauneto\_59, Bonum\_61, Braxoaddie\_58, Buggaboo\_59, ChewyVIII\_69, CoffeeBean\_59, Commandaria\_58, Emianna\_57, Ennea\_64, Float294\_59, Foxboro\_58, GRU1\_47, GTE8\_46, GrootJr\_59, GuyFagieri\_57, HubbaBubba\_54, IDyn\_58, Jifall16\_56, Kabluna\_61, KidneyBean\_57, Kurt\_57, Lollipop1437\_62, MacGully\_65, Marietta\_59, Maselop\_58, MerCougar\_59, NadineRae\_57, NatB6\_57, NosilaM\_61, NovumRegina\_57, Outis\_59, Patio\_61, Phomeo\_56, Polyuyuki\_58, Skysand\_60, StarStruck\_59, Sukkupi\_58, SuperSulley\_59, Tracker\_57, Wheezy\_57, WhoseManz\_58, Yndexa\_58,

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

- 

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

- Adjutor\_68, Aesir\_72, Aikoy\_88, Ajin\_79, Alyssamiracle\_86, Anakin\_73, AnnaSerena\_73, Apeppi\_81, Avian\_83, Barnyard\_88, Beckerton\_78, Beyoncage\_80, BigMama\_68, BirthdayBoy\_88, BiteSize\_80, Butterscotch\_68, C3PO\_42, Candle\_81, Cborch11\_80, Chill\_72, Chivey\_74, CoolCookie\_78, Crestdrop\_76, Cruella\_42, Cuke\_93, Cybele\_73, Dalilpop\_62, Damien\_79, DannyDe\_74, Darwin\_46, Dauntless\_73, Delton\_70, Djokovic\_80, DoobyDoo\_83, DrLupo\_91, Dryad\_40, DumpTruck\_88, EhyElimayoE\_66, Erk16\_70, Erudite\_72, Erutan\_85, Flapper\_62, Fowlmouth\_91, Frankenweenie\_73, FreddieHg\_74, Fulcrum\_84, Fury\_65, GOATification\_84, GTE5\_48, Genamy16\_86, Gibbin\_87, Gibson\_36, Gilda\_73, Giuseppe\_72, Gretellyn\_85, Gumball\_70, Hager\_75, Haunter\_74, Hawkeye\_82, Helpful\_73, Hiddenleaf\_74, Indlulamithi\_82, JDawG\_72, Jalebi\_85, JingleBells\_74, JustBecause\_60, KandZ\_68, Karate\_72, Kate\_73, Kela\_61, Kimchi1738\_42, Konstantine\_82, Kors\_78, Kradal\_66, Krampus\_73, Labelle\_92, Lambo\_85, Leopard\_87, Lila22\_90, LilyPad\_77, LittleFella\_79, Lizz\_36, LuckyLeo\_83, Madi\_79, Madrug\_91, Megatron06\_82, MoiGyank\_90, MontyDev\_83, Mopey\_72, MortySmith\_71, MrMiyagi\_90, NarutoRun\_73, Neptune\_73, Nilo\_86, Nirvana\_71, NorManre\_90, NovaSharks\_85, Nova\_70, Oaker\_79, Onyinye\_87, OtterstedtS21\_86, OverHedge\_73, P1201\_57, PBI1\_66, PHTowN\_36, PLOT\_70, Papyrus\_82, ParvusTarda\_85, Patience\_93, Patos\_90, Penelope2018\_70, Penjamin420\_86, PeteyPab\_44, Pharpay\_72, Phreeze\_78, PhunaPhoke\_73, Pleakley\_65, PotatoChip\_45, Potty\_72, Poultruss\_73, Prager\_70, Predator\_79, Puissant\_80, Rachella\_73, Ranch\_89, Rie18\_73, RikSengupta\_77, Riparian\_85, Rooney\_36, Rope\_83, Rumi\_84, Sadboi\_85, Sampudon\_87, Satis\_66, Send513\_83, ShakeNBake\_36, Sienna\_80, SirHarley\_72, Snakehole\_74, Sparcetus\_77, Stickynote\_44, Suzy\_77, Tedro\_73, Terapin\_81, Thoth\_70, Thumb\_80, Tillicus\_81, TinyMiny\_77, Troll4\_70, Turuncu\_62, Visconti\_71, WaldoWhy\_72, Weiss13\_83, Wentworth\_37, Wilkos\_37, Wojtek\_78, Xenia2\_88, Yara\_34, Yelo\_82, Yikes\_86, Zany\_84, Zenon\_85, Zion\_45,

### Summary by start number:

Start 8:

- Found in 2 of 207 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 2 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fury\_65 (CR5), Pleakley\_65 (CR5),

Start 9:

- Found in 2 of 207 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GTE5\_48 (CR1), Turuncu\_62 (CR1),

Start 10:

- Found in 2 of 207 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 2 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dalilpop\_62 (CR1), Flapper\_62 (CR1),

Start 21:

- Found in 2 of 207 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Suzy\_77 (DG1),

Start 25:

- Found in 6 of 207 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 6 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beyoncage\_80 (DG1), BiteSize\_80 (DG1), Djokovic\_80 (DG1), Madi\_79 (DG1), Sienna\_80 (DG1), Terapin\_81 (DG1),

Start 29:

- Found in 1 of 207 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LilyPad\_77 (DG1),

Start 31:

- Found in 32 of 207 ( 15.5% ) of genes in pham
- Manual Annotations of this start: 11 of 176
- Called 34.4% of time when present
- Phage (with cluster) where this start called: Anakin\_73 (EF), AnnaSerena\_73 (EF), Chivey\_74 (EF), FreddieHg\_74 (EF), Hiddenleaf\_74 (EF), Kate\_73 (EF), Krampus\_73 (EF), NarutoRun\_73 (EF), Neptune\_73 (EF), Potty\_72 (EF), Rie18\_73 (EF),

Start 32:

- Found in 14 of 207 ( 6.8% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 7.1% of time when present
- Phage (with cluster) where this start called: LittleFella\_79 (DG2),

Start 33:

- Found in 38 of 207 ( 18.4% ) of genes in pham
- Manual Annotations of this start: 14 of 176
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Aesir\_72 (EF), Crestdrop\_76 (EF), Cybele\_73 (EF), DannyDe\_74 (EF), Dauntless\_73 (EF), Erudite\_72 (EF), Gilda\_73 (EF), Hager\_75 (EF), Haunter\_74 (EF), JDawG\_72 (EF), JingleBells\_74 (EF), Karate\_72 (EF), MortySmith\_71 (EF), PhunaPhoke\_73 (EF), Poultriss\_73 (EF), Rachella\_73 (EF), Snakehole\_74 (EF), Tedro\_73 (EF), TinyMiny\_77 (EF),

Start 35:

- Found in 44 of 207 ( 21.3% ) of genes in pham
- Manual Annotations of this start: 39 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Apiary\_58 (CR), Arti\_57 (CR2), BiPauneto\_59 (CR4), Bonum\_61 (CR2), Braxoaddie\_58 (CR), Buggaboo\_59 (CR2), ChewyVIII\_69 (singleton), CoffeeBean\_59 (CR), Commandaria\_58 (CR2), Emianna\_57 (CR2), Ennea\_64 (CR3), Float294\_59 (CR3), Foxboro\_58 (CR2),



GRU1\_47 (CR1), GTE8\_46 (CR2), GrootJr\_59 (CR2), GuyFagieri\_57 (CR), HubbaBubba\_54 (CR4), IDyn\_58 (CR4), Jifall16\_56 (CR2), Kabluna\_61 (CR2), KidneyBean\_57 (CR2), Kurt\_57 (CR2), Lollipop1437\_62 (CR3), MacGully\_65 (CR), Marietta\_59 (CR4), Maselop\_58 (CR), MerCougar\_59 (CR2), NadineRae\_57 (CR4), NatB6\_57 (CR2), NosilaM\_61 (CR2), NovumRegina\_57 (CR2), Outis\_59 (CR2), Patio\_61 (CR3), Phomeo\_56 (CR2), Polyuyuki\_58 (CR), Skysand\_60 (CR3), StarStruck\_59 (CR2), Sukkupi\_58 (CR4), SuperSulley\_59 (CR2), Tracker\_57 (CR2), Wheezy\_57 (CR2), WhoseManz\_58 (CR4), Yndexa\_58 (CR4),

Start 36:

- Found in 3 of 207 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Aikoy\_88 (AE),

Start 44:

- Found in 11 of 207 ( 5.3% ) of genes in pham
- Manual Annotations of this start: 8 of 176
- Called 90.9% of time when present
- Phage (with cluster) where this start called: Candle\_81 (R), MontyDev\_83 (R), Nilo\_86 (R), Papyrus\_82 (R), Riparian\_85 (R), Rope\_83 (R), Send513\_83 (R), Weiss13\_83 (R), Yelo\_82 (R), Zenon\_85 (R),

Start 48:

- Found in 1 of 207 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Yara\_34 (BN),

Start 49:

- Found in 30 of 207 ( 14.5% ) of genes in pham
- Manual Annotations of this start: 20 of 176
- Called 70.0% of time when present
- Phage (with cluster) where this start called: Adjutor\_68 (D1), BigMama\_68 (D1), Butterscotch\_68 (D1), Chill\_72 (D1), Delton\_70 (D1), Erk16\_70 (D1), Giuseppe\_72 (D1), Hawkeye\_82 (D2), Helpful\_73 (D1), KandZ\_68 (D1), Leopard\_87 (AE), Mopey\_72 (D1), Nova\_70 (D1), Onyinye\_87 (AE), PLOT\_70 (D1), Penelope2018\_70 (D1), Prager\_70 (D1), SirHarley\_72 (D1), Thoth\_70 (D1), Visconti\_71 (D1), WaldoWhy\_72 (D1),

Start 51:

- Found in 9 of 207 ( 4.3% ) of genes in pham
- Manual Annotations of this start: 7 of 176
- Called 88.9% of time when present
- Phage (with cluster) where this start called: Dryad\_40 (BN), Gibson\_36 (BN), Lizz\_36 (BN), PHTowN\_36 (BN), Rooney\_36 (BN), ShakeNBake\_36 (BN), Wentworth\_37 (BN), Wilkos\_37 (BN),

Start 56:

- Found in 4 of 207 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 3 of 176
- Called 75.0% of time when present

- Phage (with cluster) where this start called: Cuke\_93 (AC), Fowlmouth\_91 (AC), MrMiyagi\_90 (AC),

#### Start 59:

- Found in 32 of 207 ( 15.5% ) of genes in pham
- Manual Annotations of this start: 23 of 176
- Called 93.8% of time when present
- Phage (with cluster) where this start called: Alyssamiracle\_86 (DV), Apeppi\_81 (DV), Avian\_83 (DV), BirthdayBoy\_88 (DV), DoobyDoo\_83 (DV), DumpTruck\_88 (DV), Erutan\_85 (DV), Fulcrum\_84 (DV), GOATification\_84 (DV), Genamy16\_86 (DV), Gibbin\_87 (DV), GretelLyn\_85 (DV), Jalebi\_85 (DV), Lambo\_85 (DV), Lila22\_90 (DV), LuckyLeo\_83 (DV), MoiGyank\_90 (DV), NorManre\_90 (DV), NovaSharks\_85 (DV), OtterstedtS21\_86 (DV), ParvusTarda\_85 (DV), Patos\_90 (DV), Penjamin420\_86 (DV), Ranch\_89 (DV), Rumi\_84 (DV), Sampudon\_87 (DV), Tillicus\_81 (DV), Wojtek\_78 (DV), Xenia2\_88 (DV), Zany\_84 (DV),

#### Start 60:

- Found in 1 of 207 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Indlulamithi\_82 (AC),

#### Start 61:

- Found in 37 of 207 ( 17.9% ) of genes in pham
- Manual Annotations of this start: 2 of 176
- Called 18.9% of time when present
- Phage (with cluster) where this start called: Ajin\_79 (EF), CoolCookie\_78 (EF), Kors\_78 (EF), OverHedge\_73 (EF), Pharpay\_72 (EF), RikSengupta\_77 (EF), Sparcetus\_77 (EF),

#### Start 62:

- Found in 1 of 207 ( 0.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: P1201\_57 (singleton),

#### Start 66:

- Found in 21 of 207 ( 10.1% ) of genes in pham
- Manual Annotations of this start: 2 of 176
- Called 9.5% of time when present
- Phage (with cluster) where this start called: Gumball\_70 (D1), Troll4\_70 (D1),

#### Start 68:

- Found in 12 of 207 ( 5.8% ) of genes in pham
- Manual Annotations of this start: 8 of 176
- Called 66.7% of time when present
- Phage (with cluster) where this start called: C3PO\_42 (EN), Cruella\_42 (EN), Darwin\_46 (EN), Kimchi1738\_42 (EN), PeteyPab\_44 (EN), PotatoChip\_45 (EN), Stickynote\_44 (EN), Zion\_45 (EN),

#### Start 71:

- Found in 56 of 207 ( 27.1% ) of genes in pham
- Manual Annotations of this start: 2 of 176

- Called 3.6% of time when present
- Phage (with cluster) where this start called: Sadboi\_85 (DV), Yikes\_86 (DV),

#### Start 81:

- Found in 8 of 207 ( 3.9% ) of genes in pham
- Manual Annotations of this start: 7 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beckerton\_78 (H1), Cborch11\_80 (H1), Damien\_79 (H1), Konstantine\_82 (H1), Megatron06\_82 (H1), Oaker\_79 (H1), Phreeze\_78 (H1), Thumb\_80 (H1),

#### Start 83:

- Found in 11 of 207 ( 5.3% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 9.1% of time when present
- Phage (with cluster) where this start called: Predator\_79 (H1),

#### Start 85:

- Found in 1 of 207 ( 0.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Puissant\_80 (H1),

#### Start 88:

- Found in 3 of 207 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 3 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Labelle\_92 (U), Madruga\_91 (U), Patience\_93 (U),

#### Start 90:

- Found in 2 of 207 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 2 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Barnyard\_88 (H2), DrLupo\_91 (H2),

#### Start 95:

- Found in 3 of 207 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 3 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EhyElimayoE\_66 (BM), Kradal\_66 (BM), Satis\_66 (BM),

#### Start 97:

- Found in 3 of 207 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Kela\_61 (BM),

#### Start 98:

- Found in 5 of 207 ( 2.4% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 40.0% of time when present

- Phage (with cluster) where this start called: Frankenweenie\_73 (BM), Nirvana\_71 (BM),

Start 100:

- Found in 26 of 207 ( 12.6% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 3.8% of time when present
- Phage (with cluster) where this start called: PBI1\_66 (D1),

Start 101:

- Found in 99 of 207 ( 47.8% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 1.0% of time when present
- Phage (with cluster) where this start called: JustBecause\_60 (BM),

### **Summary by clusters:**

There are 22 clusters represented in this pham: singleton, BM, BN, DV, AC, EN, AE, EF, DG2, R, U, CR, CR2, CR3, CR1, CR4, CR5, H2, H1, DG1, D2, D1,

Info for manual annotations of cluster AC:

- Start number 56 was manually annotated 3 times for cluster AC.
- Start number 60 was manually annotated 1 time for cluster AC.

Info for manual annotations of cluster AE:

- Start number 36 was manually annotated 1 time for cluster AE.
- Start number 49 was manually annotated 2 times for cluster AE.

Info for manual annotations of cluster BM:

- Start number 95 was manually annotated 3 times for cluster BM.
- Start number 97 was manually annotated 1 time for cluster BM.
- Start number 98 was manually annotated 1 time for cluster BM.
- Start number 101 was manually annotated 1 time for cluster BM.

Info for manual annotations of cluster BN:

- Start number 48 was manually annotated 1 time for cluster BN.
- Start number 51 was manually annotated 7 times for cluster BN.

Info for manual annotations of cluster CR:

- Start number 35 was manually annotated 6 times for cluster CR.

Info for manual annotations of cluster CR1:

- Start number 9 was manually annotated 1 time for cluster CR1.
- Start number 10 was manually annotated 2 times for cluster CR1.

Info for manual annotations of cluster CR2:

- Start number 35 was manually annotated 20 times for cluster CR2.

Info for manual annotations of cluster CR3:

- Start number 35 was manually annotated 5 times for cluster CR3.

Info for manual annotations of cluster CR4:

- Start number 35 was manually annotated 7 times for cluster CR4.

Info for manual annotations of cluster CR5:

- Start number 8 was manually annotated 2 times for cluster CR5.

Info for manual annotations of cluster D1:

- Start number 49 was manually annotated 17 times for cluster D1.
- Start number 66 was manually annotated 2 times for cluster D1.
- Start number 100 was manually annotated 1 time for cluster D1.

Info for manual annotations of cluster D2:

- Start number 49 was manually annotated 1 time for cluster D2.

Info for manual annotations of cluster DG1:

- Start number 21 was manually annotated 1 time for cluster DG1.
- Start number 25 was manually annotated 6 times for cluster DG1.
- Start number 29 was manually annotated 1 time for cluster DG1.

Info for manual annotations of cluster DG2:

- Start number 32 was manually annotated 1 time for cluster DG2.

Info for manual annotations of cluster DV:

- Start number 59 was manually annotated 23 times for cluster DV.
- Start number 71 was manually annotated 2 times for cluster DV.

Info for manual annotations of cluster EF:

- Start number 31 was manually annotated 11 times for cluster EF.
- Start number 33 was manually annotated 14 times for cluster EF.
- Start number 61 was manually annotated 2 times for cluster EF.

Info for manual annotations of cluster EN:

- Start number 68 was manually annotated 8 times for cluster EN.

Info for manual annotations of cluster H1:

- Start number 81 was manually annotated 7 times for cluster H1.
- Start number 83 was manually annotated 1 time for cluster H1.

Info for manual annotations of cluster H2:

- Start number 90 was manually annotated 2 times for cluster H2.

Info for manual annotations of cluster R:

- Start number 44 was manually annotated 8 times for cluster R.

Info for manual annotations of cluster U:

- Start number 88 was manually annotated 3 times for cluster U.

### ***Gene Information:***

Gene: Adjutor\_68 Start: 54806, Stop: 55477, Start Num: 49

Candidate Starts for Adjutor\_68:

(Start: 49 @54806 has 20 MA's), (57, 54827), (Start: 66 @54857 has 2 MA's), (Start: 100 @54959 has 1 MA's), (Start: 101 @54965 has 1 MA's), (104, 54974), (111, 54998), (165, 55133), (166, 55136),

(177, 55190), (204, 55307), (231, 55406),

Gene: Aesir\_72 Start: 51638, Stop: 52348, Start Num: 33

Candidate Starts for Aesir\_72:

(Start: 31 @51635 has 11 MA's), (Start: 33 @51638 has 14 MA's), (Start: 61 @51716 has 2 MA's), (92, 51794), (117, 51887), (123, 51908), (177, 52091), (190, 52139), (204, 52211), (222, 52298),

Gene: Aikoy\_88 Start: 61398, Stop: 62117, Start Num: 36

Candidate Starts for Aikoy\_88:

(Start: 36 @61398 has 1 MA's), (46, 61434), (Start: 49 @61437 has 20 MA's), (55, 61455), (64, 61479), (148, 61746), (172, 61827), (178, 61857), (201, 61953), (204, 61968), (214, 62031), (241, 62100),

Gene: Ajin\_79 Start: 52158, Stop: 52784, Start Num: 61

Candidate Starts for Ajin\_79:

(Start: 33 @52086 has 14 MA's), (Start: 61 @52158 has 2 MA's), (96, 52257), (99, 52275), (119, 52335), (159, 52467), (177, 52533), (194, 52596), (195, 52602), (204, 52650), (230, 52752),

Gene: Alyssamiracle\_86 Start: 56530, Stop: 57204, Start Num: 59

Candidate Starts for Alyssamiracle\_86:

(Start: 49 @56515 has 20 MA's), (58, 56527), (Start: 59 @56530 has 23 MA's), (Start: 71 @56569 has 2 MA's), (120, 56722), (130, 56749), (152, 56830), (164, 56866), (196, 56998), (199, 57013), (207, 57064),

Gene: Anakin\_73 Start: 51949, Stop: 52662, Start Num: 31

Candidate Starts for Anakin\_73:

(Start: 31 @51949 has 11 MA's), (Start: 33 @51952 has 14 MA's), (Start: 61 @52030 has 2 MA's), (92, 52108), (123, 52222), (139, 52273), (177, 52405), (204, 52525), (222, 52612),

Gene: AnnaSerena\_73 Start: 51983, Stop: 52696, Start Num: 31

Candidate Starts for AnnaSerena\_73:

(Start: 31 @51983 has 11 MA's), (Start: 33 @51986 has 14 MA's), (Start: 61 @52064 has 2 MA's), (92, 52142), (123, 52256), (139, 52307), (177, 52439), (204, 52559), (222, 52646),

Gene: Apeppi\_81 Start: 57772, Stop: 58446, Start Num: 59

Candidate Starts for Apeppi\_81:

(58, 57769), (Start: 59 @57772 has 23 MA's), (99, 57901), (120, 57964), (130, 57991), (152, 58072), (164, 58108), (177, 58168), (183, 58198), (196, 58240), (207, 58306), (214, 58348),

Gene: Apiary\_58 Start: 42343, Stop: 41603, Start Num: 35

Candidate Starts for Apiary\_58:

(27, 42370), (Start: 35 @42343 has 39 MA's), (42, 42319), (Start: 71 @42244 has 2 MA's), (92, 42202), (99, 42163), (Start: 101 @42160 has 1 MA's), (102, 42157), (127, 42082), (165, 41926), (172, 41893), (178, 41863), (179, 41860), (180, 41851), (193, 41815), (204, 41749), (236, 41611), (238, 41608),

Gene: Arti\_57 Start: 44353, Stop: 43622, Start Num: 35

Candidate Starts for Arti\_57:

(Start: 35 @44353 has 39 MA's), (53, 44305), (Start: 71 @44263 has 2 MA's), (Start: 101 @44176 has 1 MA's), (132, 44071), (148, 44005), (151, 43999), (152, 43996), (161, 43966), (164, 43951), (165, 43948), (215, 43702), (222, 43681), (240, 43627),

Gene: Avian\_83 Start: 56261, Stop: 56935, Start Num: 59

Candidate Starts for Avian\_83:

(Start: 49 @56246 has 20 MA's), (58, 56258), (Start: 59 @56261 has 23 MA's), (Start: 71 @56300 has 2 MA's), (120, 56453), (130, 56480), (152, 56561), (164, 56597), (196, 56729), (199, 56744), (207, 56795),

Gene: Barnyard\_88 Start: 60764, Stop: 61486, Start Num: 90

Candidate Starts for Barnyard\_88:

(Start: 90 @60764 has 2 MA's), (Start: 100 @60818 has 1 MA's), (123, 60872), (138, 60935), (143, 60962), (153, 60989), (157, 60998), (158, 61001), (164, 61037), (177, 61103), (178, 61109), (184, 61133), (189, 61148), (201, 61262), (219, 61367), (237, 61421), (242, 61430),

Gene: Beckerton\_78 Start: 59931, Stop: 60683, Start Num: 81

Candidate Starts for Beckerton\_78:

(Start: 81 @59931 has 7 MA's), (122, 60102), (137, 60159), (145, 60204), (153, 60225), (157, 60234), (164, 60273), (173, 60315), (178, 60339), (179, 60342), (184, 60363), (186, 60369), (192, 60408), (195, 60435), (204, 60483), (225, 60582), (235, 60606),

Gene: Beyoncage\_80 Start: 55697, Stop: 56518, Start Num: 25

Candidate Starts for Beyoncage\_80:

(18, 55658), (Start: 25 @55697 has 6 MA's), (47, 55769), (58, 55793), (Start: 71 @55835 has 2 MA's), (92, 55889), (Start: 101 @55937 has 1 MA's), (107, 55961), (116, 55985), (119, 56000), (172, 56186),

Gene: BiPauneto\_59 Start: 43866, Stop: 43126, Start Num: 35

Candidate Starts for BiPauneto\_59:

(12, 43998), (14, 43974), (20, 43929), (Start: 35 @43866 has 39 MA's), (52, 43821), (Start: 101 @43689 has 1 MA's), (131, 43596), (151, 43503), (152, 43500), (157, 43488), (165, 43452), (182, 43368), (215, 43206), (234, 43152), (240, 43131),

Gene: BigMama\_68 Start: 54879, Stop: 55550, Start Num: 49

Candidate Starts for BigMama\_68:

(Start: 49 @54879 has 20 MA's), (57, 54900), (Start: 66 @54930 has 2 MA's), (Start: 100 @55032 has 1 MA's), (Start: 101 @55038 has 1 MA's), (104, 55047), (111, 55071), (165, 55206), (166, 55209), (177, 55263), (204, 55380), (231, 55479),

Gene: BirthdayBoy\_88 Start: 58563, Stop: 59237, Start Num: 59

Candidate Starts for BirthdayBoy\_88:

(Start: 32 @58503 has 1 MA's), (40, 58527), (Start: 59 @58563 has 23 MA's), (Start: 71 @58602 has 2 MA's), (120, 58755), (152, 58863), (164, 58899), (183, 58989), (196, 59031), (207, 59097), (214, 59139),

Gene: BiteSize\_80 Start: 55783, Stop: 56604, Start Num: 25

Candidate Starts for BiteSize\_80:

(18, 55744), (Start: 25 @55783 has 6 MA's), (47, 55855), (58, 55879), (Start: 71 @55921 has 2 MA's), (92, 55975), (Start: 101 @56023 has 1 MA's), (107, 56047), (116, 56071), (119, 56086), (172, 56272),

Gene: Bonum\_61 Start: 45017, Stop: 44271, Start Num: 35

Candidate Starts for Bonum\_61:

(Start: 35 @45017 has 39 MA's), (Start: 71 @44915 has 2 MA's), (Start: 101 @44828 has 1 MA's), (118, 44774), (148, 44657), (156, 44639), (159, 44630), (163, 44606), (182, 44516), (199, 44447), (222, 44330), (234, 44297), (240, 44276),

Gene: Braxoaddie\_58 Start: 42332, Stop: 41592, Start Num: 35

Candidate Starts for Braxoaddie\_58:

(27, 42359), (Start: 35 @42332 has 39 MA's), (42, 42308), (Start: 71 @42233 has 2 MA's), (92, 42191), (99, 42152), (Start: 101 @42149 has 1 MA's), (102, 42146), (127, 42071), (151, 41972), (165, 41915), (172, 41882), (177, 41858), (193, 41804), (204, 41738), (236, 41600), (238, 41597),

Gene: Buggaboo\_59 Start: 45496, Stop: 44750, Start Num: 35

Candidate Starts for Buggaboo\_59:

(Start: 35 @45496 has 39 MA's), (Start: 71 @45394 has 2 MA's), (93, 45346), (Start: 101 @45307 has 1 MA's), (118, 45253), (148, 45136), (156, 45118), (159, 45109), (182, 44995), (199, 44926), (222, 44809), (234, 44776), (240, 44755),

Gene: Butterscotch\_68 Start: 54857, Stop: 55528, Start Num: 49

Candidate Starts for Butterscotch\_68:

(Start: 49 @54857 has 20 MA's), (57, 54878), (Start: 66 @54908 has 2 MA's), (Start: 100 @55010 has 1 MA's), (Start: 101 @55016 has 1 MA's), (104, 55025), (111, 55049), (165, 55184), (166, 55187), (177, 55241), (204, 55358), (231, 55457),

Gene: C3PO\_42 Start: 38653, Stop: 38066, Start Num: 68

Candidate Starts for C3PO\_42:

(Start: 68 @38653 has 8 MA's), (99, 38557), (Start: 101 @38554 has 1 MA's), (110, 38527), (115, 38515), (175, 38287), (214, 38122), (215, 38113), (216, 38110), (227, 38083),

Gene: Candle\_81 Start: 62723, Stop: 63430, Start Num: 44

Candidate Starts for Candle\_81:

(Start: 44 @62723 has 8 MA's), (63, 62774), (Start: 83 @62825 has 1 MA's), (99, 62894), (Start: 101 @62900 has 1 MA's), (109, 62930), (136, 62990), (155, 63038), (165, 63068), (166, 63071), (175, 63122), (177, 63131), (193, 63185), (203, 63242), (211, 63302), (212, 63305), (214, 63311), (226, 63353), (239, 63395),

Gene: Cborch11\_80 Start: 59117, Stop: 59869, Start Num: 81

Candidate Starts for Cborch11\_80:

(Start: 81 @59117 has 7 MA's), (122, 59288), (137, 59345), (145, 59390), (153, 59411), (157, 59420), (164, 59459), (173, 59501), (178, 59525), (179, 59528), (184, 59549), (186, 59555), (192, 59594), (195, 59621), (225, 59768), (235, 59792),

Gene: ChewyVIII\_69 Start: 49815, Stop: 49147, Start Num: 35

Candidate Starts for ChewyVIII\_69:

(34, 49818), (Start: 35 @49815 has 39 MA's), (67, 49728), (80, 49692), (92, 49665), (93, 49662), (Start: 101 @49623 has 1 MA's), (140, 49506), (145, 49491), (148, 49482), (159, 49458), (187, 49344), (193, 49332), (223, 49182), (233, 49152),

Gene: Chill\_72 Start: 54894, Stop: 55562, Start Num: 49

Candidate Starts for Chill\_72:

(Start: 49 @54894 has 20 MA's), (57, 54915), (Start: 66 @54945 has 2 MA's), (Start: 100 @55047 has 1 MA's), (Start: 101 @55053 has 1 MA's), (104, 55062), (111, 55086), (116, 55089), (165, 55221), (166, 55224), (177, 55278), (231, 55494),

Gene: Chivey\_74 Start: 51437, Stop: 52150, Start Num: 31

Candidate Starts for Chivey\_74:

(Start: 31 @51437 has 11 MA's), (Start: 33 @51440 has 14 MA's), (Start: 61 @51518 has 2 MA's), (92, 51596), (117, 51689), (123, 51710), (177, 51893), (204, 52013), (222, 52100),

Gene: CoffeeBean\_59 Start: 42290, Stop: 41550, Start Num: 35

Candidate Starts for CoffeeBean\_59:



(27, 42317), (Start: 35 @42290 has 39 MA's), (42, 42266), (Start: 71 @42191 has 2 MA's), (92, 42149), (99, 42110), (Start: 101 @42107 has 1 MA's), (102, 42104), (127, 42029), (151, 41930), (165, 41873), (172, 41840), (177, 41816), (193, 41762), (204, 41696), (236, 41558), (238, 41555),

Gene: Commandaria\_58 Start: 45467, Stop: 44736, Start Num: 35

Candidate Starts for Commandaria\_58:

(Start: 35 @45467 has 39 MA's), (53, 45419), (Start: 68 @45386 has 8 MA's), (92, 45332), (Start: 101 @45290 has 1 MA's), (108, 45266), (117, 45239), (134, 45173), (141, 45146), (152, 45110), (161, 45080), (164, 45065), (165, 45062), (177, 45005), (182, 44978), (188, 44960), (199, 44912), (222, 44795), (230, 44777), (234, 44762), (240, 44741),

Gene: CoolCookie\_78 Start: 52118, Stop: 52750, Start Num: 61

Candidate Starts for CoolCookie\_78:

(Start: 31 @52037 has 11 MA's), (Start: 33 @52040 has 14 MA's), (45, 52079), (Start: 61 @52118 has 2 MA's), (92, 52196), (117, 52289), (123, 52310), (177, 52493), (190, 52541), (204, 52613), (222, 52700),

Gene: Crestdrop\_76 Start: 51864, Stop: 52574, Start Num: 33

Candidate Starts for Crestdrop\_76:

(Start: 31 @51861 has 11 MA's), (Start: 33 @51864 has 14 MA's), (Start: 61 @51942 has 2 MA's), (92, 52020), (117, 52113), (123, 52134), (177, 52317), (190, 52365), (204, 52437), (212, 52488), (222, 52524),

Gene: Cruella\_42 Start: 38653, Stop: 38066, Start Num: 68

Candidate Starts for Cruella\_42:

(Start: 68 @38653 has 8 MA's), (99, 38557), (Start: 101 @38554 has 1 MA's), (110, 38527), (115, 38515), (175, 38287), (214, 38122), (215, 38113), (216, 38110), (227, 38083),

Gene: Cuke\_93 Start: 54589, Stop: 55197, Start Num: 56

Candidate Starts for Cuke\_93:

(Start: 44 @54562 has 8 MA's), (Start: 56 @54589 has 3 MA's), (69, 54625), (72, 54637), (76, 54646), (Start: 100 @54724 has 1 MA's), (Start: 101 @54727 has 1 MA's), (107, 54751), (119, 54781), (136, 54817), (143, 54838), (145, 54844), (146, 54847), (149, 54853), (154, 54865), (165, 54895), (169, 54913), (175, 54934), (185, 54979), (194, 55009), (196, 55018), (199, 55030), (207, 55081), (210, 55111), (212, 55117), (216, 55135), (228, 55162),

Gene: Cybele\_73 Start: 51982, Stop: 52692, Start Num: 33

Candidate Starts for Cybele\_73:

(Start: 31 @51979 has 11 MA's), (Start: 33 @51982 has 14 MA's), (Start: 61 @52060 has 2 MA's), (92, 52138), (123, 52252), (176, 52432), (177, 52435), (204, 52555), (222, 52642),

Gene: Dalilpop\_62 Start: 46648, Stop: 45902, Start Num: 10

Candidate Starts for Dalilpop\_62:

(Start: 10 @46648 has 2 MA's), (75, 46537), (84, 46522), (89, 46510), (93, 46501), (99, 46465), (117, 46411), (157, 46276), (162, 46255), (165, 46240), (177, 46183), (190, 46135), (204, 46057), (206, 46051), (215, 45991), (236, 45925), (240, 45916),

Gene: Damien\_79 Start: 59427, Stop: 60179, Start Num: 81

Candidate Starts for Damien\_79:

(Start: 81 @59427 has 7 MA's), (122, 59598), (137, 59655), (145, 59700), (153, 59721), (157, 59730), (164, 59769), (173, 59811), (178, 59835), (179, 59838), (184, 59859), (186, 59865), (192, 59904), (195, 59931), (225, 60078), (235, 60102),

Gene: DannyDe\_74 Start: 51442, Stop: 52152, Start Num: 33

Candidate Starts for DannyDe\_74:

(Start: 31 @51439 has 11 MA's), (Start: 33 @51442 has 14 MA's), (Start: 61 @51520 has 2 MA's), (117, 51691), (123, 51712), (177, 51895), (190, 51943), (203, 52009), (204, 52015), (222, 52102),

Gene: Darwin\_46 Start: 38531, Stop: 37944, Start Num: 68

Candidate Starts for Darwin\_46:

(Start: 68 @38531 has 8 MA's), (99, 38435), (Start: 101 @38432 has 1 MA's), (110, 38405), (115, 38393), (121, 38372), (175, 38165), (214, 38000), (215, 37991), (216, 37988), (227, 37961),

Gene: Dauntless\_73 Start: 51573, Stop: 52283, Start Num: 33

Candidate Starts for Dauntless\_73:

(Start: 31 @51570 has 11 MA's), (Start: 33 @51573 has 14 MA's), (Start: 61 @51651 has 2 MA's), (92, 51729), (117, 51822), (123, 51843), (177, 52026), (190, 52074), (203, 52140), (204, 52146), (222, 52233),

Gene: Delton\_70 Start: 55255, Stop: 55926, Start Num: 49

Candidate Starts for Delton\_70:

(Start: 49 @55255 has 20 MA's), (57, 55276), (Start: 66 @55306 has 2 MA's), (Start: 100 @55408 has 1 MA's), (Start: 101 @55414 has 1 MA's), (104, 55423), (111, 55447), (165, 55582), (166, 55585), (177, 55639), (204, 55756), (231, 55855),

Gene: Djokovic\_80 Start: 55696, Stop: 56517, Start Num: 25

Candidate Starts for Djokovic\_80:

(18, 55657), (Start: 25 @55696 has 6 MA's), (47, 55768), (58, 55792), (Start: 71 @55834 has 2 MA's), (92, 55888), (Start: 101 @55936 has 1 MA's), (107, 55960), (116, 55984), (119, 55999), (172, 56185),

Gene: DoobyDoo\_83 Start: 56890, Stop: 57564, Start Num: 59

Candidate Starts for DoobyDoo\_83:

(Start: 32 @56830 has 1 MA's), (40, 56854), (58, 56887), (Start: 59 @56890 has 23 MA's), (Start: 71 @56929 has 2 MA's), (120, 57082), (130, 57109), (152, 57190), (164, 57226), (196, 57358), (199, 57373), (207, 57424),

Gene: DrLupo\_91 Start: 60981, Stop: 61727, Start Num: 90

Candidate Starts for DrLupo\_91:

(Start: 90 @60981 has 2 MA's), (92, 60996), (93, 60999), (Start: 100 @61038 has 1 MA's), (Start: 101 @61044 has 1 MA's), (114, 61068), (123, 61104), (138, 61170), (143, 61197), (146, 61206), (157, 61233), (158, 61236), (164, 61272), (167, 61290), (174, 61326), (177, 61338), (184, 61368), (189, 61383), (219, 61602), (237, 61656), (242, 61665),

Gene: Dryad\_40 Start: 31376, Stop: 30774, Start Num: 51

Candidate Starts for Dryad\_40:

(Start: 51 @31376 has 7 MA's), (94, 31265), (116, 31190), (119, 31175), (147, 31073), (174, 30995), (198, 30902), (199, 30899), (203, 30875), (204, 30869), (212, 30818),

Gene: DumpTruck\_88 Start: 58077, Stop: 58757, Start Num: 59

Candidate Starts for DumpTruck\_88:

(Start: 59 @58077 has 23 MA's), (93, 58170), (106, 58230), (120, 58269), (148, 58368), (152, 58377), (174, 58461), (196, 58545), (207, 58611),

Gene: EhyElimayoE\_66 Start: 44745, Stop: 44173, Start Num: 95

Candidate Starts for EhyElimayoE\_66:

(Start: 95 @44745 has 3 MA's), (Start: 98 @44733 has 1 MA's), (119, 44667), (123, 44652), (144, 44586), (145, 44583), (150, 44571), (182, 44445), (198, 44382), (208, 44319), (221, 44262),

Gene: Emianna\_57 Start: 45345, Stop: 44614, Start Num: 35

Candidate Starts for Emianna\_57:

(Start: 35 @45345 has 39 MA's), (53, 45297), (Start: 71 @45255 has 2 MA's), (Start: 101 @45168 has 1 MA's), (132, 45063), (148, 44997), (151, 44991), (152, 44988), (161, 44958), (164, 44943), (165, 44940), (215, 44694), (222, 44673), (240, 44619),

Gene: Ennea\_64 Start: 46346, Stop: 45609, Start Num: 35

Candidate Starts for Ennea\_64:

(Start: 35 @46346 has 39 MA's), (89, 46211), (93, 46202), (Start: 101 @46163 has 1 MA's), (113, 46127), (151, 45992), (159, 45971), (164, 45944), (165, 45941), (177, 45884), (193, 45830), (204, 45764), (236, 45632), (240, 45623),

Gene: Erk16\_70 Start: 54972, Stop: 55640, Start Num: 49

Candidate Starts for Erk16\_70:

(Start: 49 @54972 has 20 MA's), (57, 54993), (Start: 66 @55023 has 2 MA's), (Start: 100 @55125 has 1 MA's), (Start: 101 @55131 has 1 MA's), (104, 55140), (111, 55164), (116, 55167), (165, 55299), (166, 55302), (177, 55356), (231, 55572),

Gene: Erudite\_72 Start: 51573, Stop: 52283, Start Num: 33

Candidate Starts for Erudite\_72:

(Start: 31 @51570 has 11 MA's), (Start: 33 @51573 has 14 MA's), (Start: 61 @51651 has 2 MA's), (92, 51729), (117, 51822), (123, 51843), (177, 52026), (190, 52074), (203, 52140), (204, 52146), (222, 52233),

Gene: Erutan\_85 Start: 58028, Stop: 58702, Start Num: 59

Candidate Starts for Erutan\_85:

(Start: 32 @57968 has 1 MA's), (40, 57992), (58, 58025), (Start: 59 @58028 has 23 MA's), (Start: 71 @58067 has 2 MA's), (120, 58220), (130, 58247), (152, 58328), (164, 58364), (174, 58412), (183, 58454), (196, 58496), (207, 58562), (214, 58604),

Gene: Flapper\_62 Start: 46080, Stop: 45334, Start Num: 10

Candidate Starts for Flapper\_62:

(Start: 10 @46080 has 2 MA's), (75, 45969), (84, 45954), (89, 45942), (93, 45933), (99, 45897), (113, 45858), (165, 45672), (177, 45615), (204, 45489), (206, 45483), (215, 45423), (236, 45357), (240, 45348),

Gene: Float294\_59 Start: 45788, Stop: 45051, Start Num: 35

Candidate Starts for Float294\_59:

(Start: 35 @45788 has 39 MA's), (89, 45653), (93, 45644), (Start: 101 @45605 has 1 MA's), (113, 45569), (151, 45434), (164, 45386), (165, 45383), (177, 45326), (193, 45272), (204, 45206), (236, 45074), (240, 45065),

Gene: Fowlmouth\_91 Start: 56536, Stop: 57147, Start Num: 56

Candidate Starts for Fowlmouth\_91:

(Start: 56 @56536 has 3 MA's), (69, 56572), (92, 56629), (141, 56776), (149, 56803), (154, 56815), (169, 56863), (175, 56884), (185, 56929), (194, 56959), (196, 56968), (199, 56980), (207, 57031), (212, 57067), (216, 57085), (228, 57112),

Gene: Foxboro\_58 Start: 45851, Stop: 45120, Start Num: 35

Candidate Starts for Foxboro\_58:

(Start: 35 @45851 has 39 MA's), (53, 45803), (Start: 71 @45761 has 2 MA's), (Start: 101 @45674 has 1 MA's), (132, 45569), (148, 45503), (151, 45497), (152, 45494), (161, 45464), (164, 45449), (165, 45446), (215, 45200), (222, 45179), (240, 45125),

Gene: Frankenweenie\_73 Start: 47336, Stop: 46788, Start Num: 98

Candidate Starts for Frankenweenie\_73:

(Start: 98 @47336 has 1 MA's), (112, 47294), (119, 47270), (131, 47234), (135, 47216), (145, 47180), (148, 47171), (180, 47051), (193, 47012), (195, 46994), (198, 46979), (200, 46964), (205, 46940), (211, 46889),

Gene: FreddieHg\_74 Start: 51454, Stop: 52167, Start Num: 31

Candidate Starts for FreddieHg\_74:

(Start: 31 @51454 has 11 MA's), (Start: 33 @51457 has 14 MA's), (Start: 61 @51535 has 2 MA's), (92, 51613), (117, 51706), (123, 51727), (177, 51910), (204, 52030), (222, 52117),

Gene: Fulcrum\_84 Start: 57717, Stop: 58391, Start Num: 59

Candidate Starts for Fulcrum\_84:

(Start: 32 @57657 has 1 MA's), (40, 57681), (Start: 59 @57717 has 23 MA's), (Start: 71 @57756 has 2 MA's), (120, 57909), (130, 57936), (152, 58017), (164, 58053), (183, 58143), (196, 58185), (207, 58251),

Gene: Fury\_65 Start: 44523, Stop: 43777, Start Num: 8

Candidate Starts for Fury\_65:

(7, 44583), (Start: 8 @44523 has 2 MA's), (65, 44442), (89, 44385), (92, 44379), (Start: 101 @44337 has 1 MA's), (117, 44286), (131, 44244), (148, 44166), (165, 44109), (168, 44091), (182, 44025), (212, 43881), (232, 43824), (236, 43800), (240, 43791),

Gene: GOATification\_84 Start: 57717, Stop: 58391, Start Num: 59

Candidate Starts for GOATification\_84:

(Start: 32 @57657 has 1 MA's), (40, 57681), (Start: 59 @57717 has 23 MA's), (Start: 71 @57756 has 2 MA's), (120, 57909), (130, 57936), (152, 58017), (164, 58053), (183, 58143), (196, 58185), (207, 58251),

Gene: GRU1\_47 Start: 37626, Stop: 36880, Start Num: 35

Candidate Starts for GRU1\_47:

(Start: 21 @37686 has 1 MA's), (Start: 35 @37626 has 39 MA's), (75, 37515), (84, 37500), (89, 37488), (93, 37479), (165, 37218), (177, 37161), (204, 37035), (206, 37029), (215, 36969), (236, 36903), (240, 36894),

Gene: GTE5\_48 Start: 38936, Stop: 38190, Start Num: 9

Candidate Starts for GTE5\_48:

(Start: 9 @38936 has 1 MA's), (75, 38825), (84, 38810), (89, 38798), (93, 38789), (99, 38753), (117, 38699), (165, 38528), (177, 38471), (204, 38345), (206, 38339), (215, 38279), (236, 38213), (240, 38204),

Gene: GTE8\_46 Start: 38609, Stop: 37878, Start Num: 35

Candidate Starts for GTE8\_46:

(20, 38672), (Start: 35 @38609 has 39 MA's), (53, 38561), (Start: 71 @38519 has 2 MA's), (Start: 101 @38432 has 1 MA's), (148, 38261), (151, 38255), (152, 38252), (164, 38207), (177, 38147), (182, 38120), (185, 38111), (215, 37958), (240, 37883),

Gene: Genamy16\_86 Start: 56519, Stop: 57193, Start Num: 59

Candidate Starts for Genamy16\_86:

(Start: 49 @56504 has 20 MA's), (58, 56516), (Start: 59 @56519 has 23 MA's), (Start: 71 @56558 has 2 MA's), (120, 56711), (130, 56738), (152, 56819), (164, 56855), (196, 56987), (199, 57002), (207, 57053),

Gene: Gibbin\_87 Start: 58357, Stop: 59031, Start Num: 59

Candidate Starts for Gibbin\_87:

(23, 58243), (26, 58258), (30, 58276), (37, 58297), (58, 58354), (Start: 59 @58357 has 23 MA's), (Start: 71 @58396 has 2 MA's), (120, 58549), (130, 58576), (152, 58657), (164, 58693), (196, 58825), (199, 58840), (207, 58891),

Gene: Gibson\_36 Start: 30882, Stop: 30280, Start Num: 51

Candidate Starts for Gibson\_36:

(Start: 51 @30882 has 7 MA's), (84, 30798), (116, 30696), (147, 30579), (174, 30501), (181, 30471), (199, 30405), (203, 30381), (204, 30375), (212, 30324),

Gene: Gilda\_73 Start: 51974, Stop: 52684, Start Num: 33

Candidate Starts for Gilda\_73:

(Start: 31 @51971 has 11 MA's), (Start: 33 @51974 has 14 MA's), (Start: 61 @52052 has 2 MA's), (92, 52130), (123, 52244), (139, 52295), (177, 52427), (204, 52547), (222, 52634),

Gene: Giuseppe\_72 Start: 54784, Stop: 55455, Start Num: 49

Candidate Starts for Giuseppe\_72:

(Start: 49 @54784 has 20 MA's), (57, 54805), (Start: 66 @54835 has 2 MA's), (Start: 100 @54937 has 1 MA's), (Start: 101 @54943 has 1 MA's), (104, 54952), (111, 54976), (165, 55111), (166, 55114), (177, 55168), (204, 55285), (231, 55384),

Gene: Gretellyn\_85 Start: 58084, Stop: 58758, Start Num: 59

Candidate Starts for Gretellyn\_85:

(23, 57970), (26, 57985), (30, 58003), (37, 58024), (58, 58081), (Start: 59 @58084 has 23 MA's), (Start: 71 @58123 has 2 MA's), (120, 58276), (130, 58303), (152, 58384), (164, 58420), (196, 58552), (199, 58567), (207, 58618),

Gene: GrootJr\_59 Start: 44727, Stop: 43996, Start Num: 35

Candidate Starts for GrootJr\_59:

(Start: 35 @44727 has 39 MA's), (53, 44679), (Start: 71 @44637 has 2 MA's), (Start: 101 @44550 has 1 MA's), (132, 44445), (148, 44379), (151, 44373), (152, 44370), (161, 44340), (164, 44325), (165, 44322), (215, 44076), (222, 44055), (240, 44001),

Gene: Gumball\_70 Start: 55377, Stop: 55997, Start Num: 66

Candidate Starts for Gumball\_70:

(Start: 49 @55326 has 20 MA's), (57, 55347), (Start: 66 @55377 has 2 MA's), (Start: 100 @55479 has 1 MA's), (Start: 101 @55485 has 1 MA's), (104, 55494), (111, 55518), (165, 55653), (166, 55656), (177, 55710), (204, 55827), (231, 55926),

Gene: GuyFagieri\_57 Start: 42526, Stop: 41783, Start Num: 35

Candidate Starts for GuyFagieri\_57:

(27, 42553), (Start: 35 @42526 has 39 MA's), (Start: 101 @42340 has 1 MA's), (102, 42337), (108, 42316), (117, 42289), (151, 42163), (165, 42106), (172, 42073), (175, 42058), (177, 42049), (204, 41929), (236, 41791), (238, 41788),

Gene: Hager\_75 Start: 51440, Stop: 52150, Start Num: 33

Candidate Starts for Hager\_75:

(Start: 31 @51437 has 11 MA's), (Start: 33 @51440 has 14 MA's), (45, 51479), (Start: 61 @51518 has 2 MA's), (92, 51596), (109, 51665), (123, 51710), (176, 51890), (177, 51893), (190, 51941), (204, 52013), (222, 52100),

Gene: Haunter\_74 Start: 51350, Stop: 52060, Start Num: 33

Candidate Starts for Haunter\_74:

(Start: 31 @51347 has 11 MA's), (Start: 33 @51350 has 14 MA's), (45, 51389), (Start: 61 @51428 has 2 MA's), (92, 51506), (96, 51527), (117, 51599), (123, 51620), (177, 51803), (190, 51851), (203, 51917), (204, 51923), (222, 52010),

Gene: Hawkeye\_82 Start: 56674, Stop: 57330, Start Num: 49

Candidate Starts for Hawkeye\_82:

(Start: 49 @56674 has 20 MA's), (54, 56686), (Start: 100 @56824 has 1 MA's), (Start: 101 @56830 has 1 MA's), (111, 56863), (147, 56950), (197, 57136), (207, 57193),

Gene: Helpful\_73 Start: 55172, Stop: 55843, Start Num: 49

Candidate Starts for Helpful\_73:

(Start: 49 @55172 has 20 MA's), (57, 55193), (Start: 66 @55223 has 2 MA's), (Start: 100 @55325 has 1 MA's), (Start: 101 @55331 has 1 MA's), (104, 55340), (111, 55364), (165, 55499), (166, 55502), (177, 55556), (204, 55673), (231, 55772),

Gene: Hiddenleaf\_74 Start: 51437, Stop: 52150, Start Num: 31

Candidate Starts for Hiddenleaf\_74:

(Start: 31 @51437 has 11 MA's), (Start: 33 @51440 has 14 MA's), (Start: 61 @51518 has 2 MA's), (92, 51596), (117, 51689), (123, 51710), (177, 51893), (204, 52013), (222, 52100),

Gene: HubbaBubba\_54 Start: 40875, Stop: 40135, Start Num: 35

Candidate Starts for HubbaBubba\_54:

(Start: 35 @40875 has 39 MA's), (52, 40830), (67, 40797), (Start: 101 @40698 has 1 MA's), (131, 40605), (151, 40512), (152, 40509), (157, 40497), (182, 40377), (215, 40215), (234, 40161), (240, 40140),

Gene: IDyn\_58 Start: 42307, Stop: 41567, Start Num: 35

Candidate Starts for IDyn\_58:

(1, 43456), (2, 43183), (3, 42949), (4, 42643), (11, 42445), (Start: 35 @42307 has 39 MA's), (52, 42262), (67, 42229), (Start: 101 @42130 has 1 MA's), (131, 42037), (151, 41944), (152, 41941), (157, 41929), (182, 41809), (215, 41647), (234, 41593), (240, 41572),

Gene: Indlulamithi\_82 Start: 58260, Stop: 58847, Start Num: 60

Candidate Starts for Indlulamithi\_82:

(Start: 56 @58254 has 3 MA's), (Start: 60 @58260 has 1 MA's), (82, 58323), (92, 58344), (Start: 97 @58368 has 1 MA's), (Start: 101 @58389 has 1 MA's), (102, 58392), (126, 58452), (142, 58485), (196, 58674), (201, 58701), (203, 58710), (207, 58737), (212, 58773), (213, 58776), (216, 58791), (228, 58806),

Gene: JDawG\_72 Start: 51633, Stop: 52343, Start Num: 33

Candidate Starts for JDawG\_72:

(Start: 31 @51630 has 11 MA's), (Start: 33 @51633 has 14 MA's), (Start: 61 @51711 has 2 MA's), (92, 51789), (117, 51882), (123, 51903), (177, 52086), (204, 52206), (222, 52293),

Gene: Jalebi\_85 Start: 59002, Stop: 59676, Start Num: 59

Candidate Starts for Jalebi\_85:

(Start: 32 @58942 has 1 MA's), (40, 58966), (58, 58999), (Start: 59 @59002 has 23 MA's), (Start: 71 @59041 has 2 MA's), (120, 59194), (130, 59221), (152, 59302), (164, 59338), (183, 59428), (196, 59470), (207, 59536),

Gene: Jifall16\_56 Start: 44999, Stop: 44268, Start Num: 35

Candidate Starts for Jifall16\_56:

(Start: 35 @44999 has 39 MA's), (53, 44951), (Start: 71 @44909 has 2 MA's), (Start: 101 @44822 has 1 MA's), (132, 44717), (148, 44651), (151, 44645), (152, 44642), (161, 44612), (164, 44597), (165, 44594), (215, 44348), (222, 44327), (240, 44273),

Gene: JingleBells\_74 Start: 51545, Stop: 52255, Start Num: 33

Candidate Starts for JingleBells\_74:

(Start: 31 @51542 has 11 MA's), (Start: 33 @51545 has 14 MA's), (Start: 61 @51623 has 2 MA's), (92, 51701), (117, 51794), (123, 51815), (177, 51998), (204, 52118), (222, 52205),

Gene: JustBecause\_60 Start: 41941, Stop: 41381, Start Num: 101

Candidate Starts for JustBecause\_60:

(Start: 97 @41959 has 1 MA's), (Start: 101 @41941 has 1 MA's), (112, 41908), (145, 41794), (148, 41785), (156, 41767), (178, 41677), (180, 41665), (182, 41656), (183, 41653), (198, 41593), (200, 41578), (205, 41554), (211, 41503), (215, 41485), (221, 41470),

Gene: Kabluna\_61 Start: 44432, Stop: 43686, Start Num: 35

Candidate Starts for Kabluna\_61:

(Start: 35 @44432 has 39 MA's), (Start: 71 @44330 has 2 MA's), (Start: 101 @44243 has 1 MA's), (118, 44189), (148, 44072), (156, 44054), (159, 44045), (163, 44021), (182, 43931), (199, 43862), (222, 43745), (234, 43712), (240, 43691),

Gene: KandZ\_68 Start: 55001, Stop: 55672, Start Num: 49

Candidate Starts for KandZ\_68:

(Start: 49 @55001 has 20 MA's), (57, 55022), (Start: 66 @55052 has 2 MA's), (Start: 100 @55154 has 1 MA's), (Start: 101 @55160 has 1 MA's), (104, 55169), (111, 55193), (116, 55196), (165, 55328), (166, 55331), (177, 55385), (204, 55502), (231, 55601),

Gene: Karate\_72 Start: 51686, Stop: 52396, Start Num: 33

Candidate Starts for Karate\_72:

(Start: 31 @51683 has 11 MA's), (Start: 33 @51686 has 14 MA's), (Start: 61 @51764 has 2 MA's), (92, 51842), (123, 51956), (139, 52007), (177, 52139), (204, 52259), (222, 52346),

Gene: Kate\_73 Start: 51888, Stop: 52601, Start Num: 31

Candidate Starts for Kate\_73:

(Start: 31 @51888 has 11 MA's), (Start: 33 @51891 has 14 MA's), (Start: 61 @51969 has 2 MA's), (92, 52047), (123, 52161), (139, 52212), (177, 52344), (204, 52464), (222, 52551),

Gene: Kela\_61 Start: 41824, Stop: 41246, Start Num: 97

Candidate Starts for Kela\_61:

(Start: 97 @41824 has 1 MA's), (Start: 101 @41806 has 1 MA's), (112, 41773), (145, 41659), (148, 41650), (156, 41632), (178, 41542), (180, 41530), (182, 41521), (183, 41518), (198, 41458), (200, 41443), (205, 41419), (211, 41368), (215, 41350), (221, 41335),

Gene: KidneyBean\_57 Start: 45123, Stop: 44392, Start Num: 35

Candidate Starts for KidneyBean\_57:

(Start: 35 @45123 has 39 MA's), (53, 45075), (Start: 71 @45033 has 2 MA's), (Start: 101 @44946 has 1 MA's), (132, 44841), (148, 44775), (151, 44769), (152, 44766), (161, 44736), (164, 44721), (165,

44718), (215, 44472), (222, 44451), (240, 44397),

Gene: Kimchi1738\_42 Start: 37740, Stop: 37153, Start Num: 68

Candidate Starts for Kimchi1738\_42:

(Start: 68 @37740 has 8 MA's), (99, 37644), (Start: 101 @37641 has 1 MA's), (110, 37614), (115, 37602), (121, 37581), (175, 37374), (214, 37209), (215, 37200), (216, 37197), (227, 37170),

Gene: Konstantine\_82 Start: 59921, Stop: 60673, Start Num: 81

Candidate Starts for Konstantine\_82:

(Start: 81 @59921 has 7 MA's), (122, 60092), (137, 60149), (145, 60194), (153, 60215), (157, 60224), (164, 60263), (173, 60305), (178, 60329), (179, 60332), (184, 60353), (186, 60359), (195, 60425), (204, 60473), (225, 60572), (235, 60596),

Gene: Kors\_78 Start: 52230, Stop: 52856, Start Num: 61

Candidate Starts for Kors\_78:

(Start: 33 @52158 has 14 MA's), (Start: 61 @52230 has 2 MA's), (96, 52329), (99, 52347), (119, 52407), (159, 52539), (177, 52605), (194, 52668), (204, 52722), (230, 52824),

Gene: Kradal\_66 Start: 44745, Stop: 44173, Start Num: 95

Candidate Starts for Kradal\_66:

(Start: 95 @44745 has 3 MA's), (Start: 98 @44733 has 1 MA's), (119, 44667), (123, 44652), (144, 44586), (145, 44583), (150, 44571), (182, 44445), (198, 44382), (208, 44319), (221, 44262),

Gene: Krampus\_73 Start: 51984, Stop: 52697, Start Num: 31

Candidate Starts for Krampus\_73:

(Start: 31 @51984 has 11 MA's), (Start: 33 @51987 has 14 MA's), (Start: 61 @52065 has 2 MA's), (92, 52143), (123, 52257), (139, 52308), (177, 52440), (204, 52560), (222, 52647),

Gene: Kurt\_57 Start: 45360, Stop: 44629, Start Num: 35

Candidate Starts for Kurt\_57:

(Start: 35 @45360 has 39 MA's), (53, 45312), (Start: 71 @45270 has 2 MA's), (Start: 101 @45183 has 1 MA's), (132, 45078), (148, 45012), (151, 45006), (152, 45003), (161, 44973), (164, 44958), (165, 44955), (215, 44709), (222, 44688), (240, 44634),

Gene: Labelle\_92 Start: 61441, Stop: 62139, Start Num: 88

Candidate Starts for Labelle\_92:

(74, 61414), (79, 61426), (84, 61432), (Start: 88 @61441 has 3 MA's), (105, 61519), (128, 61555), (157, 61669), (170, 61732), (171, 61741), (179, 61780), (191, 61828), (209, 61966), (218, 62005), (231, 62044), (245, 62104),

Gene: Lambo\_85 Start: 58114, Stop: 58788, Start Num: 59

Candidate Starts for Lambo\_85:

(58, 58111), (Start: 59 @58114 has 23 MA's), (120, 58306), (152, 58414), (164, 58450), (183, 58540), (196, 58582), (199, 58597), (207, 58648), (214, 58690),

Gene: Leopard\_87 Start: 61735, Stop: 62415, Start Num: 49

Candidate Starts for Leopard\_87:

(Start: 36 @61696 has 1 MA's), (46, 61732), (Start: 49 @61735 has 20 MA's), (55, 61753), (64, 61777), (127, 61966), (133, 61993), (148, 62044), (172, 62125), (178, 62155), (201, 62251), (204, 62266), (214, 62329), (241, 62398),

Gene: Lila22\_90 Start: 58477, Stop: 59151, Start Num: 59

Candidate Starts for Lila22\_90:



(Start: 32 @58417 has 1 MA's), (40, 58441), (58, 58474), (Start: 59 @58477 has 23 MA's), (Start: 71 @58516 has 2 MA's), (120, 58669), (130, 58696), (152, 58777), (164, 58813), (183, 58903), (196, 58945), (207, 59011), (214, 59053),

Gene: LilyPad\_77 Start: 54664, Stop: 55503, Start Num: 29

Candidate Starts for LilyPad\_77:

(Start: 29 @54664 has 1 MA's), (47, 54727), (58, 54751), (Start: 71 @54793 has 2 MA's), (77, 54808), (116, 54943), (118, 54955), (119, 54958), (172, 55144), (211, 55339), (243, 55447), (244, 55453),

Gene: LittleFella\_79 Start: 55168, Stop: 56049, Start Num: 32

Candidate Starts for LittleFella\_79:

(Start: 32 @55168 has 1 MA's), (38, 55186), (42, 55201), (58, 55237), (Start: 71 @55279 has 2 MA's), (99, 55369), (Start: 100 @55372 has 1 MA's), (116, 55426), (157, 55561), (202, 55759), (228, 55870), (229, 55876), (247, 55951), (248, 55969),

Gene: Lizz\_36 Start: 30696, Stop: 30094, Start Num: 51

Candidate Starts for Lizz\_36:

(Start: 51 @30696 has 7 MA's), (84, 30612), (107, 30531), (133, 30447), (147, 30393), (148, 30390), (174, 30315), (177, 30303), (199, 30219), (203, 30195), (204, 30189), (212, 30138),

Gene: Lollipop1437\_62 Start: 46334, Stop: 45597, Start Num: 35

Candidate Starts for Lollipop1437\_62:

(Start: 35 @46334 has 39 MA's), (89, 46199), (93, 46190), (Start: 101 @46151 has 1 MA's), (113, 46115), (151, 45980), (164, 45932), (177, 45872), (193, 45818), (204, 45752), (236, 45620), (240, 45611),

Gene: LuckyLeo\_83 Start: 57772, Stop: 58446, Start Num: 59

Candidate Starts for LuckyLeo\_83:

(58, 57769), (Start: 59 @57772 has 23 MA's), (99, 57901), (120, 57964), (130, 57991), (152, 58072), (164, 58108), (177, 58168), (183, 58198), (196, 58240), (207, 58306), (214, 58348),

Gene: MacGully\_65 Start: 44606, Stop: 43860, Start Num: 35

Candidate Starts for MacGully\_65:

(Start: 35 @44606 has 39 MA's), (Start: 71 @44507 has 2 MA's), (92, 44465), (93, 44462), (99, 44426), (Start: 101 @44423 has 1 MA's), (116, 44381), (127, 44345), (164, 44192), (165, 44189), (171, 44156), (199, 44036), (204, 44006), (238, 43865),

Gene: Madi\_79 Start: 55533, Stop: 56354, Start Num: 25

Candidate Starts for Madi\_79:

(22, 55518), (Start: 25 @55533 has 6 MA's), (47, 55605), (58, 55629), (Start: 71 @55671 has 2 MA's), (92, 55725), (Start: 101 @55773 has 1 MA's), (107, 55797), (116, 55821), (118, 55833), (119, 55836), (172, 56022), (243, 56325),

Gene: Madruga\_91 Start: 61056, Stop: 61754, Start Num: 88

Candidate Starts for Madruga\_91:

(70, 61014), (73, 61026), (76, 61032), (79, 61041), (84, 61047), (Start: 88 @61056 has 3 MA's), (105, 61134), (128, 61170), (157, 61284), (170, 61347), (171, 61356), (179, 61395), (191, 61443), (209, 61581), (218, 61620), (231, 61659), (245, 61719),

Gene: Marietta\_59 Start: 42201, Stop: 41461, Start Num: 35

Candidate Starts for Marietta\_59:

(12, 42333), (14, 42309), (16, 42297), (20, 42264), (Start: 35 @42201 has 39 MA's), (52, 42156), (67, 42123), (Start: 101 @42024 has 1 MA's), (131, 41931), (151, 41838), (152, 41835), (157, 41823),

(182, 41703), (215, 41541), (234, 41487), (240, 41466),

Gene: Maselop\_58 Start: 42366, Stop: 41626, Start Num: 35

Candidate Starts for Maselop\_58:

(27, 42393), (Start: 35 @42366 has 39 MA's), (42, 42342), (Start: 71 @42267 has 2 MA's), (92, 42225), (99, 42186), (Start: 101 @42183 has 1 MA's), (102, 42180), (127, 42105), (151, 42006), (165, 41949), (172, 41916), (177, 41892), (193, 41838), (204, 41772), (236, 41634), (238, 41631),

Gene: Megatron06\_82 Start: 60012, Stop: 60764, Start Num: 81

Candidate Starts for Megatron06\_82:

(Start: 81 @60012 has 7 MA's), (122, 60183), (137, 60240), (145, 60285), (153, 60306), (157, 60315), (164, 60354), (173, 60396), (178, 60420), (179, 60423), (184, 60444), (186, 60450), (192, 60489), (195, 60516), (204, 60564), (225, 60663), (235, 60687),

Gene: MerCougar\_59 Start: 45623, Stop: 44877, Start Num: 35

Candidate Starts for MerCougar\_59:

(Start: 35 @45623 has 39 MA's), (Start: 68 @45530 has 8 MA's), (Start: 71 @45521 has 2 MA's), (Start: 101 @45434 has 1 MA's), (106, 45419), (118, 45380), (148, 45263), (182, 45122), (212, 44972), (222, 44936), (230, 44918), (234, 44903), (240, 44882),

Gene: MoiGyank\_90 Start: 58408, Stop: 59082, Start Num: 59

Candidate Starts for MoiGyank\_90:

(58, 58405), (Start: 59 @58408 has 23 MA's), (Start: 71 @58447 has 2 MA's), (120, 58600), (130, 58627), (152, 58708), (164, 58744), (183, 58834), (196, 58876), (207, 58942),

Gene: MontyDev\_83 Start: 62366, Stop: 63073, Start Num: 44

Candidate Starts for MontyDev\_83:

(Start: 44 @62366 has 8 MA's), (63, 62417), (Start: 83 @62468 has 1 MA's), (99, 62537), (Start: 101 @62543 has 1 MA's), (109, 62573), (136, 62633), (155, 62681), (165, 62711), (166, 62714), (175, 62765), (177, 62774), (193, 62828), (203, 62885), (211, 62945), (212, 62948), (214, 62954), (226, 62996), (239, 63038),

Gene: Mopey\_72 Start: 54810, Stop: 55481, Start Num: 49

Candidate Starts for Mopey\_72:

(Start: 49 @54810 has 20 MA's), (57, 54831), (Start: 66 @54861 has 2 MA's), (Start: 100 @54963 has 1 MA's), (Start: 101 @54969 has 1 MA's), (104, 54978), (111, 55002), (165, 55137), (166, 55140), (177, 55194), (204, 55311), (231, 55410),

Gene: MortySmith\_71 Start: 51047, Stop: 51757, Start Num: 33

Candidate Starts for MortySmith\_71:

(Start: 31 @51044 has 11 MA's), (Start: 33 @51047 has 14 MA's), (Start: 61 @51125 has 2 MA's), (92, 51203), (117, 51296), (123, 51317), (177, 51500), (190, 51548), (203, 51614), (204, 51620), (222, 51707),

Gene: MrMiyagi\_90 Start: 56804, Stop: 57415, Start Num: 56

Candidate Starts for MrMiyagi\_90:

(Start: 56 @56804 has 3 MA's), (69, 56840), (92, 56897), (124, 57011), (141, 57044), (149, 57071), (169, 57131), (175, 57152), (185, 57197), (194, 57227), (196, 57236), (199, 57248), (207, 57299), (212, 57335), (216, 57353), (228, 57380),

Gene: NadineRae\_57 Start: 41445, Stop: 40705, Start Num: 35

Candidate Starts for NadineRae\_57:

(20, 41508), (Start: 35 @41445 has 39 MA's), (52, 41400), (67, 41367), (Start: 101 @41268 has 1 MA's), (131, 41175), (151, 41082), (152, 41079), (157, 41067), (182, 40947), (215, 40785), (234, 40731), (240, 40710),

Gene: NarutoRun\_73 Start: 51949, Stop: 52662, Start Num: 31

Candidate Starts for NarutoRun\_73:

(Start: 31 @51949 has 11 MA's), (Start: 33 @51952 has 14 MA's), (Start: 61 @52030 has 2 MA's), (92, 52108), (123, 52222), (139, 52273), (177, 52405), (204, 52525), (222, 52612),

Gene: NatB6\_57 Start: 44417, Stop: 43686, Start Num: 35

Candidate Starts for NatB6\_57:

(Start: 35 @44417 has 39 MA's), (53, 44369), (Start: 71 @44327 has 2 MA's), (Start: 101 @44240 has 1 MA's), (132, 44135), (148, 44069), (151, 44063), (152, 44060), (161, 44030), (164, 44015), (165, 44012), (215, 43766), (222, 43745), (240, 43691),

Gene: Neptune\_73 Start: 51979, Stop: 52692, Start Num: 31

Candidate Starts for Neptune\_73:

(Start: 31 @51979 has 11 MA's), (Start: 33 @51982 has 14 MA's), (Start: 61 @52060 has 2 MA's), (92, 52138), (123, 52252), (176, 52432), (177, 52435), (204, 52555), (222, 52642),

Gene: Nilo\_86 Start: 62725, Stop: 63432, Start Num: 44

Candidate Starts for Nilo\_86:

(Start: 44 @62725 has 8 MA's), (63, 62776), (Start: 83 @62827 has 1 MA's), (99, 62896), (Start: 101 @62902 has 1 MA's), (109, 62932), (136, 62992), (155, 63040), (165, 63070), (166, 63073), (175, 63124), (177, 63133), (193, 63187), (203, 63244), (211, 63304), (212, 63307), (214, 63313), (226, 63355), (239, 63397),

Gene: Nirvana\_71 Start: 46706, Stop: 46125, Start Num: 98

Candidate Starts for Nirvana\_71:

(Start: 98 @46706 has 1 MA's), (103, 46691), (112, 46664), (119, 46640), (145, 46550), (148, 46541), (180, 46421), (182, 46412), (183, 46409), (193, 46382), (198, 46349), (200, 46334), (205, 46310), (211, 46259), (215, 46241), (221, 46226),

Gene: NorManre\_90 Start: 59321, Stop: 59995, Start Num: 59

Candidate Starts for NorManre\_90:

(Start: 32 @59261 has 1 MA's), (40, 59285), (Start: 59 @59321 has 23 MA's), (120, 59513), (152, 59621), (164, 59657), (183, 59747), (196, 59789), (207, 59855), (214, 59897),

Gene: NosilaM\_61 Start: 45330, Stop: 44584, Start Num: 35

Candidate Starts for NosilaM\_61:

(Start: 33 @45333 has 14 MA's), (Start: 35 @45330 has 39 MA's), (Start: 71 @45228 has 2 MA's), (Start: 101 @45141 has 1 MA's), (118, 45087), (148, 44970), (159, 44943), (177, 44856), (182, 44829), (183, 44826), (199, 44760), (211, 44682), (222, 44643), (234, 44610), (240, 44589),

Gene: Nova\_70 Start: 55349, Stop: 56020, Start Num: 49

Candidate Starts for Nova\_70:

(Start: 49 @55349 has 20 MA's), (57, 55370), (Start: 66 @55400 has 2 MA's), (Start: 100 @55502 has 1 MA's), (Start: 101 @55508 has 1 MA's), (104, 55517), (111, 55541), (165, 55676), (166, 55679), (177, 55733), (204, 55850), (231, 55949),

Gene: NovaSharks\_85 Start: 56222, Stop: 56896, Start Num: 59

Candidate Starts for NovaSharks\_85:

(Start: 49 @56207 has 20 MA's), (58, 56219), (Start: 59 @56222 has 23 MA's), (Start: 71 @56261 has 2 MA's), (120, 56414), (130, 56441), (152, 56522), (164, 56558), (196, 56690), (199, 56705), (207, 56756),

Gene: NovumRegina\_57 Start: 44726, Stop: 43995, Start Num: 35

Candidate Starts for NovumRegina\_57:

(Start: 35 @44726 has 39 MA's), (53, 44678), (Start: 71 @44636 has 2 MA's), (Start: 101 @44549 has 1 MA's), (132, 44444), (148, 44378), (151, 44372), (152, 44369), (161, 44339), (164, 44324), (165, 44321), (215, 44075), (222, 44054), (240, 44000),

Gene: Oaker\_79 Start: 60029, Stop: 60781, Start Num: 81

Candidate Starts for Oaker\_79:

(Start: 81 @60029 has 7 MA's), (122, 60200), (137, 60257), (145, 60302), (153, 60323), (157, 60332), (164, 60371), (173, 60413), (178, 60437), (179, 60440), (184, 60461), (186, 60467), (195, 60533), (204, 60581), (235, 60704),

Gene: Onyinye\_87 Start: 61230, Stop: 61910, Start Num: 49

Candidate Starts for Onyinye\_87:

(Start: 36 @61191 has 1 MA's), (46, 61227), (Start: 49 @61230 has 20 MA's), (55, 61248), (64, 61272), (127, 61461), (133, 61488), (148, 61539), (172, 61620), (178, 61650), (201, 61746), (204, 61761), (214, 61824), (241, 61893),

Gene: OtterstedtS21\_86 Start: 58125, Stop: 58799, Start Num: 59

Candidate Starts for OtterstedtS21\_86:

(Start: 32 @58068 has 1 MA's), (40, 58092), (58, 58122), (Start: 59 @58125 has 23 MA's), (Start: 71 @58164 has 2 MA's), (120, 58317), (130, 58344), (152, 58425), (164, 58461), (183, 58551), (196, 58593), (199, 58608), (207, 58659), (214, 58701),

Gene: Outis\_59 Start: 45317, Stop: 44571, Start Num: 35

Candidate Starts for Outis\_59:

(Start: 35 @45317 has 39 MA's), (Start: 68 @45224 has 8 MA's), (Start: 71 @45215 has 2 MA's), (78, 45194), (Start: 101 @45128 has 1 MA's), (118, 45074), (148, 44957), (161, 44918), (163, 44906), (182, 44816), (212, 44666), (222, 44630), (234, 44597), (240, 44576),

Gene: OverHedge\_73 Start: 51926, Stop: 52558, Start Num: 61

Candidate Starts for OverHedge\_73:

(Start: 31 @51845 has 11 MA's), (Start: 33 @51848 has 14 MA's), (Start: 61 @51926 has 2 MA's), (92, 52004), (123, 52118), (176, 52298), (177, 52301), (204, 52421), (222, 52508),

Gene: P1201\_57 Start: 44915, Stop: 44262, Start Num: 62

Candidate Starts for P1201\_57:

(62, 44915), (112, 44756), (132, 44690), (177, 44510), (214, 44312), (217, 44300),

Gene: PBI1\_66 Start: 54941, Stop: 55459, Start Num: 100

Candidate Starts for PBI1\_66:

(Start: 49 @54788 has 20 MA's), (57, 54809), (Start: 66 @54839 has 2 MA's), (Start: 100 @54941 has 1 MA's), (Start: 101 @54947 has 1 MA's), (104, 54956), (111, 54980), (165, 55115), (166, 55118), (177, 55172), (204, 55289), (231, 55388),

Gene: PHTowN\_36 Start: 30694, Stop: 30092, Start Num: 51

Candidate Starts for PHTowN\_36:

(Start: 51 @30694 has 7 MA's), (84, 30610), (107, 30529), (133, 30445), (147, 30391), (148, 30388), (174, 30313), (177, 30301), (199, 30217), (203, 30193), (204, 30187), (212, 30136),

Gene: PLOT\_70 Start: 54810, Stop: 55481, Start Num: 49

Candidate Starts for PLOT\_70:

(Start: 49 @54810 has 20 MA's), (57, 54831), (Start: 66 @54861 has 2 MA's), (Start: 100 @54963 has 1 MA's), (Start: 101 @54969 has 1 MA's), (104, 54978), (111, 55002), (116, 55005), (165, 55137), (166, 55140), (177, 55194), (204, 55311), (231, 55410),

Gene: Papyrus\_82 Start: 61384, Stop: 62091, Start Num: 44

Candidate Starts for Papyrus\_82:

(Start: 44 @61384 has 8 MA's), (63, 61435), (Start: 83 @61486 has 1 MA's), (99, 61555), (Start: 101 @61561 has 1 MA's), (109, 61591), (136, 61651), (155, 61699), (165, 61729), (166, 61732), (175, 61783), (177, 61792), (193, 61846), (203, 61903), (211, 61963), (212, 61966), (214, 61972), (226, 62014), (239, 62056),

Gene: ParvusTarda\_85 Start: 57398, Stop: 58072, Start Num: 59

Candidate Starts for ParvusTarda\_85:

(Start: 32 @57338 has 1 MA's), (40, 57362), (58, 57395), (Start: 59 @57398 has 23 MA's), (Start: 71 @57437 has 2 MA's), (120, 57590), (130, 57617), (152, 57698), (164, 57734), (183, 57824), (196, 57866), (199, 57881), (207, 57932), (214, 57974),

Gene: Patience\_93 Start: 61969, Stop: 62667, Start Num: 88

Candidate Starts for Patience\_93:

(70, 61927), (73, 61939), (76, 61945), (79, 61954), (84, 61960), (Start: 88 @61969 has 3 MA's), (105, 62047), (128, 62083), (157, 62197), (170, 62260), (171, 62269), (179, 62308), (191, 62356), (209, 62494), (218, 62533), (231, 62572), (245, 62632),

Gene: Patio\_61 Start: 45570, Stop: 44833, Start Num: 35

Candidate Starts for Patio\_61:

(Start: 35 @45570 has 39 MA's), (89, 45435), (93, 45426), (Start: 101 @45387 has 1 MA's), (107, 45366), (151, 45216), (164, 45168), (165, 45165), (177, 45108), (193, 45054), (204, 44988), (236, 44856), (240, 44847),

Gene: Patos\_90 Start: 59320, Stop: 59994, Start Num: 59

Candidate Starts for Patos\_90:

(Start: 32 @59260 has 1 MA's), (40, 59284), (Start: 59 @59320 has 23 MA's), (120, 59512), (152, 59620), (164, 59656), (183, 59746), (196, 59788), (207, 59854), (214, 59896),

Gene: Penelope2018\_70 Start: 54844, Stop: 55515, Start Num: 49

Candidate Starts for Penelope2018\_70:

(Start: 49 @54844 has 20 MA's), (57, 54865), (Start: 66 @54895 has 2 MA's), (Start: 100 @54997 has 1 MA's), (Start: 101 @55003 has 1 MA's), (104, 55012), (111, 55036), (165, 55171), (166, 55174), (177, 55228), (204, 55345), (231, 55444),

Gene: Penjamin420\_86 Start: 58094, Stop: 58768, Start Num: 59

Candidate Starts for Penjamin420\_86:

(17, 57935), (19, 57959), (24, 57989), (30, 58016), (43, 58061), (58, 58091), (Start: 59 @58094 has 23 MA's), (120, 58286), (130, 58313), (152, 58394), (164, 58430), (183, 58520), (196, 58562), (207, 58628), (214, 58670),

Gene: PeteyPab\_44 Start: 39498, Stop: 38911, Start Num: 68

Candidate Starts for PeteyPab\_44:

(Start: 68 @39498 has 8 MA's), (99, 39402), (Start: 101 @39399 has 1 MA's), (110, 39372), (115, 39360), (121, 39339), (175, 39132), (214, 38967), (215, 38958), (216, 38955), (227, 38928),

Gene: Pharpay\_72 Start: 52075, Stop: 52707, Start Num: 61

Candidate Starts for Pharpay\_72:

(Start: 31 @51994 has 11 MA's), (Start: 33 @51997 has 14 MA's), (Start: 61 @52075 has 2 MA's), (92, 52153), (123, 52267), (176, 52447), (177, 52450), (204, 52570), (222, 52657),

Gene: Phomeo\_56 Start: 44995, Stop: 44264, Start Num: 35

Candidate Starts for Phomeo\_56:

(Start: 35 @44995 has 39 MA's), (53, 44947), (Start: 71 @44905 has 2 MA's), (Start: 101 @44818 has 1 MA's), (132, 44713), (148, 44647), (151, 44641), (152, 44638), (161, 44608), (164, 44593), (165, 44590), (215, 44344), (222, 44323), (240, 44269),

Gene: Phreeze\_78 Start: 58999, Stop: 59703, Start Num: 81

Candidate Starts for Phreeze\_78:

(Start: 81 @58999 has 7 MA's), (125, 59131), (129, 59137), (137, 59179), (145, 59224), (153, 59245), (157, 59254), (164, 59293), (173, 59335), (178, 59359), (179, 59362), (184, 59383), (186, 59389), (195, 59455), (235, 59626),

Gene: PhunaPhoke\_73 Start: 51967, Stop: 52677, Start Num: 33

Candidate Starts for PhunaPhoke\_73:

(Start: 31 @51964 has 11 MA's), (Start: 33 @51967 has 14 MA's), (Start: 61 @52045 has 2 MA's), (92, 52123), (123, 52237), (139, 52288), (177, 52420), (204, 52540), (222, 52627),

Gene: Pleakley\_65 Start: 44524, Stop: 43778, Start Num: 8

Candidate Starts for Pleakley\_65:

(7, 44584), (Start: 8 @44524 has 2 MA's), (65, 44443), (89, 44386), (92, 44380), (Start: 101 @44338 has 1 MA's), (117, 44287), (131, 44245), (148, 44167), (165, 44110), (168, 44092), (182, 44026), (212, 43882), (232, 43825), (236, 43801), (240, 43792),

Gene: Polyuki\_58 Start: 42355, Stop: 41615, Start Num: 35

Candidate Starts for Polyuki\_58:

(27, 42382), (Start: 35 @42355 has 39 MA's), (42, 42331), (Start: 71 @42256 has 2 MA's), (92, 42214), (99, 42175), (Start: 101 @42172 has 1 MA's), (102, 42169), (127, 42094), (151, 41995), (165, 41938), (172, 41905), (177, 41881), (193, 41827), (204, 41761), (236, 41623), (238, 41620),

Gene: PotatoChip\_45 Start: 39500, Stop: 38913, Start Num: 68

Candidate Starts for PotatoChip\_45:

(Start: 68 @39500 has 8 MA's), (99, 39404), (Start: 101 @39401 has 1 MA's), (110, 39374), (115, 39362), (121, 39341), (175, 39134), (214, 38969), (215, 38960), (216, 38957), (227, 38930),

Gene: Potty\_72 Start: 51894, Stop: 52607, Start Num: 31

Candidate Starts for Potty\_72:

(Start: 31 @51894 has 11 MA's), (Start: 33 @51897 has 14 MA's), (Start: 61 @51975 has 2 MA's), (92, 52053), (123, 52167), (176, 52347), (177, 52350), (204, 52470), (222, 52557),

Gene: Poultruss\_73 Start: 52242, Stop: 52952, Start Num: 33

Candidate Starts for Poultruss\_73:

(Start: 31 @52239 has 11 MA's), (Start: 33 @52242 has 14 MA's), (Start: 61 @52320 has 2 MA's), (92, 52398), (117, 52491), (123, 52512), (127, 52518), (177, 52695), (204, 52815),

Gene: Prager\_70 Start: 54904, Stop: 55575, Start Num: 49

Candidate Starts for Prager\_70:

(Start: 49 @54904 has 20 MA's), (57, 54925), (Start: 66 @54955 has 2 MA's), (Start: 100 @55057 has 1 MA's), (Start: 101 @55063 has 1 MA's), (104, 55072), (111, 55096), (165, 55231), (166, 55234), (177, 55288), (204, 55405), (231, 55504),

Gene: Predator\_79 Start: 59366, Stop: 60121, Start Num: 83

Candidate Starts for Predator\_79:

(50, 59273), (Start: 83 @59366 has 1 MA's), (92, 59396), (99, 59435), (122, 59543), (151, 59660), (157, 59675), (160, 59684), (164, 59714), (179, 59783), (195, 59873), (199, 59891), (246, 60092),

Gene: Puissant\_80 Start: 59219, Stop: 59914, Start Num: 85

Candidate Starts for Puissant\_80:

(85, 59219), (87, 59222), (Start: 101 @59285 has 1 MA's), (125, 59345), (129, 59351), (134, 59384), (138, 59405), (145, 59438), (153, 59459), (157, 59468), (164, 59507), (173, 59549), (177, 59567), (179, 59576), (184, 59597), (186, 59603), (192, 59642), (195, 59669), (199, 59687), (235, 59837),

Gene: Rachella\_73 Start: 51978, Stop: 52688, Start Num: 33

Candidate Starts for Rachella\_73:

(Start: 31 @51975 has 11 MA's), (Start: 33 @51978 has 14 MA's), (Start: 61 @52056 has 2 MA's), (92, 52134), (123, 52248), (139, 52299), (177, 52431), (204, 52551), (222, 52638),

Gene: Ranch\_89 Start: 57797, Stop: 58471, Start Num: 59

Candidate Starts for Ranch\_89:

(58, 57794), (Start: 59 @57797 has 23 MA's), (91, 57881), (120, 57989), (152, 58097), (164, 58133), (183, 58223), (196, 58265), (207, 58331),

Gene: Rie18\_73 Start: 51765, Stop: 52478, Start Num: 31

Candidate Starts for Rie18\_73:

(Start: 31 @51765 has 11 MA's), (Start: 33 @51768 has 14 MA's), (45, 51807), (Start: 61 @51846 has 2 MA's), (92, 51924), (123, 52038), (176, 52218), (177, 52221), (204, 52341), (222, 52428),

Gene: RikSengupta\_77 Start: 52261, Stop: 52887, Start Num: 61

Candidate Starts for RikSengupta\_77:

(Start: 33 @52189 has 14 MA's), (Start: 61 @52261 has 2 MA's), (96, 52360), (99, 52378), (119, 52438), (159, 52570), (177, 52636), (194, 52699), (195, 52705), (204, 52753), (230, 52855),

Gene: Riparian\_85 Start: 62171, Stop: 62878, Start Num: 44

Candidate Starts for Riparian\_85:

(Start: 44 @62171 has 8 MA's), (63, 62222), (Start: 83 @62273 has 1 MA's), (99, 62342), (Start: 101 @62348 has 1 MA's), (109, 62378), (136, 62438), (155, 62486), (165, 62516), (166, 62519), (175, 62570), (177, 62579), (193, 62633), (203, 62690), (211, 62750), (212, 62753), (214, 62759), (226, 62801), (239, 62843),

Gene: Rooney\_36 Start: 30879, Stop: 30277, Start Num: 51

Candidate Starts for Rooney\_36:

(Start: 51 @30879 has 7 MA's), (84, 30795), (116, 30693), (147, 30576), (174, 30498), (181, 30468), (199, 30402), (203, 30378), (204, 30372), (212, 30321),

Gene: Rope\_83 Start: 62330, Stop: 63037, Start Num: 44

Candidate Starts for Rope\_83:

(Start: 44 @62330 has 8 MA's), (63, 62381), (Start: 83 @62432 has 1 MA's), (99, 62501), (Start: 101 @62507 has 1 MA's), (102, 62510), (109, 62537), (136, 62597), (155, 62645), (165, 62675), (166, 62678), (175, 62729), (177, 62738), (193, 62792), (203, 62849), (211, 62909), (212, 62912), (214, 62918), (226, 62960), (239, 63002),

Gene: Rumi\_84 Start: 55807, Stop: 56481, Start Num: 59

Candidate Starts for Rumi\_84:

(Start: 49 @55792 has 20 MA's), (58, 55804), (Start: 59 @55807 has 23 MA's), (Start: 71 @55846 has 2 MA's), (120, 55999), (130, 56026), (152, 56107), (164, 56143), (196, 56275), (199, 56290), (207, 56341),

Gene: Sadboi\_85 Start: 58124, Stop: 58759, Start Num: 71

Candidate Starts for Sadboi\_85:

(23, 57971), (26, 57986), (30, 58004), (37, 58025), (58, 58082), (Start: 59 @58085 has 23 MA's), (Start: 71 @58124 has 2 MA's), (120, 58277), (152, 58385), (164, 58421), (183, 58511), (196, 58553), (207, 58619), (214, 58661),

Gene: Sampudon\_87 Start: 59002, Stop: 59676, Start Num: 59

Candidate Starts for Sampudon\_87:

(Start: 32 @58942 has 1 MA's), (40, 58966), (58, 58999), (Start: 59 @59002 has 23 MA's), (Start: 71 @59041 has 2 MA's), (120, 59194), (130, 59221), (152, 59302), (164, 59338), (183, 59428), (196, 59470), (207, 59536),

Gene: Satis\_66 Start: 44741, Stop: 44169, Start Num: 95

Candidate Starts for Satis\_66:

(Start: 95 @44741 has 3 MA's), (Start: 98 @44729 has 1 MA's), (119, 44663), (123, 44648), (144, 44582), (145, 44579), (150, 44567), (182, 44441), (198, 44378), (208, 44315), (221, 44258),

Gene: Send513\_83 Start: 62707, Stop: 63414, Start Num: 44

Candidate Starts for Send513\_83:

(Start: 44 @62707 has 8 MA's), (63, 62758), (Start: 83 @62809 has 1 MA's), (99, 62878), (Start: 101 @62884 has 1 MA's), (102, 62887), (109, 62914), (136, 62974), (155, 63022), (165, 63052), (166, 63055), (175, 63106), (177, 63115), (193, 63169), (203, 63226), (211, 63286), (212, 63289), (214, 63295), (226, 63337), (239, 63379),

Gene: ShakeNBake\_36 Start: 30712, Stop: 30110, Start Num: 51

Candidate Starts for ShakeNBake\_36:

(Start: 51 @30712 has 7 MA's), (84, 30628), (107, 30547), (133, 30463), (147, 30409), (148, 30406), (174, 30331), (177, 30319), (199, 30235), (203, 30211), (204, 30205), (212, 30154),

Gene: Sienna\_80 Start: 55774, Stop: 56595, Start Num: 25

Candidate Starts for Sienna\_80:

(22, 55759), (Start: 25 @55774 has 6 MA's), (47, 55846), (58, 55870), (Start: 71 @55912 has 2 MA's), (92, 55966), (Start: 101 @56014 has 1 MA's), (107, 56038), (116, 56062), (119, 56077), (172, 56263),

Gene: SirHarley\_72 Start: 55309, Stop: 55980, Start Num: 49

Candidate Starts for SirHarley\_72:

(Start: 49 @55309 has 20 MA's), (57, 55330), (Start: 66 @55360 has 2 MA's), (Start: 100 @55462 has 1 MA's), (Start: 101 @55468 has 1 MA's), (104, 55477), (111, 55501), (165, 55636), (166, 55639), (177, 55693), (204, 55810), (231, 55909),

Gene: Skysand\_60 Start: 45790, Stop: 45053, Start Num: 35

Candidate Starts for Skysand\_60:

(5, 45910), (6, 45898), (Start: 35 @45790 has 39 MA's), (89, 45655), (93, 45646), (Start: 101 @45607 has 1 MA's), (151, 45436), (164, 45388), (165, 45385), (177, 45328), (193, 45274), (204, 45208), (236, 45076), (240, 45067),



Gene: Snakehole\_74 Start: 51389, Stop: 52099, Start Num: 33

Candidate Starts for Snakehole\_74:

(Start: 31 @51386 has 11 MA's), (Start: 33 @51389 has 14 MA's), (Start: 61 @51467 has 2 MA's), (92, 51545), (117, 51638), (123, 51659), (177, 51842), (190, 51890), (203, 51956), (204, 51962), (222, 52049),

Gene: Sparcetus\_77 Start: 52075, Stop: 52701, Start Num: 61

Candidate Starts for Sparcetus\_77:

(Start: 33 @52003 has 14 MA's), (Start: 61 @52075 has 2 MA's), (96, 52174), (99, 52192), (119, 52252), (159, 52384), (177, 52450), (194, 52513), (195, 52519), (204, 52567), (230, 52669),

Gene: StarStruck\_59 Start: 45317, Stop: 44571, Start Num: 35

Candidate Starts for StarStruck\_59:

(Start: 35 @45317 has 39 MA's), (Start: 68 @45224 has 8 MA's), (Start: 71 @45215 has 2 MA's), (78, 45194), (Start: 101 @45128 has 1 MA's), (118, 45074), (148, 44957), (161, 44918), (163, 44906), (182, 44816), (212, 44666), (222, 44630), (234, 44597), (240, 44576),

Gene: Stickynote\_44 Start: 38920, Stop: 38333, Start Num: 68

Candidate Starts for Stickynote\_44:

(Start: 68 @38920 has 8 MA's), (99, 38824), (Start: 101 @38821 has 1 MA's), (110, 38794), (115, 38782), (121, 38761), (175, 38554), (214, 38389), (216, 38377), (227, 38350),

Gene: Sukkupi\_58 Start: 43757, Stop: 43017, Start Num: 35

Candidate Starts for Sukkupi\_58:

(12, 43889), (14, 43865), (20, 43820), (Start: 35 @43757 has 39 MA's), (52, 43712), (Start: 101 @43580 has 1 MA's), (131, 43487), (151, 43394), (152, 43391), (157, 43379), (165, 43343), (182, 43259), (215, 43097), (234, 43043), (240, 43022),

Gene: SuperSulley\_59 Start: 45496, Stop: 44750, Start Num: 35

Candidate Starts for SuperSulley\_59:

(Start: 35 @45496 has 39 MA's), (Start: 71 @45394 has 2 MA's), (93, 45346), (Start: 101 @45307 has 1 MA's), (118, 45253), (148, 45136), (156, 45118), (159, 45109), (182, 44995), (199, 44926), (222, 44809), (234, 44776), (240, 44755),

Gene: Suzy\_77 Start: 55845, Stop: 56666, Start Num: 21

Candidate Starts for Suzy\_77:

(Start: 21 @55845 has 1 MA's), (47, 55917), (58, 55941), (Start: 71 @55983 has 2 MA's), (92, 56037), (Start: 101 @56085 has 1 MA's), (107, 56109), (116, 56133), (119, 56148), (172, 56334),

Gene: Tedro\_73 Start: 51437, Stop: 52147, Start Num: 33

Candidate Starts for Tedro\_73:

(Start: 31 @51434 has 11 MA's), (Start: 33 @51437 has 14 MA's), (45, 51476), (Start: 61 @51515 has 2 MA's), (92, 51593), (93, 51596), (123, 51707), (176, 51887), (177, 51890), (204, 52010), (222, 52097),

Gene: Terapin\_81 Start: 55698, Stop: 56519, Start Num: 25

Candidate Starts for Terapin\_81:

(18, 55659), (Start: 25 @55698 has 6 MA's), (47, 55770), (58, 55794), (Start: 71 @55836 has 2 MA's), (92, 55890), (Start: 101 @55938 has 1 MA's), (107, 55962), (116, 55986), (119, 56001), (172, 56187),

Gene: Thoth\_70 Start: 54898, Stop: 55569, Start Num: 49

Candidate Starts for Thoth\_70:

(Start: 49 @54898 has 20 MA's), (57, 54919), (Start: 66 @54949 has 2 MA's), (Start: 100 @55051 has 1 MA's), (Start: 101 @55057 has 1 MA's), (104, 55066), (111, 55090), (165, 55225), (166, 55228), (177, 55282), (204, 55399), (231, 55498),

Gene: Thumb\_80 Start: 59431, Stop: 60135, Start Num: 81

Candidate Starts for Thumb\_80:

(Start: 81 @59431 has 7 MA's), (125, 59563), (129, 59569), (137, 59611), (145, 59656), (153, 59677), (157, 59686), (164, 59725), (173, 59767), (178, 59791), (179, 59794), (184, 59815), (186, 59821), (195, 59887), (235, 60058), (246, 60106),

Gene: Tillicus\_81 Start: 57502, Stop: 58176, Start Num: 59

Candidate Starts for Tillicus\_81:

(23, 57388), (26, 57403), (30, 57421), (37, 57442), (58, 57499), (Start: 59 @57502 has 23 MA's), (120, 57694), (130, 57721), (152, 57802), (164, 57838), (177, 57898), (183, 57928), (196, 57970), (207, 58036), (214, 58078),

Gene: TinyMiny\_77 Start: 52093, Stop: 52791, Start Num: 33

Candidate Starts for TinyMiny\_77:

(Start: 33 @52093 has 14 MA's), (Start: 61 @52165 has 2 MA's), (96, 52264), (99, 52282), (119, 52342), (159, 52474), (177, 52540), (194, 52603), (195, 52609), (204, 52657), (230, 52759),

Gene: Tracker\_57 Start: 44141, Stop: 43410, Start Num: 35

Candidate Starts for Tracker\_57:

(20, 44204), (Start: 35 @44141 has 39 MA's), (53, 44093), (Start: 71 @44051 has 2 MA's), (Start: 101 @43964 has 1 MA's), (132, 43859), (148, 43793), (151, 43787), (152, 43784), (161, 43754), (164, 43739), (165, 43736), (215, 43490), (222, 43469), (240, 43415),

Gene: Troll4\_70 Start: 55017, Stop: 55637, Start Num: 66

Candidate Starts for Troll4\_70:

(Start: 49 @54966 has 20 MA's), (57, 54987), (Start: 66 @55017 has 2 MA's), (Start: 100 @55119 has 1 MA's), (Start: 101 @55125 has 1 MA's), (104, 55134), (111, 55158), (165, 55293), (166, 55296), (177, 55350), (204, 55467), (231, 55566),

Gene: Turuncu\_62 Start: 45742, Stop: 44996, Start Num: 9

Candidate Starts for Turuncu\_62:

(Start: 9 @45742 has 1 MA's), (75, 45631), (84, 45616), (89, 45604), (93, 45595), (99, 45559), (113, 45520), (117, 45505), (165, 45334), (177, 45277), (204, 45151), (206, 45145), (236, 45019), (240, 45010),

Gene: Visconti\_71 Start: 54874, Stop: 55545, Start Num: 49

Candidate Starts for Visconti\_71:

(Start: 49 @54874 has 20 MA's), (57, 54895), (Start: 66 @54925 has 2 MA's), (Start: 100 @55027 has 1 MA's), (Start: 101 @55033 has 1 MA's), (104, 55042), (111, 55066), (165, 55201), (166, 55204), (177, 55258), (204, 55375), (231, 55474),

Gene: WaldoWhy\_72 Start: 54894, Stop: 55562, Start Num: 49

Candidate Starts for WaldoWhy\_72:

(Start: 49 @54894 has 20 MA's), (57, 54915), (Start: 66 @54945 has 2 MA's), (Start: 100 @55047 has 1 MA's), (Start: 101 @55053 has 1 MA's), (104, 55062), (111, 55086), (116, 55089), (165, 55221), (166, 55224), (177, 55278), (231, 55494),

Gene: Weiss13\_83 Start: 62408, Stop: 63115, Start Num: 44

Candidate Starts for Weiss13\_83:

(Start: 44 @62408 has 8 MA's), (63, 62459), (Start: 83 @62510 has 1 MA's), (99, 62579), (Start: 101 @62585 has 1 MA's), (109, 62615), (136, 62675), (155, 62723), (165, 62753), (166, 62756), (175, 62807), (177, 62816), (193, 62870), (203, 62927), (211, 62987), (212, 62990), (214, 62996), (226, 63038), (239, 63080),

Gene: Wentworth\_37 Start: 31184, Stop: 30582, Start Num: 51

Candidate Starts for Wentworth\_37:

(Start: 51 @31184 has 7 MA's), (Start: 101 @31040 has 1 MA's), (116, 30998), (147, 30881), (181, 30773), (199, 30707), (203, 30683), (204, 30677), (212, 30626), (224, 30590),

Gene: Wheezy\_57 Start: 44349, Stop: 43618, Start Num: 35

Candidate Starts for Wheezy\_57:

(20, 44412), (Start: 35 @44349 has 39 MA's), (53, 44301), (Start: 71 @44259 has 2 MA's), (Start: 101 @44172 has 1 MA's), (132, 44067), (148, 44001), (151, 43995), (152, 43992), (161, 43962), (164, 43947), (165, 43944), (215, 43698), (222, 43677), (240, 43623),

Gene: WhoseManz\_58 Start: 41814, Stop: 41074, Start Num: 35

Candidate Starts for WhoseManz\_58:

(5, 42120), (12, 41946), (14, 41922), (16, 41910), (20, 41877), (Start: 35 @41814 has 39 MA's), (52, 41769), (67, 41736), (Start: 101 @41637 has 1 MA's), (131, 41544), (151, 41451), (152, 41448), (157, 41436), (182, 41316), (215, 41154), (234, 41100), (240, 41079),

Gene: Wilkos\_37 Start: 30999, Stop: 30397, Start Num: 51

Candidate Starts for Wilkos\_37:

(Start: 51 @30999 has 7 MA's), (86, 30909), (116, 30813), (118, 30801), (147, 30696), (148, 30693), (199, 30522), (203, 30498), (204, 30492), (212, 30441),

Gene: Wojtek\_78 Start: 58104, Stop: 58778, Start Num: 59

Candidate Starts for Wojtek\_78:

(Start: 32 @58044 has 1 MA's), (40, 58068), (Start: 59 @58104 has 23 MA's), (120, 58296), (152, 58404), (164, 58440), (183, 58530), (196, 58572), (199, 58587), (207, 58638), (214, 58680),

Gene: Xenia2\_88 Start: 58445, Stop: 59125, Start Num: 59

Candidate Starts for Xenia2\_88:

(Start: 59 @58445 has 23 MA's), (93, 58538), (106, 58598), (120, 58637), (148, 58736), (152, 58745), (174, 58829), (196, 58913), (207, 58979),

Gene: Yara\_34 Start: 30376, Stop: 29774, Start Num: 48

Candidate Starts for Yara\_34:

(13, 30535), (15, 30520), (28, 30445), (39, 30403), (41, 30391), (Start: 48 @30376 has 1 MA's), (Start: 51 @30370 has 7 MA's), (94, 30259), (107, 30205), (118, 30172), (119, 30169), (135, 30115), (148, 30070), (190, 29941), (204, 29869), (214, 29812), (220, 29791),

Gene: Yelo\_82 Start: 62763, Stop: 63470, Start Num: 44

Candidate Starts for Yelo\_82:

(Start: 44 @62763 has 8 MA's), (63, 62814), (Start: 83 @62865 has 1 MA's), (99, 62934), (Start: 101 @62940 has 1 MA's), (109, 62970), (136, 63030), (155, 63078), (165, 63108), (166, 63111), (175, 63162), (177, 63171), (193, 63225), (203, 63282), (211, 63342), (212, 63345), (214, 63351), (226, 63393), (239, 63435),

Gene: Yikes\_86 Start: 58672, Stop: 59307, Start Num: 71

Candidate Starts for Yikes\_86:

(23, 58519), (26, 58534), (30, 58552), (37, 58573), (58, 58630), (Start: 59 @58633 has 23 MA's), (Start: 71 @58672 has 2 MA's), (120, 58825), (130, 58852), (152, 58933), (164, 58969), (196, 59101), (199, 59116), (207, 59167),

Gene: Yndexa\_58 Start: 43757, Stop: 43017, Start Num: 35

Candidate Starts for Yndexa\_58:

(12, 43889), (14, 43865), (20, 43820), (Start: 35 @43757 has 39 MA's), (52, 43712), (Start: 101 @43580 has 1 MA's), (131, 43487), (151, 43394), (152, 43391), (157, 43379), (165, 43343), (182, 43259), (215, 43097), (234, 43043), (240, 43022),

Gene: Zany\_84 Start: 58887, Stop: 59561, Start Num: 59

Candidate Starts for Zany\_84:

(58, 58884), (Start: 59 @58887 has 23 MA's), (120, 59079), (130, 59106), (152, 59187), (164, 59223), (196, 59355), (199, 59370), (207, 59421), (214, 59463),

Gene: Zenon\_85 Start: 62734, Stop: 63441, Start Num: 44

Candidate Starts for Zenon\_85:

(Start: 44 @62734 has 8 MA's), (63, 62785), (Start: 83 @62836 has 1 MA's), (99, 62905), (Start: 101 @62911 has 1 MA's), (109, 62941), (136, 63001), (155, 63049), (165, 63079), (166, 63082), (175, 63133), (177, 63142), (193, 63196), (203, 63253), (211, 63313), (212, 63316), (214, 63322), (226, 63364), (239, 63406),

Gene: Zion\_45 Start: 39498, Stop: 38911, Start Num: 68

Candidate Starts for Zion\_45:

(Start: 68 @39498 has 8 MA's), (99, 39402), (Start: 101 @39399 has 1 MA's), (110, 39372), (115, 39360), (121, 39339), (175, 39132), (214, 38967), (215, 38958), (216, 38955), (227, 38928),