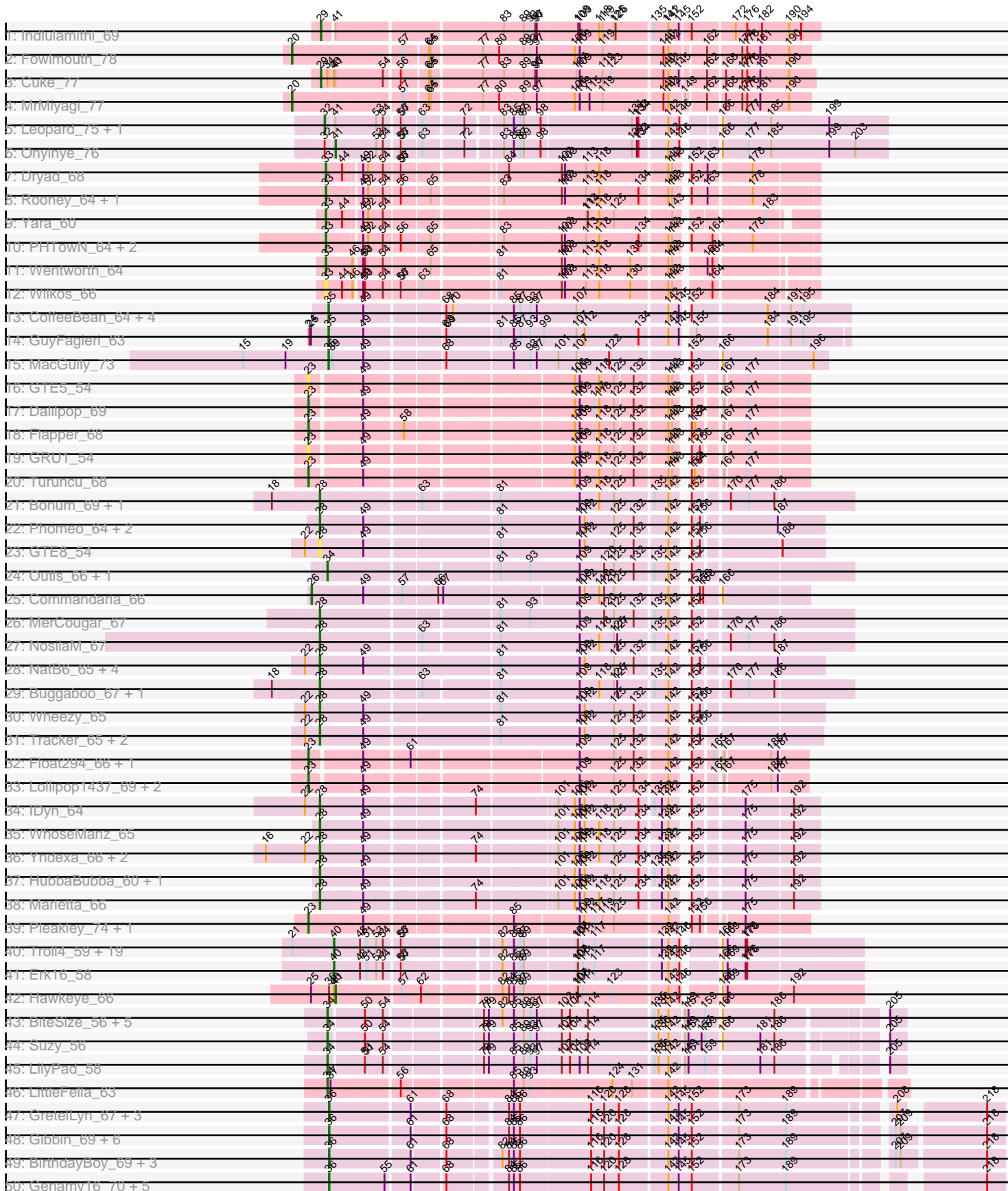


Pham 171206





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 171206 Report

This analysis was run 07/10/24 on database version 566.

Pham number 171206 has 204 members, 28 are drafts.

Phages represented in each track:

- Track 1 : Indlulamithi\_69
- Track 2 : Fowlmouth\_78
- Track 3 : Cuke\_77
- Track 4 : MrMiyagi\_77
- Track 5 : Leopard\_75, Aikoy\_76
- Track 6 : Onyinye\_76
- Track 7 : Dryad\_68
- Track 8 : Rooney\_64, Gibson\_64
- Track 9 : Yara\_60
- Track 10 : PHTown\_64, Lizz\_64, ShakeNBake\_64
- Track 11 : Wentworth\_64
- Track 12 : Wilkos\_66
- Track 13 : CoffeeBean\_64, Maselop\_64, Apiary\_64, Braxoaddie\_64, Polyuyuki\_64
- Track 14 : GuyFagieri\_63
- Track 15 : MacGully\_73
- Track 16 : GTE5\_54
- Track 17 : Dalilpop\_69
- Track 18 : Flapper\_68
- Track 19 : GRU1\_54
- Track 20 : Turuncu\_68
- Track 21 : Bonum\_69, Kabluna\_68
- Track 22 : Phomeo\_64, Jifall16\_64, KidneyBean\_65
- Track 23 : GTE8\_54
- Track 24 : Outis\_66, StarStruck\_66
- Track 25 : Commandaria\_66
- Track 26 : MerCougar\_67
- Track 27 : NosilaM\_67
- Track 28 : NatB6\_65, Emianna\_65, Kurt\_65, NovumRegina\_65, GrootJr\_67
- Track 29 : Buggaboo\_67, SuperSulley\_67
- Track 30 : Wheezy\_65
- Track 31 : Tracker\_65, Arti\_64, Foxboro\_66
- Track 32 : Float294\_66, Skysand\_67
- Track 33 : Lollipop1437\_69, Ennea\_72, Patio\_67
- Track 34 : IDyn\_64
- Track 35 : WhoseManz\_65
- Track 36 : Yndexa\_66, Sukkupi\_66, BiPauneto\_68
- Track 37 : HubbaBubba\_60, NadineRae\_65

- Track 38 : Marietta\_66
- Track 39 : Pleakley\_74, Fury\_74
- Track 40 : Troll4\_59, BigMama\_57, Prager\_59, Helpful\_62, Penelope2018\_59, Visconti\_60, Adjutor\_58, PBI1\_56, PLOT\_59, Delton\_60, Giuseppe\_60, WaldoWhy\_61, Gumball\_59, Butterscotch\_58, SirHarley\_61, KandZ\_58, Mopey\_60, Thoth\_59, Chill\_61, Nova\_58
- Track 41 : Erk16\_58
- Track 42 : Hawkeye\_66
- Track 43 : BiteSize\_56, Terapin\_57, Beyoncage\_56, Sienna\_56, Djokovic\_56, Madi\_56
- Track 44 : Suzy\_56
- Track 45 : LilyPad\_58
- Track 46 : LittleFella\_63
- Track 47 : GretelLyn\_67, Zany\_65, Sadboi\_68, Yikes\_69
- Track 48 : Gibbin\_69, Patos\_71, Ranch\_67, NorManre\_71, Lambo\_65, ParvusTarda\_66, Lila22\_71
- Track 49 : BirthdayBoy\_69, GOATification\_67, OtterstedtS21\_67, Fulcrum\_67
- Track 50 : Genamy16\_70, Alyssamiracle\_70, Jamemuya19\_67, NovaSharks\_69, Avian\_66, Rumi\_68
- Track 51 : Mima20\_68, DoobyDoo\_65, Alephilan\_68
- Track 52 : Apeppi\_61, LuckyLeo\_64
- Track 53 : Erutan\_67
- Track 54 : Wojtek\_63
- Track 55 : Jalebi\_66, MoiGyank\_73, Sampudon\_67
- Track 56 : DaviePasture\_68
- Track 57 : DumpTruck\_66
- Track 58 : Xenia2\_63
- Track 59 : Tillicus\_63
- Track 60 : Karate\_44
- Track 61 : Hiddenleaf\_45, DannyDe\_45, Chivey\_45, FreddieHg\_45
- Track 62 : Snakehole\_45
- Track 63 : TinyMiny\_49, RikSengupta\_49
- Track 64 : MortySmith\_43, Erudite\_44, Dauntless\_45
- Track 65 : Kors\_50
- Track 66 : Sparcetus\_49
- Track 67 : AnnaSerena\_45, Pharpay\_45, Kate\_46, NarutoRun\_45, CoolCookie\_50, Cybele\_45, Gilda\_45, Anakin\_45, Rachella\_45, Krampus\_45, Neptune\_45, PhunaPhoke\_45, Potty\_45, OverHedge\_45
- Track 68 : JDawG\_44, Aesir\_44
- Track 69 : JingleBells\_45
- Track 70 : Tedro\_45
- Track 71 : Ajin\_49
- Track 72 : Crestdrop\_46
- Track 73 : Poultruss\_45
- Track 74 : Haunter\_45
- Track 75 : Hager\_46
- Track 76 : Rie18\_45
- Track 77 : PotatoChip\_54, Zion\_54, PeteyPab\_53
- Track 78 : Darwin\_56
- Track 79 : C3PO\_52, Cruella\_52
- Track 80 : Kimchi1738\_53, Stickynote\_54
- Track 81 : Oaker\_72, Phreeze\_71, Thumb\_73
- Track 82 : Megatron06\_73

- Track 83 : Konstantine\_76
- Track 84 : Damien\_72
- Track 85 : Puissant\_73
- Track 86 : Predator\_71
- Track 87 : Cborch11\_74
- Track 88 : Beckerton\_71
- Track 89 : DrLupo\_79
- Track 90 : Barnyard\_75
- Track 91 : Nilo\_72, Papyrus\_70, Rope\_70, Yelo\_69, Riparian\_72, Candle\_68, Weiss13\_70, MontyDev\_73
- Track 92 : Zenon\_72, Send513\_70
- Track 93 : Madrugá\_83, Patience\_85, Labelle\_84
- Track 94 : Wollypog\_48
- Track 95 : P1201\_70
- Track 96 : ChewyVIII\_77

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

The start number called the most often in the published annotations is 36, it was called in 59 of the 176 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aesir\_44, Alephilan\_68, Alyssamiracle\_70, Anakin\_45, AnnaSerena\_45, Apeppi\_61, Avian\_66, Beckerton\_71, BirthdayBoy\_69, Cborch11\_74, Chivey\_45, CoolCookie\_50, Crestdrop\_46, Cybele\_45, Damien\_72, DannyDe\_45, Dauntless\_45, DaviePasture\_68, DoobyDoo\_65, DumpTruck\_66, Erudite\_44, Erutan\_67, FreddieHg\_45, Fulcrum\_67, GOATification\_67, Genamy16\_70, Gibbin\_69, Gilda\_45, GretelLyn\_67, Hager\_46, Haunter\_45, Hiddenleaf\_45, JDawG\_44, Jalebi\_66, Jamemuya19\_67, JingleBells\_45, Karate\_44, Kate\_46, Konstantine\_76, Krampus\_45, Lambo\_65, Lila22\_71, LuckyLeo\_64, Megatron06\_73, Mima20\_68, MoiGyank\_73, MortySmith\_43, NarutoRun\_45, Neptune\_45, NorManre\_71, NovaSharks\_69, Oaker\_72, OtterstedtS21\_67, OverHedge\_45, ParvusTarda\_66, Patos\_71, Pharpay\_45, Phreeze\_71, PhunaPhoke\_45, Potty\_45, Poultruss\_45, Predator\_71, Puissant\_73, Rachella\_45, Ranch\_67, Rie18\_45, Rumi\_68, Sadboi\_68, Sampudon\_67, Snakehole\_45, Tedro\_45, Thumb\_73, Tillicus\_63, Wojtek\_63, Xenia2\_63, Yikes\_69, Zany\_65,

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

- Hawkeye\_66,

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

- Adjutor\_58, Aikoy\_76, Ajin\_49, Apiary\_64, Arti\_64, Barnyard\_75, Beyonccage\_56, BiPauneto\_68, BigMama\_57, BiteSize\_56, Bonum\_69, Braxoaddie\_64, Buggaboo\_67, Butterscotch\_58, C3PO\_52, Candle\_68, ChewyVIII\_77, Chill\_61, CoffeeBean\_64, Commandaria\_66, Cruella\_52, Cuke\_77, Dalilpop\_69, Darwin\_56, Delton\_60, Djokovic\_56, DrLupo\_79, Dryad\_68, Emianna\_65, Ennea\_72, Erk16\_58, Flapper\_68, Float294\_66, Fowlmouth\_78, Foxboro\_66, Fury\_74, GRU1\_54, GTE5\_54, GTE8\_54, Gibson\_64, Giuseppe\_60, GrootJr\_67, Gumball\_59, GuyFagieri\_63, Helpful\_62, HubbaBubba\_60, IDyn\_64, Indlulamithi\_69, Jifall16\_64, Kabluna\_68, KandZ\_58, KidneyBean\_65, Kimchi1738\_53, Kors\_50, Kurt\_65,

Labelle\_84, Leopard\_75, LilyPad\_58, LittleFella\_63, Lizz\_64, Lollipop1437\_69, MacGully\_73, Madi\_56, Madrugá\_83, Marietta\_66, Maselop\_64, MerCougar\_67, MontyDev\_73, Mopey\_60, MrMiyagi\_77, NadineRae\_65, NatB6\_65, Nilo\_72, NosilaM\_67, Nova\_58, NovumRegina\_65, Onyinye\_76, Outis\_66, P1201\_70, PBI1\_56, PHTowN\_64, PLOT\_59, Papyrus\_70, Patience\_85, Patio\_67, Penelope2018\_59, PeteyPab\_53, Phomeo\_64, Pleakley\_74, Polyyuki\_64, PotatoChip\_54, Prager\_59, RikSengupta\_49, Riparian\_72, Rooney\_64, Rope\_70, Send513\_70, ShakeNBake\_64, Sienna\_56, SirHarley\_61, Skysand\_67, Sparcetus\_49, StarStruck\_66, Stickynote\_54, Sukkupi\_66, SuperSulley\_67, Suzy\_56, Terapin\_57, Thoth\_59, TinyMiny\_49, Tracker\_65, Troll4\_59, Turuncu\_68, Visconti\_60, WaldoWhy\_61, Weiss13\_70, Wentworth\_64, Wheezy\_65, WhoseManz\_65, Wilkos\_66, Wollypog\_48, Yara\_60, Yelo\_69, Yndexa\_66, Zenon\_72, Zion\_54,

### Summary by start number:

#### Start 20:

- Found in 2 of 204 ( 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: Fowlmouth\_78 (AC), MrMiyagi\_77 (AC),

#### Start 23:

- Found in 12 of 204 ( 5.9% ) of genes in pham
- Manual Annotations of this start: 10 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dalilpop\_69 (CR1), Ennea\_72 (CR3), Flapper\_68 (CR1), Float294\_66 (CR3), Fury\_74 (CR5), GRU1\_54 (CR1), GTE5\_54 (CR1), Lollipop1437\_69 (CR3), Patio\_67 (CR3), Pleakley\_74 (CR5), Skysand\_67 (CR3), Turuncu\_68 (CR1),

#### Start 26:

- Found in 1 of 204 ( 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: Commandaria\_66 (CR2),

#### Start 27:

- Found in 10 of 204 ( 4.9% ) of genes in pham
- Manual Annotations of this start: 9 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Candle\_68 (R), MontyDev\_73 (R), Nilo\_72 (R), Papyrus\_70 (R), Riparian\_72 (R), Rope\_70 (R), Send513\_70 (R), Weiss13\_70 (R), Yelo\_69 (R), Zenon\_72 (R),

#### Start 28:

- Found in 27 of 204 ( 13.2% ) of genes in pham
- Manual Annotations of this start: 24 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Arti\_64 (CR2), BiPauneto\_68 (CR4), Bonum\_69 (CR2), Buggaboo\_67 (CR2), Emianna\_65 (CR2), Foxboro\_66 (CR2), GTE8\_54 (CR2), GrootJr\_67 (CR2), HubbaBubba\_60 (CR4), IDyn\_64 (CR4), Jifall16\_64 (CR2), Kabluna\_68 (CR2), KidneyBean\_65 (CR2), Kurt\_65 (CR2),

Marietta\_66 (CR4), MerCougar\_67 (CR2), NadineRae\_65 (CR4), NatB6\_65 (CR2), NosilaM\_67 (CR2), NovumRegina\_65 (CR2), Phomeo\_64 (CR2), Sukkupi\_66 (CR4), SuperSulley\_67 (CR2), Tracker\_65 (CR2), Wheezy\_65 (CR2), WhoseManz\_65 (CR4), Yndexa\_66 (CR4),

Start 29:

- Found in 2 of 204 ( 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: Cuke\_77 (AC), Indlulamithi\_69 (AC),

Start 30:

- Found in 5 of 204 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 4 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ajin\_49 (EF), Kors\_50 (EF), RikSengupta\_49 (EF), Sparcetus\_49 (EF), TinyMiny\_49 (EF),

Start 31:

- Found in 8 of 204 ( 3.9% ) of genes in pham
- Manual Annotations of this start: 8 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: C3PO\_52 (EN), Cruella\_52 (EN), Darwin\_56 (EN), Kimchi1738\_53 (EN), PeteyPab\_53 (EN), PotatoChip\_54 (EN), Stickynote\_54 (EN), Zion\_54 (EN),

Start 32:

- Found in 3 of 204 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 2 of 176
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Aikoy\_76 (AE), Leopard\_75 (AE),

Start 33:

- Found in 10 of 204 ( 4.9% ) of genes in pham
- Manual Annotations of this start: 8 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dryad\_68 (BN), Gibson\_64 (BN), Lizz\_64 (BN), P1201\_70 (singleton), PHTowN\_64 (BN), Rooney\_64 (BN), ShakeNBake\_64 (BN), Wentworth\_64 (BN), Wilkos\_66 (BN), Yara\_60 (BN),

Start 34:

- Found in 15 of 204 ( 7.4% ) of genes in pham
- Manual Annotations of this start: 14 of 176
- Called 93.3% of time when present
- Phage (with cluster) where this start called: Beyoncage\_56 (DG1), BiteSize\_56 (DG1), Djokovic\_56 (DG1), Labelle\_84 (U), LilyPad\_58 (DG1), LittleFella\_63 (DG2), Madi\_56 (DG1), Madrugá\_83 (U), Outis\_66 (CR2), Patience\_85 (U), Sienna\_56 (DG1), StarStruck\_66 (CR2), Suzy\_56 (DG1), Terapin\_57 (DG1),

Start 35:

- Found in 7 of 204 ( 3.4% ) 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: Apiary\_64 (CR), Braxoaddie\_64 (CR), CoffeeBean\_64 (CR), GuyFagieri\_63 (CR), MacGully\_73 (CR), Maselop\_64 (CR), Polyyuki\_64 (CR),

#### Start 36:

- Found in 78 of 204 ( 38.2% ) of genes in pham
- Manual Annotations of this start: 59 of 176
- Called 98.7% of time when present
- Phage (with cluster) where this start called: Aesir\_44 (EF), Alephilan\_68 (DV), Alyssamiracle\_70 (DV), Anakin\_45 (EF), AnnaSerena\_45 (EF), Apeppi\_61 (DV), Avian\_66 (DV), Beckerton\_71 (H1), BirthdayBoy\_69 (DV), Cborch11\_74 (H1), Chivey\_45 (EF), CoolCookie\_50 (EF), Crestdrop\_46 (EF), Cybele\_45 (EF), Damien\_72 (H1), DannyDe\_45 (EF), Dauntless\_45 (EF), DaviePasture\_68 (DV), DoobyDoo\_65 (DV), DumpTruck\_66 (DV), Erudite\_44 (EF), Erutan\_67 (DV), FreddieHg\_45 (EF), Fulcrum\_67 (DV), GOATification\_67 (DV), Genamy16\_70 (DV), Gibbin\_69 (DV), Gilda\_45 (EF), GretelLyn\_67 (DV), Hager\_46 (EF), Haunter\_45 (EF), Hiddenleaf\_45 (EF), JDawG\_44 (EF), Jalebi\_66 (DV), Jamemuya19\_67 (DV), JingleBells\_45 (EF), Karate\_44 (EF), Kate\_46 (EF), Konstantine\_76 (H1), Krampus\_45 (EF), Lambo\_65 (DV), Lila22\_71 (DV), LuckyLeo\_64 (DV), Megatron06\_73 (H1), Mima20\_68 (DV), MoiGyank\_73 (DV), MortySmith\_43 (EF), NarutoRun\_45 (EF), Neptune\_45 (EF), NorManre\_71 (DV), NovaSharks\_69 (DV), Oaker\_72 (H1), OtterstedtS21\_67 (DV), OverHedge\_45 (EF), ParvusTarda\_66 (DV), Patos\_71 (DV), Pharpay\_45 (EF), Phreeze\_71 (H1), PhunaPhoke\_45 (EF), Potty\_45 (EF), Poultruss\_45 (EF), Predator\_71 (H1), Puissant\_73 (H1), Rachella\_45 (EF), Ranch\_67 (DV), Rie18\_45 (EF), Rumi\_68 (DV), Sadboi\_68 (DV), Sampudon\_67 (DV), Snakehole\_45 (EF), Tedro\_45 (EF), Thumb\_73 (H1), Tillicus\_63 (DV), Wojtek\_63 (DV), Xenia2\_63 (DV), Yikes\_69 (DV), Zany\_65 (DV),

#### Start 38:

- Found in 2 of 204 ( 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\_75 (H2), DrLupo\_79 (H2),

#### Start 40:

- Found in 24 of 204 ( 11.8% ) of genes in pham
- Manual Annotations of this start: 21 of 176
- Called 91.7% of time when present
- Phage (with cluster) where this start called: Adjutor\_58 (D1), BigMama\_57 (D1), Butterscotch\_58 (D1), Chill\_61 (D1), Delton\_60 (D1), Erk16\_58 (D1), Giuseppe\_60 (D1), Gumball\_59 (D1), Helpful\_62 (D1), KandZ\_58 (D1), Mopey\_60 (D1), Nova\_58 (D1), PBI1\_56 (D1), PLOT\_59 (D1), Penelope2018\_59 (D1), Prager\_59 (D1), SirHarley\_61 (D1), Thoth\_59 (D1), Troll4\_59 (D1), Visconti\_60 (D1), WaldoWhy\_61 (D1), Wollypog\_48 (singleton),

#### Start 41:

- Found in 7 of 204 ( 3.4% ) of genes in pham
- Manual Annotations of this start: 3 of 176
- Called 42.9% of time when present
- Phage (with cluster) where this start called: ChewyVIII\_77 (singleton), Hawkeye\_66 (D2), Onyinye\_76 (AE),

### Summary by clusters:



There are 21 clusters represented in this pham: CR2, CR3, AC, H1, AE, CR4, CR1, H2, BN, EF, singleton, DG2, DG1, U, EN, DV, CR, R, D2, CR5, D1,

Info for manual annotations of cluster AC:

- Start number 20 was manually annotated 2 times for cluster AC.
- Start number 29 was manually annotated 2 times for cluster AC.

Info for manual annotations of cluster AE:

- Start number 32 was manually annotated 2 times for cluster AE.
- Start number 41 was manually annotated 1 time for cluster AE.

Info for manual annotations of cluster BN:

- Start number 33 was manually annotated 8 times for cluster BN.

Info for manual annotations of cluster CR:

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

Info for manual annotations of cluster CR1:

- Start number 23 was manually annotated 3 times for cluster CR1.

Info for manual annotations of cluster CR2:

- Start number 26 was manually annotated 1 time for cluster CR2.
- Start number 28 was manually annotated 17 times for cluster CR2.
- Start number 34 was manually annotated 2 times for cluster CR2.

Info for manual annotations of cluster CR3:

- Start number 23 was manually annotated 5 times for cluster CR3.

Info for manual annotations of cluster CR4:

- Start number 28 was manually annotated 7 times for cluster CR4.

Info for manual annotations of cluster CR5:

- Start number 23 was manually annotated 2 times for cluster CR5.

Info for manual annotations of cluster D1:

- Start number 40 was manually annotated 20 times for cluster D1.

Info for manual annotations of cluster D2:

- Start number 41 was manually annotated 1 time for cluster D2.

Info for manual annotations of cluster DG1:

- Start number 34 was manually annotated 8 times for cluster DG1.

Info for manual annotations of cluster DG2:

- Start number 34 was manually annotated 1 time for cluster DG2.

Info for manual annotations of cluster DV:

- Start number 36 was manually annotated 24 times for cluster DV.

Info for manual annotations of cluster EF:

- Start number 30 was manually annotated 4 times for cluster EF.
- Start number 36 was manually annotated 26 times for cluster EF.

Info for manual annotations of cluster EN:

- Start number 31 was manually annotated 8 times for cluster EN.

Info for manual annotations of cluster H1:

- Start number 36 was manually annotated 9 times for cluster H1.

Info for manual annotations of cluster H2:

- Start number 38 was manually annotated 2 times for cluster H2.

Info for manual annotations of cluster R:

- Start number 27 was manually annotated 9 times for cluster R.

Info for manual annotations of cluster U:

- Start number 34 was manually annotated 3 times for cluster U.

### **Gene Information:**

Gene: Adjutor\_58 Start: 44429, Stop: 45289, Start Num: 40

Candidate Starts for Adjutor\_58:

(21, 44357), (Start: 40 @44429 has 21 MA's), (48, 44474), (51, 44486), (53, 44504), (54, 44516), (56, 44540), (57, 44543), (82, 44696), (85, 44717), (87, 44726), (89, 44732), (107, 44822), (108, 44825), (111, 44834), (117, 44855), (139, 44966), (142, 44978), (146, 44996), (166, 45047), (169, 45056), (175, 45086), (176, 45089),

Gene: Aesir\_44 Start: 29791, Stop: 30636, Start Num: 36

Candidate Starts for Aesir\_44:

(1, 29230), (5, 29326), (6, 29365), (12, 29491), (13, 29527), (Start: 36 @29791 has 59 MA's), (49, 29845), (54, 29881), (56, 29908), (64, 29953), (65, 29956), (71, 30001), (100, 30157), (107, 30193), (110, 30202), (111, 30205), (138, 30334), (142, 30349), (174, 30454), (183, 30496),

Gene: Aikoy\_76 Start: 51990, Stop: 52910, Start Num: 32

Candidate Starts for Aikoy\_76:

(Start: 32 @51990 has 2 MA's), (Start: 41 @52005 has 3 MA's), (53, 52077), (54, 52089), (56, 52113), (57, 52116), (63, 52146), (72, 52209), (83, 52266), (85, 52284), (87, 52293), (89, 52299), (98, 52329), (131, 52488), (133, 52497), (134, 52500), (142, 52545), (146, 52563), (166, 52611), (177, 52659), (185, 52698), (199, 52803),

Gene: Ajin\_49 Start: 31113, Stop: 31955, Start Num: 30

Candidate Starts for Ajin\_49:

(Start: 30 @31113 has 4 MA's), (63, 31260), (64, 31272), (65, 31275), (94, 31437), (100, 31473), (107, 31509), (124, 31572), (127, 31581), (138, 31650), (142, 31665), (183, 31812),

Gene: Alephilan\_68 Start: 45485, Stop: 46561, Start Num: 36

Candidate Starts for Alephilan\_68:

(Start: 36 @45485 has 59 MA's), (61, 45617), (68, 45665), (82, 45746), (84, 45758), (85, 45767), (86, 45776), (116, 45899), (120, 45920), (128, 45947), (142, 46028), (145, 46046), (152, 46067), (173, 46145), (189, 46229), (208, 46394), (218, 46532),

Gene: Alyssamiracle\_70 Start: 44487, Stop: 45557, Start Num: 36

Candidate Starts for Alyssamiracle\_70:

(Start: 36 @44487 has 59 MA's), (55, 44583), (61, 44619), (68, 44667), (84, 44760), (85, 44769), (86, 44778), (116, 44901), (120, 44922), (128, 44949), (142, 45030), (145, 45048), (152, 45069), (173, 45147), (189, 45231), (218, 45528),

Gene: Anakin\_45 Start: 30144, Stop: 30992, Start Num: 36

Candidate Starts for Anakin\_45:

(6, 29718), (10, 29748), (13, 29880), (Start: 36 @30144 has 59 MA's), (49, 30198), (54, 30234), (56, 30261), (64, 30306), (65, 30309), (71, 30354), (100, 30510), (107, 30546), (110, 30555), (111, 30558), (138, 30687), (142, 30702), (174, 30807), (183, 30849),

Gene: AnnaSerena\_45 Start: 30179, Stop: 31027, Start Num: 36

Candidate Starts for AnnaSerena\_45:

(6, 29753), (10, 29783), (13, 29915), (Start: 36 @30179 has 59 MA's), (49, 30233), (54, 30269), (56, 30296), (64, 30341), (65, 30344), (71, 30389), (100, 30545), (107, 30581), (110, 30590), (111, 30593), (138, 30722), (142, 30737), (174, 30842), (183, 30884),

Gene: Apeppi\_61 Start: 44646, Stop: 45731, Start Num: 36

Candidate Starts for Apeppi\_61:

(Start: 36 @44646 has 59 MA's), (54, 44739), (61, 44778), (68, 44826), (85, 44928), (86, 44937), (116, 45060), (120, 45081), (124, 45096), (128, 45108), (142, 45189), (145, 45207), (152, 45228), (158, 45249), (173, 45306), (189, 45390), (217, 45690),

Gene: Apiary\_64 Start: 48400, Stop: 47549, Start Num: 35

Candidate Starts for Apiary\_64:

(Start: 35 @48400 has 7 MA's), (49, 48340), (68, 48220), (70, 48208), (85, 48106), (87, 48097), (93, 48079), (97, 48067), (107, 47995), (142, 47839), (145, 47821), (152, 47815), (184, 47692), (191, 47656), (195, 47635),

Gene: Arti\_64 Start: 50810, Stop: 49992, Start Num: 28

Candidate Starts for Arti\_64:

(22, 50837), (Start: 28 @50810 has 24 MA's), (49, 50738), (81, 50516), (109, 50375), (112, 50366), (125, 50315), (132, 50279), (142, 50225), (152, 50207), (156, 50192),

Gene: Avian\_66 Start: 44215, Stop: 45285, Start Num: 36

Candidate Starts for Avian\_66:

(Start: 36 @44215 has 59 MA's), (55, 44311), (61, 44347), (68, 44395), (84, 44488), (85, 44497), (86, 44506), (116, 44629), (120, 44650), (128, 44677), (142, 44758), (145, 44776), (152, 44797), (173, 44875), (189, 44959), (218, 45256),

Gene: Barnyard\_75 Start: 51526, Stop: 52548, Start Num: 38

Candidate Starts for Barnyard\_75:

(Start: 38 @51526 has 2 MA's), (59, 51652), (60, 51658), (63, 51682), (71, 51742), (72, 51745), (79, 51790), (85, 51835), (86, 51844), (89, 51850), (95, 51868), (108, 51949), (115, 51970), (132, 52048), (136, 52093), (142, 52111), (145, 52129), (171, 52204), (185, 52273), (188, 52294), (202, 52387), (204, 52423),

Gene: Beckerton\_71 Start: 53060, Stop: 54136, Start Num: 36

Candidate Starts for Beckerton\_71:

(Start: 36 @53060 has 59 MA's), (39, 53066), (49, 53114), (57, 53177), (65, 53222), (72, 53270), (77, 53300), (85, 53357), (86, 53366), (89, 53372), (111, 53474), (119, 53507), (123, 53522), (131, 53561), (136, 53600), (142, 53618), (145, 53636), (147, 53639), (150, 53648), (171, 53714), (175, 53738), (206, 53927), (216, 54074), (217, 54077), (219, 54116), (220, 54125),

Gene: Beyoncage\_56 Start: 41805, Stop: 42734, Start Num: 34

Candidate Starts for Beyoncage\_56:

(Start: 34 @41805 has 14 MA's), (50, 41862), (54, 41895), (78, 42045), (79, 42054), (82, 42078), (85, 42099), (89, 42114), (93, 42126), (97, 42138), (102, 42177), (104, 42192), (114, 42225), (135, 42336), (136, 42342), (142, 42360), (149, 42384), (151, 42390), (159, 42420), (166, 42444), (186, 42537), (205, 42705),

Gene: BiPauneto\_68 Start: 50402, Stop: 49605, Start Num: 28

Candidate Starts for BiPauneto\_68:

(16, 50501), (22, 50429), (Start: 28 @50402 has 24 MA's), (49, 50327), (74, 50153), (101, 50021), (106, 49991), (109, 49982), (112, 49973), (118, 49946), (125, 49919), (134, 49874), (139, 49841), (142, 49829), (152, 49811), (175, 49730), (192, 49652),

Gene: BigMama\_57 Start: 44505, Stop: 45365, Start Num: 40

Candidate Starts for BigMama\_57:

(21, 44433), (Start: 40 @44505 has 21 MA's), (48, 44550), (51, 44562), (53, 44580), (54, 44592), (56, 44616), (57, 44619), (82, 44772), (85, 44793), (87, 44802), (89, 44808), (107, 44898), (108, 44901), (111, 44910), (117, 44931), (139, 45042), (142, 45054), (146, 45072), (166, 45123), (169, 45132), (175, 45162), (176, 45165),

Gene: BirthdayBoy\_69 Start: 45791, Stop: 46882, Start Num: 36

Candidate Starts for BirthdayBoy\_69:

(Start: 36 @45791 has 59 MA's), (61, 45923), (68, 45971), (82, 46052), (84, 46064), (85, 46073), (86, 46082), (116, 46205), (120, 46226), (128, 46253), (142, 46334), (145, 46352), (152, 46373), (173, 46451), (189, 46535), (207, 46700), (209, 46709), (218, 46853),

Gene: BiteSize\_56 Start: 41891, Stop: 42820, Start Num: 34

Candidate Starts for BiteSize\_56:

(Start: 34 @41891 has 14 MA's), (50, 41948), (54, 41981), (78, 42131), (79, 42140), (82, 42164), (85, 42185), (89, 42200), (93, 42212), (97, 42224), (102, 42263), (104, 42278), (114, 42311), (135, 42422), (136, 42428), (142, 42446), (149, 42470), (151, 42476), (159, 42506), (166, 42530), (186, 42623), (205, 42791),

Gene: Bonum\_69 Start: 51702, Stop: 50839, Start Num: 28

Candidate Starts for Bonum\_69:

(18, 51780), (Start: 28 @51702 has 24 MA's), (63, 51540), (81, 51414), (109, 51273), (118, 51240), (125, 51213), (135, 51147), (142, 51123), (152, 51105), (170, 51051), (177, 51021), (186, 50976),

Gene: Braxoaddie\_64 Start: 48389, Stop: 47538, Start Num: 35

Candidate Starts for Braxoaddie\_64:

(Start: 35 @48389 has 7 MA's), (49, 48329), (68, 48209), (70, 48197), (85, 48095), (87, 48086), (93, 48068), (97, 48056), (107, 47984), (142, 47828), (145, 47810), (152, 47804), (184, 47681), (191, 47645), (195, 47624),

Gene: Buggaboo\_67 Start: 52253, Stop: 51390, Start Num: 28

Candidate Starts for Buggaboo\_67:

(18, 52331), (Start: 28 @52253 has 24 MA's), (63, 52091), (81, 51965), (109, 51824), (118, 51791), (125, 51764), (127, 51758), (135, 51698), (142, 51674), (152, 51656), (170, 51602), (177, 51572), (186, 51527),

Gene: Butterscotch\_58 Start: 44489, Stop: 45349, Start Num: 40

Candidate Starts for Butterscotch\_58:

(21, 44417), (Start: 40 @44489 has 21 MA's), (48, 44534), (51, 44546), (53, 44564), (54, 44576), (56, 44600), (57, 44603), (82, 44756), (85, 44777), (87, 44786), (89, 44792), (107, 44882), (108, 44885), (111, 44894), (117, 44915), (139, 45026), (142, 45038), (146, 45056), (166, 45107), (169, 45116), (175, 45146), (176, 45149),

Gene: C3PO\_52 Start: 45078, Stop: 44314, Start Num: 31

Candidate Starts for C3PO\_52:

(Start: 31 @45078 has 8 MA's), (68, 44886), (71, 44859), (85, 44784), (132, 44577), (142, 44523), (160, 44478), (179, 44394),

Gene: Candle\_68 Start: 52987, Stop: 53817, Start Num: 27

Candidate Starts for Candle\_68:

(Start: 27 @52987 has 9 MA's), (45, 53032), (50, 53062), (54, 53095), (56, 53119), (65, 53167), (69, 53188), (82, 53281), (87, 53311), (88, 53314), (92, 53326), (115, 53410), (121, 53440), (136, 53524), (139, 53530), (142, 53542), (145, 53560), (153, 53587), (154, 53590), (176, 53686), (180, 53707), (186, 53734),

Gene: Cborch11\_74 Start: 52603, Stop: 53682, Start Num: 36

Candidate Starts for Cborch11\_74:

(17, 52492), (Start: 36 @52603 has 59 MA's), (39, 52609), (43, 52621), (49, 52657), (65, 52765), (72, 52813), (75, 52834), (76, 52840), (85, 52900), (86, 52909), (89, 52915), (111, 53017), (119, 53050), (123, 53065), (131, 53104), (136, 53143), (142, 53161), (145, 53179), (147, 53182), (150, 53191), (171, 53257), (175, 53281), (206, 53473), (216, 53620), (217, 53623), (219, 53662), (220, 53671),

Gene: ChewyVIII\_77 Start: 56830, Stop: 56066, Start Num: 41

Candidate Starts for ChewyVIII\_77:

(Start: 41 @56830 has 3 MA's), (42, 56821), (49, 56782), (58, 56716), (89, 56524), (126, 56359), (129, 56335), (137, 56287), (144, 56260), (152, 56245),

Gene: Chill\_61 Start: 44552, Stop: 45412, Start Num: 40

Candidate Starts for Chill\_61:

(21, 44480), (Start: 40 @44552 has 21 MA's), (48, 44597), (51, 44609), (53, 44627), (54, 44639), (56, 44663), (57, 44666), (82, 44819), (85, 44840), (87, 44849), (89, 44855), (107, 44945), (108, 44948), (111, 44957), (117, 44978), (139, 45089), (142, 45101), (146, 45119), (166, 45170), (169, 45179), (175, 45209), (176, 45212),

Gene: Chivey\_45 Start: 29369, Stop: 30214, Start Num: 36

Candidate Starts for Chivey\_45:

(1, 28808), (5, 28904), (6, 28943), (7, 28949), (10, 28973), (12, 29069), (13, 29105), (Start: 36 @29369 has 59 MA's), (49, 29423), (54, 29459), (56, 29486), (64, 29531), (65, 29534), (71, 29579), (100, 29735), (107, 29771), (110, 29780), (111, 29783), (138, 29912), (142, 29927), (174, 30032), (183, 30074),

Gene: CoffeeBean\_64 Start: 48347, Stop: 47496, Start Num: 35

Candidate Starts for CoffeeBean\_64:

(Start: 35 @48347 has 7 MA's), (49, 48287), (68, 48167), (70, 48155), (85, 48053), (87, 48044), (93, 48026), (97, 48014), (107, 47942), (142, 47786), (145, 47768), (152, 47762), (184, 47639), (191, 47603), (195, 47582),

Gene: Commandaria\_66 Start: 52055, Stop: 51243, Start Num: 26

Candidate Starts for Commandaria\_66:

(Start: 26 @52055 has 1 MA's), (49, 51968), (57, 51908), (66, 51851), (67, 51842), (109, 51608), (112, 51599), (118, 51575), (120, 51566), (125, 51548), (142, 51458), (152, 51440), (156, 51425), (158,

51419), (166, 51395),

Gene: CoolCookie\_50 Start: 30174, Stop: 31022, Start Num: 36

Candidate Starts for CoolCookie\_50:

(6, 29748), (10, 29778), (13, 29910), (Start: 36 @30174 has 59 MA's), (49, 30228), (54, 30264), (56, 30291), (64, 30336), (65, 30339), (71, 30384), (100, 30540), (107, 30576), (110, 30585), (111, 30588), (138, 30717), (142, 30732), (174, 30837), (183, 30879),

Gene: Crestdrop\_46 Start: 29400, Stop: 30245, Start Num: 36

Candidate Starts for Crestdrop\_46:

(2, 28890), (3, 28896), (4, 28923), (6, 28974), (10, 29004), (13, 29136), (Start: 36 @29400 has 59 MA's), (49, 29454), (54, 29490), (56, 29517), (64, 29562), (65, 29565), (71, 29610), (100, 29766), (107, 29802), (110, 29811), (111, 29814), (138, 29943), (142, 29958), (174, 30063), (183, 30105),

Gene: Cruella\_52 Start: 45078, Stop: 44314, Start Num: 31

Candidate Starts for Cruella\_52:

(Start: 31 @45078 has 8 MA's), (68, 44886), (71, 44859), (85, 44784), (132, 44577), (142, 44523), (160, 44478), (179, 44394),

Gene: Cuke\_77 Start: 46278, Stop: 47102, Start Num: 29

Candidate Starts for Cuke\_77:

(Start: 29 @46278 has 2 MA's), (Start: 34 @46290 has 14 MA's), (Start: 40 @46302 has 21 MA's), (Start: 41 @46305 has 3 MA's), (54, 46389), (56, 46413), (64, 46458), (65, 46461), (77, 46539), (83, 46578), (89, 46611), (96, 46632), (97, 46635), (107, 46701), (109, 46707), (119, 46746), (123, 46761), (140, 46848), (142, 46857), (145, 46875), (162, 46914), (168, 46941), (174, 46971), (176, 46980), (181, 47004), (190, 47055),

Gene: Cybele\_45 Start: 30144, Stop: 30992, Start Num: 36

Candidate Starts for Cybele\_45:

(6, 29718), (10, 29748), (13, 29880), (Start: 36 @30144 has 59 MA's), (49, 30198), (54, 30234), (56, 30261), (64, 30306), (65, 30309), (71, 30354), (100, 30510), (107, 30546), (110, 30555), (111, 30558), (138, 30687), (142, 30702), (174, 30807), (183, 30849),

Gene: Dalilpop\_69 Start: 52942, Stop: 52163, Start Num: 23

Candidate Starts for Dalilpop\_69:

(Start: 23 @52942 has 10 MA's), (49, 52855), (106, 52516), (109, 52507), (117, 52480), (118, 52474), (125, 52447), (132, 52417), (142, 52363), (143, 52357), (152, 52345), (167, 52303), (177, 52267),

Gene: Damien\_72 Start: 52565, Stop: 53644, Start Num: 36

Candidate Starts for Damien\_72:

(Start: 36 @52565 has 59 MA's), (39, 52571), (43, 52583), (49, 52619), (65, 52727), (72, 52775), (75, 52796), (76, 52802), (85, 52862), (86, 52871), (89, 52877), (111, 52979), (119, 53012), (123, 53027), (131, 53066), (136, 53105), (142, 53123), (145, 53141), (147, 53144), (150, 53153), (171, 53219), (175, 53243), (206, 53435), (216, 53582), (217, 53585), (219, 53624), (220, 53633),

Gene: DannyDe\_45 Start: 29375, Stop: 30220, Start Num: 36

Candidate Starts for DannyDe\_45:

(1, 28814), (5, 28910), (6, 28949), (7, 28955), (10, 28979), (12, 29075), (13, 29111), (Start: 36 @29375 has 59 MA's), (49, 29429), (54, 29465), (56, 29492), (64, 29537), (65, 29540), (71, 29585), (100, 29741), (107, 29777), (110, 29786), (111, 29789), (138, 29918), (142, 29933), (174, 30038), (183, 30080),

Gene: Darwin\_56 Start: 44559, Stop: 43795, Start Num: 31

Candidate Starts for Darwin\_56:

(Start: 31 @44559 has 8 MA's), (71, 44340), (83, 44283), (132, 44058), (142, 44004), (160, 43959), (179, 43875),

Gene: Dauntless\_45 Start: 29727, Stop: 30572, Start Num: 36

Candidate Starts for Dauntless\_45:

(6, 29301), (10, 29331), (11, 29358), (12, 29427), (13, 29463), (Start: 36 @29727 has 59 MA's), (49, 29781), (54, 29817), (56, 29844), (64, 29889), (65, 29892), (71, 29937), (100, 30093), (107, 30129), (110, 30138), (111, 30141), (138, 30270), (142, 30285), (174, 30390), (183, 30432),

Gene: DaviePasture\_68 Start: 45399, Stop: 46469, Start Num: 36

Candidate Starts for DaviePasture\_68:

(Start: 36 @45399 has 59 MA's), (61, 45531), (68, 45579), (84, 45672), (85, 45681), (86, 45690), (116, 45813), (120, 45834), (128, 45861), (142, 45942), (145, 45960), (152, 45981), (173, 46059), (189, 46143), (200, 46221), (208, 46308), (218, 46440),

Gene: Delton\_60 Start: 44887, Stop: 45747, Start Num: 40

Candidate Starts for Delton\_60:

(21, 44815), (Start: 40 @44887 has 21 MA's), (48, 44932), (51, 44944), (53, 44962), (54, 44974), (56, 44998), (57, 45001), (82, 45154), (85, 45175), (87, 45184), (89, 45190), (107, 45280), (108, 45283), (111, 45292), (117, 45313), (139, 45424), (142, 45436), (146, 45454), (166, 45505), (169, 45514), (175, 45544), (176, 45547),

Gene: Djokovic\_56 Start: 41804, Stop: 42733, Start Num: 34

Candidate Starts for Djokovic\_56:

(Start: 34 @41804 has 14 MA's), (50, 41861), (54, 41894), (78, 42044), (79, 42053), (82, 42077), (85, 42098), (89, 42113), (93, 42125), (97, 42137), (102, 42176), (104, 42191), (114, 42224), (135, 42335), (136, 42341), (142, 42359), (149, 42383), (151, 42389), (159, 42419), (166, 42443), (186, 42536), (205, 42704),

Gene: DoobyDoo\_65 Start: 44375, Stop: 45445, Start Num: 36

Candidate Starts for DoobyDoo\_65:

(Start: 36 @44375 has 59 MA's), (61, 44507), (68, 44555), (82, 44636), (84, 44648), (85, 44657), (86, 44666), (116, 44789), (120, 44810), (128, 44837), (142, 44918), (145, 44936), (152, 44957), (173, 45035), (189, 45119), (208, 45284), (218, 45416),

Gene: DrLupo\_79 Start: 52740, Stop: 53756, Start Num: 38

Candidate Starts for DrLupo\_79:

(Start: 38 @52740 has 2 MA's), (59, 52866), (60, 52872), (63, 52896), (71, 52956), (72, 52959), (78, 52995), (79, 53004), (85, 53049), (86, 53058), (89, 53064), (95, 53082), (99, 53100), (108, 53163), (115, 53184), (132, 53262), (136, 53307), (142, 53325), (145, 53343), (148, 53349), (171, 53418), (188, 53508), (198, 53577), (215, 53739),

Gene: Dryad\_68 Start: 46911, Stop: 46123, Start Num: 33

Candidate Starts for Dryad\_68:

(Start: 33 @46911 has 8 MA's), (44, 46884), (49, 46857), (52, 46848), (54, 46821), (56, 46797), (57, 46794), (84, 46635), (102, 46545), (103, 46539), (113, 46500), (118, 46479), (142, 46362), (143, 46356), (152, 46338), (163, 46311), (178, 46239),

Gene: DumpTruck\_66 Start: 44187, Stop: 45317, Start Num: 36

Candidate Starts for DumpTruck\_66:

(Start: 36 @44187 has 59 MA's), (54, 44283), (61, 44322), (68, 44370), (82, 44451), (84, 44463), (85, 44472), (86, 44481), (120, 44625), (142, 44733), (145, 44751), (152, 44772), (159, 44796), (161,

44799), (173, 44850), (197, 44991), (210, 45147), (218, 45285),

Gene: Emianna\_65 Start: 52042, Stop: 51221, Start Num: 28

Candidate Starts for Emianna\_65:

(22, 52069), (Start: 28 @52042 has 24 MA's), (49, 51970), (81, 51748), (109, 51607), (112, 51598), (125, 51547), (132, 51511), (142, 51457), (152, 51439), (156, 51424), (187, 51301),

Gene: Ennea\_72 Start: 53024, Stop: 52245, Start Num: 23

Candidate Starts for Ennea\_72:

(Start: 23 @53024 has 10 MA's), (49, 52940), (109, 52592), (125, 52532), (132, 52496), (142, 52442), (152, 52424), (165, 52391), (167, 52382), (185, 52307), (187, 52295),

Gene: Erk16\_58 Start: 44591, Stop: 45451, Start Num: 40

Candidate Starts for Erk16\_58:

(Start: 40 @44591 has 21 MA's), (48, 44636), (51, 44648), (53, 44666), (54, 44678), (56, 44702), (57, 44705), (82, 44858), (85, 44879), (87, 44888), (89, 44894), (107, 44984), (108, 44987), (111, 44996), (117, 45017), (139, 45128), (142, 45140), (146, 45158), (166, 45209), (169, 45218), (175, 45248), (176, 45251),

Gene: Erudite\_44 Start: 29727, Stop: 30572, Start Num: 36

Candidate Starts for Erudite\_44:

(6, 29301), (10, 29331), (11, 29358), (12, 29427), (13, 29463), (Start: 36 @29727 has 59 MA's), (49, 29781), (54, 29817), (56, 29844), (64, 29889), (65, 29892), (71, 29937), (100, 30093), (107, 30129), (110, 30138), (111, 30141), (138, 30270), (142, 30285), (174, 30390), (183, 30432),

Gene: Erutan\_67 Start: 45017, Stop: 46087, Start Num: 36

Candidate Starts for Erutan\_67:

(Start: 36 @45017 has 59 MA's), (61, 45149), (68, 45197), (84, 45290), (85, 45299), (86, 45308), (116, 45431), (120, 45452), (128, 45479), (142, 45560), (145, 45578), (152, 45599), (173, 45677), (189, 45761), (201, 45842), (218, 46058),

Gene: Flapper\_68 Start: 52133, Stop: 51354, Start Num: 23

Candidate Starts for Flapper\_68:

(Start: 23 @52133 has 10 MA's), (49, 52046), (58, 51983), (106, 51707), (109, 51698), (118, 51665), (125, 51638), (132, 51608), (142, 51554), (143, 51548), (152, 51536), (154, 51530), (167, 51494), (177, 51458),

Gene: Float294\_66 Start: 52739, Stop: 51960, Start Num: 23

Candidate Starts for Float294\_66:

(Start: 23 @52739 has 10 MA's), (49, 52655), (61, 52580), (109, 52307), (125, 52247), (132, 52211), (142, 52157), (152, 52139), (165, 52106), (167, 52097), (185, 52022), (187, 52010),

Gene: Fowlmouth\_78 Start: 48807, Stop: 49670, Start Num: 20

Candidate Starts for Fowlmouth\_78:

(Start: 20 @48807 has 2 MA's), (57, 48993), (64, 49035), (65, 49038), (77, 49116), (80, 49146), (89, 49188), (93, 49200), (97, 49212), (106, 49275), (109, 49284), (119, 49323), (140, 49425), (142, 49434), (162, 49491), (174, 49548), (176, 49557), (181, 49581), (190, 49632),

Gene: Foxboro\_66 Start: 52567, Stop: 51746, Start Num: 28

Candidate Starts for Foxboro\_66:

(22, 52594), (Start: 28 @52567 has 24 MA's), (49, 52495), (81, 52273), (109, 52132), (112, 52123), (125, 52072), (132, 52036), (142, 51982), (152, 51964), (156, 51949),



Gene: FreddieHg\_45 Start: 29385, Stop: 30230, Start Num: 36

Candidate Starts for FreddieHg\_45:

(1, 28824), (5, 28920), (6, 28959), (7, 28965), (10, 28989), (12, 29085), (13, 29121), (Start: 36 @29385 has 59 MA's), (49, 29439), (54, 29475), (56, 29502), (64, 29547), (65, 29550), (71, 29595), (100, 29751), (107, 29787), (110, 29796), (111, 29799), (138, 29928), (142, 29943), (174, 30048), (183, 30090),

Gene: Fulcrum\_67 Start: 45099, Stop: 46190, Start Num: 36

Candidate Starts for Fulcrum\_67:

(Start: 36 @45099 has 59 MA's), (61, 45231), (68, 45279), (82, 45360), (84, 45372), (85, 45381), (86, 45390), (116, 45513), (120, 45534), (128, 45561), (142, 45642), (145, 45660), (152, 45681), (173, 45759), (189, 45843), (207, 46008), (209, 46017), (218, 46161),

Gene: Fury\_74 Start: 51253, Stop: 50462, Start Num: 23

Candidate Starts for Fury\_74:

(Start: 23 @51253 has 10 MA's), (49, 51157), (85, 50923), (109, 50812), (112, 50803), (117, 50785), (119, 50773), (125, 50752), (142, 50662), (152, 50644), (156, 50629), (175, 50569),

Gene: GOATification\_67 Start: 45099, Stop: 46190, Start Num: 36

Candidate Starts for GOATification\_67:

(Start: 36 @45099 has 59 MA's), (61, 45231), (68, 45279), (82, 45360), (84, 45372), (85, 45381), (86, 45390), (116, 45513), (120, 45534), (128, 45561), (142, 45642), (145, 45660), (152, 45681), (173, 45759), (189, 45843), (207, 46008), (209, 46017), (218, 46161),

Gene: GRU1\_54 Start: 43981, Stop: 43202, Start Num: 23

Candidate Starts for GRU1\_54:

(Start: 23 @43981 has 10 MA's), (49, 43894), (106, 43555), (109, 43546), (118, 43513), (125, 43486), (132, 43456), (142, 43402), (143, 43396), (152, 43384), (156, 43369), (167, 43342), (177, 43306),

Gene: GTE5\_54 Start: 45013, Stop: 44234, Start Num: 23

Candidate Starts for GTE5\_54:

(Start: 23 @45013 has 10 MA's), (49, 44926), (106, 44587), (109, 44578), (118, 44545), (125, 44518), (132, 44488), (142, 44434), (143, 44428), (152, 44416), (167, 44374), (177, 44338),

Gene: GTE8\_54 Start: 45279, Stop: 44458, Start Num: 28

Candidate Starts for GTE8\_54:

(22, 45306), (Start: 28 @45279 has 24 MA's), (49, 45207), (81, 44985), (109, 44844), (112, 44835), (125, 44784), (132, 44748), (142, 44694), (152, 44676), (156, 44661), (188, 44535),

Gene: Genamy16\_70 Start: 44473, Stop: 45543, Start Num: 36

Candidate Starts for Genamy16\_70:

(Start: 36 @44473 has 59 MA's), (55, 44569), (61, 44605), (68, 44653), (84, 44746), (85, 44755), (86, 44764), (116, 44887), (120, 44908), (128, 44935), (142, 45016), (145, 45034), (152, 45055), (173, 45133), (189, 45217), (218, 45514),

Gene: Gibbin\_69 Start: 45904, Stop: 46995, Start Num: 36

Candidate Starts for Gibbin\_69:

(Start: 36 @45904 has 59 MA's), (61, 46036), (68, 46084), (84, 46177), (85, 46186), (86, 46195), (116, 46318), (120, 46339), (128, 46366), (142, 46447), (145, 46465), (152, 46486), (173, 46564), (189, 46648), (207, 46813), (209, 46822), (218, 46966),

Gene: Gibson\_64 Start: 46180, Stop: 45395, Start Num: 33

Candidate Starts for Gibson\_64:

(Start: 33 @46180 has 8 MA's), (49, 46126), (52, 46117), (54, 46090), (56, 46066), (65, 46018), (83, 45913), (102, 45814), (103, 45808), (113, 45769), (118, 45748), (134, 45676), (142, 45631), (143, 45625), (152, 45607), (163, 45580), (178, 45508),

Gene: Gilda\_45 Start: 30168, Stop: 31013, Start Num: 36

Candidate Starts for Gilda\_45:

(6, 29742), (10, 29772), (13, 29904), (Start: 36 @30168 has 59 MA's), (49, 30222), (54, 30258), (56, 30285), (64, 30330), (65, 30333), (71, 30378), (100, 30534), (107, 30570), (110, 30579), (111, 30582), (138, 30711), (142, 30726), (174, 30831), (183, 30873),

Gene: Giuseppe\_60 Start: 44457, Stop: 45317, Start Num: 40

Candidate Starts for Giuseppe\_60:

(21, 44385), (Start: 40 @44457 has 21 MA's), (48, 44502), (51, 44514), (53, 44532), (54, 44544), (56, 44568), (57, 44571), (82, 44724), (85, 44745), (87, 44754), (89, 44760), (107, 44850), (108, 44853), (111, 44862), (117, 44883), (139, 44994), (142, 45006), (146, 45024), (166, 45075), (169, 45084), (175, 45114), (176, 45117),

Gene: GretelLyn\_67 Start: 45889, Stop: 46959, Start Num: 36

Candidate Starts for GretelLyn\_67:

(Start: 36 @45889 has 59 MA's), (61, 46021), (68, 46069), (84, 46162), (85, 46171), (86, 46180), (116, 46303), (120, 46324), (128, 46351), (142, 46432), (145, 46450), (152, 46471), (173, 46549), (189, 46633), (208, 46798), (218, 46930),

Gene: GrootJr\_67 Start: 51436, Stop: 50615, Start Num: 28

Candidate Starts for GrootJr\_67:

(22, 51463), (Start: 28 @51436 has 24 MA's), (49, 51364), (81, 51142), (109, 51001), (112, 50992), (125, 50941), (132, 50905), (142, 50851), (152, 50833), (156, 50818), (187, 50695),

Gene: Gumball\_59 Start: 44949, Stop: 45809, Start Num: 40

Candidate Starts for Gumball\_59:

(21, 44877), (Start: 40 @44949 has 21 MA's), (48, 44994), (51, 45006), (53, 45024), (54, 45036), (56, 45060), (57, 45063), (82, 45216), (85, 45237), (87, 45246), (89, 45252), (107, 45342), (108, 45345), (111, 45354), (117, 45375), (139, 45486), (142, 45498), (146, 45516), (166, 45567), (169, 45576), (175, 45606), (176, 45609),

Gene: GuyFagieri\_63 Start: 48427, Stop: 47585, Start Num: 35

Candidate Starts for GuyFagieri\_63:

(24, 48457), (25, 48454), (Start: 35 @48427 has 7 MA's), (49, 48367), (68, 48247), (69, 48244), (81, 48157), (85, 48133), (87, 48124), (93, 48106), (99, 48082), (107, 48022), (112, 48007), (134, 47911), (142, 47866), (145, 47848), (155, 47833), (184, 47719), (191, 47683), (195, 47662),

Gene: Hager\_46 Start: 29593, Stop: 30441, Start Num: 36

Candidate Starts for Hager\_46:

(7, 29173), (8, 29188), (9, 29191), (10, 29197), (Start: 36 @29593 has 59 MA's), (47, 29635), (49, 29647), (54, 29683), (56, 29710), (64, 29755), (65, 29758), (71, 29803), (100, 29959), (107, 29995), (110, 30004), (111, 30007), (119, 30040), (138, 30136), (142, 30151), (174, 30256), (183, 30298),

Gene: Haunter\_45 Start: 29551, Stop: 30396, Start Num: 36

Candidate Starts for Haunter\_45:

(6, 29125), (10, 29155), (11, 29182), (12, 29251), (13, 29287), (Start: 36 @29551 has 59 MA's), (49, 29605), (54, 29641), (56, 29668), (64, 29713), (65, 29716), (71, 29761), (100, 29917), (107, 29953), (110, 29962), (111, 29965), (138, 30094), (142, 30109), (174, 30214), (175, 30220), (183, 30256),

Gene: Hawkeye\_66 Start: 44818, Stop: 45684, Start Num: 41

Candidate Starts for Hawkeye\_66:

(25, 44773), (Start: 36 @44806 has 59 MA's), (Start: 40 @44815 has 21 MA's), (Start: 41 @44818 has 3 MA's), (57, 44929), (62, 44962), (82, 45082), (84, 45094), (85, 45103), (87, 45112), (89, 45118), (107, 45208), (108, 45211), (111, 45220), (123, 45268), (142, 45364), (146, 45382), (166, 45436), (169, 45445), (192, 45556),

Gene: Helpful\_62 Start: 44818, Stop: 45678, Start Num: 40

Candidate Starts for Helpful\_62:

(21, 44746), (Start: 40 @44818 has 21 MA's), (48, 44863), (51, 44875), (53, 44893), (54, 44905), (56, 44929), (57, 44932), (82, 45085), (85, 45106), (87, 45115), (89, 45121), (107, 45211), (108, 45214), (111, 45223), (117, 45244), (139, 45355), (142, 45367), (146, 45385), (166, 45436), (169, 45445), (175, 45475), (176, 45478),

Gene: Hiddenleaf\_45 Start: 29369, Stop: 30214, Start Num: 36

Candidate Starts for Hiddenleaf\_45:

(1, 28808), (5, 28904), (6, 28943), (7, 28949), (10, 28973), (12, 29069), (13, 29105), (Start: 36 @29369 has 59 MA's), (49, 29423), (54, 29459), (56, 29486), (64, 29531), (65, 29534), (71, 29579), (100, 29735), (107, 29771), (110, 29780), (111, 29783), (138, 29912), (142, 29927), (174, 30032), (183, 30074),

Gene: HubbaBubba\_60 Start: 46888, Stop: 46091, Start Num: 28

Candidate Starts for HubbaBubba\_60:

(Start: 28 @46888 has 24 MA's), (49, 46813), (101, 46507), (106, 46477), (109, 46468), (112, 46459), (125, 46405), (134, 46360), (135, 46339), (139, 46327), (142, 46315), (152, 46297), (175, 46216), (192, 46138),

Gene: IDyn\_64 Start: 48323, Stop: 47526, Start Num: 28

Candidate Starts for IDyn\_64:

(22, 48350), (Start: 28 @48323 has 24 MA's), (49, 48248), (74, 48074), (101, 47942), (106, 47912), (109, 47903), (112, 47894), (125, 47840), (134, 47795), (135, 47774), (139, 47762), (142, 47750), (152, 47732), (175, 47651), (192, 47573),

Gene: Indlulamithi\_69 Start: 49597, Stop: 50433, Start Num: 29

Candidate Starts for Indlulamithi\_69:

(Start: 29 @49597 has 2 MA's), (Start: 41 @49612 has 3 MA's), (83, 49894), (89, 49930), (93, 49942), (96, 49951), (97, 49954), (108, 50023), (109, 50026), (118, 50059), (119, 50065), (125, 50086), (126, 50089), (135, 50152), (141, 50173), (142, 50176), (145, 50194), (152, 50212), (172, 50281), (176, 50302), (182, 50329), (190, 50377), (194, 50398),

Gene: JDawG\_44 Start: 29786, Stop: 30631, Start Num: 36

Candidate Starts for JDawG\_44:

(1, 29225), (5, 29321), (6, 29360), (12, 29486), (13, 29522), (Start: 36 @29786 has 59 MA's), (49, 29840), (54, 29876), (56, 29903), (64, 29948), (65, 29951), (71, 29996), (100, 30152), (107, 30188), (110, 30197), (111, 30200), (138, 30329), (142, 30344), (174, 30449), (183, 30491),

Gene: Jalebi\_66 Start: 46242, Stop: 47312, Start Num: 36

Candidate Starts for Jalebi\_66:

(Start: 36 @46242 has 59 MA's), (61, 46374), (68, 46422), (82, 46503), (84, 46515), (85, 46524), (86, 46533), (116, 46656), (120, 46677), (128, 46704), (142, 46785), (145, 46803), (152, 46824), (173, 46902), (189, 46986), (200, 47064), (208, 47151), (218, 47283),

Gene: Jamemuya19\_67 Start: 44078, Stop: 45148, Start Num: 36

Candidate Starts for Jamemuya19\_67:

(Start: 36 @44078 has 59 MA's), (55, 44174), (61, 44210), (68, 44258), (84, 44351), (85, 44360), (86, 44369), (116, 44492), (120, 44513), (128, 44540), (142, 44621), (145, 44639), (152, 44660), (173, 44738), (189, 44822), (218, 45119),

Gene: Jifall16\_64 Start: 51698, Stop: 50877, Start Num: 28

Candidate Starts for Jifall16\_64:

(Start: 28 @51698 has 24 MA's), (49, 51626), (81, 51404), (109, 51263), (112, 51254), (125, 51203), (132, 51167), (142, 51113), (152, 51095), (156, 51080), (187, 50957),

Gene: JingleBells\_45 Start: 29520, Stop: 30365, Start Num: 36

Candidate Starts for JingleBells\_45:

(6, 29094), (7, 29100), (10, 29124), (12, 29220), (13, 29256), (Start: 36 @29520 has 59 MA's), (49, 29574), (54, 29610), (56, 29637), (64, 29682), (65, 29685), (71, 29730), (100, 29886), (107, 29922), (110, 29931), (111, 29934), (138, 30063), (142, 30078), (174, 30183), (183, 30225),

Gene: Kabluna\_68 Start: 51031, Stop: 50168, Start Num: 28

Candidate Starts for Kabluna\_68:

(18, 51109), (Start: 28 @51031 has 24 MA's), (63, 50869), (81, 50743), (109, 50602), (118, 50569), (125, 50542), (135, 50476), (142, 50452), (152, 50434), (170, 50380), (177, 50350), (186, 50305),

Gene: KandZ\_58 Start: 44615, Stop: 45475, Start Num: 40

Candidate Starts for KandZ\_58:

(21, 44543), (Start: 40 @44615 has 21 MA's), (48, 44660), (51, 44672), (53, 44690), (54, 44702), (56, 44726), (57, 44729), (82, 44882), (85, 44903), (87, 44912), (89, 44918), (107, 45008), (108, 45011), (111, 45020), (117, 45041), (139, 45152), (142, 45164), (146, 45182), (166, 45233), (169, 45242), (175, 45272), (176, 45275),

Gene: Karate\_44 Start: 30169, Stop: 31014, Start Num: 36

Candidate Starts for Karate\_44:

(5, 29704), (6, 29743), (10, 29773), (13, 29905), (Start: 36 @30169 has 59 MA's), (49, 30223), (54, 30259), (56, 30286), (64, 30331), (65, 30334), (71, 30379), (100, 30535), (107, 30571), (110, 30580), (111, 30583), (138, 30712), (142, 30727), (174, 30832), (183, 30874),

Gene: Kate\_46 Start: 30176, Stop: 31024, Start Num: 36

Candidate Starts for Kate\_46:

(6, 29750), (10, 29780), (13, 29912), (Start: 36 @30176 has 59 MA's), (49, 30230), (54, 30266), (56, 30293), (64, 30338), (65, 30341), (71, 30386), (100, 30542), (107, 30578), (110, 30587), (111, 30590), (138, 30719), (142, 30734), (174, 30839), (183, 30881),

Gene: KidneyBean\_65 Start: 51822, Stop: 51001, Start Num: 28

Candidate Starts for KidneyBean\_65:

(Start: 28 @51822 has 24 MA's), (49, 51750), (81, 51528), (109, 51387), (112, 51378), (125, 51327), (132, 51291), (142, 51237), (152, 51219), (156, 51204), (187, 51081),

Gene: Kimchi1738\_53 Start: 45055, Stop: 44291, Start Num: 31

Candidate Starts for Kimchi1738\_53:

(Start: 31 @45055 has 8 MA's), (71, 44836), (132, 44554), (142, 44500), (160, 44455), (179, 44371),

Gene: Konstantine\_76 Start: 53396, Stop: 54475, Start Num: 36

Candidate Starts for Konstantine\_76:

(Start: 36 @53396 has 59 MA's), (43, 53414), (49, 53450), (65, 53558), (72, 53606), (75, 53627), (76, 53633), (85, 53693), (86, 53702), (89, 53708), (111, 53810), (119, 53843), (123, 53858), (131, 53897),

(136, 53936), (142, 53954), (145, 53972), (147, 53975), (150, 53984), (171, 54050), (175, 54074), (206, 54266), (216, 54413), (217, 54416), (219, 54455), (220, 54464),

Gene: Kors\_50 Start: 31190, Stop: 32032, Start Num: 30

Candidate Starts for Kors\_50:

(Start: 30 @31190 has 4 MA's), (51, 31253), (63, 31337), (64, 31349), (65, 31352), (94, 31514), (107, 31586), (124, 31649), (127, 31658), (138, 31727), (142, 31742), (183, 31889),

Gene: Krampus\_45 Start: 30176, Stop: 31024, Start Num: 36

Candidate Starts for Krampus\_45:

(6, 29750), (10, 29780), (13, 29912), (Start: 36 @30176 has 59 MA's), (49, 30230), (54, 30266), (56, 30293), (64, 30338), (65, 30341), (71, 30386), (100, 30542), (107, 30578), (110, 30587), (111, 30590), (138, 30719), (142, 30734), (174, 30839), (183, 30881),

Gene: Kurt\_65 Start: 52057, Stop: 51236, Start Num: 28

Candidate Starts for Kurt\_65:

(22, 52084), (Start: 28 @52057 has 24 MA's), (49, 51985), (81, 51763), (109, 51622), (112, 51613), (125, 51562), (132, 51526), (142, 51472), (152, 51454), (156, 51439), (187, 51316),

Gene: Labelle\_84 Start: 54626, Stop: 55684, Start Num: 34

Candidate Starts for Labelle\_84:

(Start: 34 @54626 has 14 MA's), (50, 54683), (51, 54686), (54, 54716), (63, 54773), (65, 54788), (85, 54917), (91, 54941), (101, 54995), (105, 55019), (135, 55163), (136, 55169), (139, 55175), (141, 55184), (142, 55187), (145, 55205), (154, 55232), (171, 55292), (180, 55340), (189, 55388), (193, 55406), (198, 55466), (202, 55487), (211, 55595), (212, 55610),

Gene: Lambo\_65 Start: 44896, Stop: 45987, Start Num: 36

Candidate Starts for Lambo\_65:

(Start: 36 @44896 has 59 MA's), (61, 45028), (68, 45076), (84, 45169), (85, 45178), (86, 45187), (116, 45310), (120, 45331), (128, 45358), (142, 45439), (145, 45457), (152, 45478), (173, 45556), (189, 45640), (207, 45805), (209, 45814), (218, 45958),

Gene: Leopard\_75 Start: 52296, Stop: 53216, Start Num: 32

Candidate Starts for Leopard\_75:

(Start: 32 @52296 has 2 MA's), (Start: 41 @52311 has 3 MA's), (53, 52383), (54, 52395), (56, 52419), (57, 52422), (63, 52452), (72, 52515), (83, 52572), (85, 52590), (87, 52599), (89, 52605), (98, 52635), (131, 52794), (133, 52803), (134, 52806), (142, 52851), (146, 52869), (166, 52917), (177, 52965), (185, 53004), (199, 53109),

Gene: Lila22\_71 Start: 45848, Stop: 46939, Start Num: 36

Candidate Starts for Lila22\_71:

(Start: 36 @45848 has 59 MA's), (61, 45980), (68, 46028), (84, 46121), (85, 46130), (86, 46139), (116, 46262), (120, 46283), (128, 46310), (142, 46391), (145, 46409), (152, 46430), (173, 46508), (189, 46592), (207, 46757), (209, 46766), (218, 46910),

Gene: LilyPad\_58 Start: 43001, Stop: 43912, Start Num: 34

Candidate Starts for LilyPad\_58:

(Start: 34 @43001 has 14 MA's), (50, 43058), (51, 43061), (54, 43091), (78, 43241), (79, 43250), (85, 43295), (89, 43310), (93, 43322), (97, 43334), (102, 43373), (104, 43388), (109, 43406), (114, 43421), (135, 43532), (136, 43538), (142, 43556), (149, 43580), (151, 43586), (159, 43616), (181, 43709), (186, 43733), (205, 43883),

Gene: LittleFella\_63 Start: 44521, Stop: 45468, Start Num: 34

Candidate Starts for LittleFella\_63:

(Start: 34 @44521 has 14 MA's), (37, 44527), (56, 44644), (85, 44824), (89, 44839), (93, 44851), (124, 44992), (131, 45028), (142, 45085),

Gene: Lizz\_64 Start: 46003, Stop: 45221, Start Num: 33

Candidate Starts for Lizz\_64:

(Start: 33 @46003 has 8 MA's), (49, 45949), (52, 45940), (54, 45913), (56, 45889), (65, 45841), (83, 45736), (102, 45637), (103, 45631), (113, 45592), (118, 45571), (134, 45499), (142, 45454), (143, 45448), (152, 45430), (164, 45394), (178, 45331),

Gene: Lollipop1437\_69 Start: 52704, Stop: 51925, Start Num: 23

Candidate Starts for Lollipop1437\_69:

(Start: 23 @52704 has 10 MA's), (49, 52620), (109, 52272), (125, 52212), (132, 52176), (142, 52122), (152, 52104), (165, 52071), (167, 52062), (185, 51987), (187, 51975),

Gene: LuckyLeo\_64 Start: 44646, Stop: 45731, Start Num: 36

Candidate Starts for LuckyLeo\_64:

(Start: 36 @44646 has 59 MA's), (54, 44739), (61, 44778), (68, 44826), (85, 44928), (86, 44937), (116, 45060), (120, 45081), (124, 45096), (128, 45108), (142, 45189), (145, 45207), (152, 45228), (158, 45249), (173, 45306), (189, 45390), (217, 45690),

Gene: MacGully\_73 Start: 51597, Stop: 50779, Start Num: 35

Candidate Starts for MacGully\_73:

(15, 51750), (19, 51672), (Start: 35 @51597 has 7 MA's), (39, 51591), (49, 51537), (68, 51411), (85, 51294), (93, 51267), (97, 51255), (101, 51216), (107, 51183), (122, 51126), (152, 51003), (166, 50958), (196, 50805),

Gene: Madi\_56 Start: 41882, Stop: 42811, Start Num: 34

Candidate Starts for Madi\_56:

(Start: 34 @41882 has 14 MA's), (50, 41939), (54, 41972), (78, 42122), (79, 42131), (82, 42155), (85, 42176), (89, 42191), (93, 42203), (97, 42215), (102, 42254), (104, 42269), (114, 42302), (135, 42413), (136, 42419), (142, 42437), (149, 42461), (151, 42467), (159, 42497), (166, 42521), (186, 42614), (205, 42782),

Gene: Madruga\_83 Start: 54580, Stop: 55638, Start Num: 34

Candidate Starts for Madruga\_83:

(Start: 34 @54580 has 14 MA's), (50, 54637), (51, 54640), (54, 54670), (63, 54727), (65, 54742), (85, 54871), (91, 54895), (101, 54949), (105, 54973), (135, 55117), (136, 55123), (139, 55129), (141, 55138), (142, 55141), (145, 55159), (154, 55186), (171, 55246), (180, 55294), (189, 55342), (193, 55360), (198, 55420), (202, 55441), (211, 55549), (212, 55564),

Gene: Marietta\_66 Start: 48435, Stop: 47638, Start Num: 28

Candidate Starts for Marietta\_66:

(Start: 28 @48435 has 24 MA's), (49, 48360), (74, 48186), (101, 48054), (106, 48024), (109, 48015), (112, 48006), (118, 47979), (125, 47952), (134, 47907), (139, 47874), (142, 47862), (152, 47844), (175, 47763), (192, 47685),

Gene: Maselop\_64 Start: 48423, Stop: 47572, Start Num: 35

Candidate Starts for Maselop\_64:

(Start: 35 @48423 has 7 MA's), (49, 48363), (68, 48243), (70, 48231), (85, 48129), (87, 48120), (93, 48102), (97, 48090), (107, 48018), (142, 47862), (145, 47844), (152, 47838), (184, 47715), (191, 47679), (195, 47658),

Gene: Megatron06\_73 Start: 53142, Stop: 54218, Start Num: 36

Candidate Starts for Megatron06\_73:

(Start: 36 @53142 has 59 MA's), (39, 53148), (43, 53160), (49, 53196), (65, 53304), (72, 53352), (77, 53382), (85, 53439), (86, 53448), (89, 53454), (111, 53556), (119, 53589), (123, 53604), (131, 53643), (136, 53682), (142, 53700), (145, 53718), (147, 53721), (150, 53730), (171, 53796), (175, 53820), (206, 54009), (216, 54156), (217, 54159), (219, 54198), (220, 54207),

Gene: MerCougar\_67 Start: 52388, Stop: 51525, Start Num: 28

Candidate Starts for MerCougar\_67:

(Start: 28 @52388 has 24 MA's), (81, 52100), (93, 52049), (109, 51959), (120, 51917), (125, 51899), (132, 51863), (135, 51833), (142, 51809), (152, 51791),

Gene: Mima20\_68 Start: 45405, Stop: 46475, Start Num: 36

Candidate Starts for Mima20\_68:

(Start: 36 @45405 has 59 MA's), (61, 45537), (68, 45585), (82, 45666), (84, 45678), (85, 45687), (86, 45696), (116, 45819), (120, 45840), (128, 45867), (142, 45948), (145, 45966), (152, 45987), (173, 46065), (189, 46149), (208, 46314), (218, 46446),

Gene: MoiGyank\_73 Start: 46170, Stop: 47240, Start Num: 36

Candidate Starts for MoiGyank\_73:

(Start: 36 @46170 has 59 MA's), (61, 46302), (68, 46350), (82, 46431), (84, 46443), (85, 46452), (86, 46461), (116, 46584), (120, 46605), (128, 46632), (142, 46713), (145, 46731), (152, 46752), (173, 46830), (189, 46914), (200, 46992), (208, 47079), (218, 47211),

Gene: MontyDev\_73 Start: 52628, Stop: 53458, Start Num: 27

Candidate Starts for MontyDev\_73:

(Start: 27 @52628 has 9 MA's), (45, 52673), (50, 52703), (54, 52736), (56, 52760), (65, 52808), (69, 52829), (82, 52922), (87, 52952), (88, 52955), (92, 52967), (115, 53051), (121, 53081), (136, 53165), (139, 53171), (142, 53183), (145, 53201), (153, 53228), (154, 53231), (176, 53327), (180, 53348), (186, 53375),

Gene: Mopey\_60 Start: 44493, Stop: 45353, Start Num: 40

Candidate Starts for Mopey\_60:

(21, 44421), (Start: 40 @44493 has 21 MA's), (48, 44538), (51, 44550), (53, 44568), (54, 44580), (56, 44604), (57, 44607), (82, 44760), (85, 44781), (87, 44790), (89, 44796), (107, 44886), (108, 44889), (111, 44898), (117, 44919), (139, 45030), (142, 45042), (146, 45060), (166, 45111), (169, 45120), (175, 45150), (176, 45153),

Gene: MortySmith\_43 Start: 29204, Stop: 30049, Start Num: 36

Candidate Starts for MortySmith\_43:

(6, 28778), (10, 28808), (11, 28835), (12, 28904), (13, 28940), (Start: 36 @29204 has 59 MA's), (49, 29258), (54, 29294), (56, 29321), (64, 29366), (65, 29369), (71, 29414), (100, 29570), (107, 29606), (110, 29615), (111, 29618), (138, 29747), (142, 29762), (174, 29867), (183, 29909),

Gene: MrMiyagi\_77 Start: 49209, Stop: 50072, Start Num: 20

Candidate Starts for MrMiyagi\_77:

(Start: 20 @49209 has 2 MA's), (57, 49395), (64, 49437), (65, 49440), (77, 49518), (80, 49548), (89, 49590), (97, 49614), (106, 49677), (109, 49686), (115, 49704), (119, 49725), (140, 49827), (142, 49836), (149, 49860), (162, 49893), (168, 49920), (174, 49950), (176, 49959), (181, 49983), (190, 50034),

Gene: NadineRae\_65 Start: 48044, Stop: 47247, Start Num: 28

Candidate Starts for NadineRae\_65:

(Start: 28 @48044 has 24 MA's), (49, 47969), (101, 47663), (106, 47633), (109, 47624), (112, 47615), (125, 47561), (134, 47516), (135, 47495), (139, 47483), (142, 47471), (152, 47453), (175, 47372), (192, 47294),

Gene: NarutoRun\_45 Start: 30144, Stop: 30992, Start Num: 36

Candidate Starts for NarutoRun\_45:

(6, 29718), (10, 29748), (13, 29880), (Start: 36 @30144 has 59 MA's), (49, 30198), (54, 30234), (56, 30261), (64, 30306), (65, 30309), (71, 30354), (100, 30510), (107, 30546), (110, 30555), (111, 30558), (138, 30687), (142, 30702), (174, 30807), (183, 30849),

Gene: NatB6\_65 Start: 51126, Stop: 50305, Start Num: 28

Candidate Starts for NatB6\_65:

(22, 51153), (Start: 28 @51126 has 24 MA's), (49, 51054), (81, 50832), (109, 50691), (112, 50682), (125, 50631), (132, 50595), (142, 50541), (152, 50523), (156, 50508), (187, 50385),

Gene: Neptune\_45 Start: 30144, Stop: 30992, Start Num: 36

Candidate Starts for Neptune\_45:

(6, 29718), (10, 29748), (13, 29880), (Start: 36 @30144 has 59 MA's), (49, 30198), (54, 30234), (56, 30261), (64, 30306), (65, 30309), (71, 30354), (100, 30510), (107, 30546), (110, 30555), (111, 30558), (138, 30687), (142, 30702), (174, 30807), (183, 30849),

Gene: Nilo\_72 Start: 52985, Stop: 53815, Start Num: 27

Candidate Starts for Nilo\_72:

(Start: 27 @52985 has 9 MA's), (45, 53030), (50, 53060), (54, 53093), (56, 53117), (65, 53165), (69, 53186), (82, 53279), (87, 53309), (88, 53312), (92, 53324), (115, 53408), (121, 53438), (136, 53522), (139, 53528), (142, 53540), (145, 53558), (153, 53585), (154, 53588), (176, 53684), (180, 53705), (186, 53732),

Gene: NorManre\_71 Start: 46296, Stop: 47387, Start Num: 36

Candidate Starts for NorManre\_71:

(Start: 36 @46296 has 59 MA's), (61, 46428), (68, 46476), (84, 46569), (85, 46578), (86, 46587), (116, 46710), (120, 46731), (128, 46758), (142, 46839), (145, 46857), (152, 46878), (173, 46956), (189, 47040), (207, 47205), (209, 47214), (218, 47358),

Gene: NosilaM\_67 Start: 51702, Stop: 50839, Start Num: 28

Candidate Starts for NosilaM\_67:

(Start: 28 @51702 has 24 MA's), (63, 51540), (81, 51414), (109, 51273), (118, 51240), (125, 51213), (127, 51207), (135, 51147), (142, 51123), (152, 51105), (170, 51051), (177, 51021), (186, 50976),

Gene: Nova\_58 Start: 44945, Stop: 45805, Start Num: 40

Candidate Starts for Nova\_58:

(21, 44873), (Start: 40 @44945 has 21 MA's), (48, 44990), (51, 45002), (53, 45020), (54, 45032), (56, 45056), (57, 45059), (82, 45212), (85, 45233), (87, 45242), (89, 45248), (107, 45338), (108, 45341), (111, 45350), (117, 45371), (139, 45482), (142, 45494), (146, 45512), (166, 45563), (169, 45572), (175, 45602), (176, 45605),

Gene: NovaSharks\_69 Start: 44064, Stop: 45134, Start Num: 36

Candidate Starts for NovaSharks\_69:

(Start: 36 @44064 has 59 MA's), (55, 44160), (61, 44196), (68, 44244), (84, 44337), (85, 44346), (86, 44355), (116, 44478), (120, 44499), (128, 44526), (142, 44607), (145, 44625), (152, 44646), (173, 44724), (189, 44808), (218, 45105),

Gene: NovumRegina\_65 Start: 51435, Stop: 50614, Start Num: 28



Candidate Starts for NovumRegina\_65:

(22, 51462), (Start: 28 @51435 has 24 MA's), (49, 51363), (81, 51141), (109, 51000), (112, 50991), (125, 50940), (132, 50904), (142, 50850), (152, 50832), (156, 50817), (187, 50694),

Gene: Oaker\_72 Start: 53171, Stop: 54247, Start Num: 36

Candidate Starts for Oaker\_72:

(Start: 36 @53171 has 59 MA's), (39, 53177), (49, 53225), (65, 53333), (72, 53381), (77, 53411), (85, 53468), (86, 53477), (89, 53483), (111, 53585), (119, 53618), (123, 53633), (131, 53672), (136, 53711), (142, 53729), (145, 53747), (147, 53750), (150, 53759), (171, 53825), (175, 53849), (206, 54038), (216, 54185), (217, 54188), (219, 54227), (220, 54236),

Gene: Onyinye\_76 Start: 52178, Stop: 53083, Start Num: 41

Candidate Starts for Onyinye\_76:

(Start: 32 @52163 has 2 MA's), (Start: 41 @52178 has 3 MA's), (53, 52250), (54, 52262), (56, 52286), (57, 52289), (63, 52319), (72, 52382), (83, 52439), (85, 52457), (87, 52466), (89, 52472), (98, 52502), (131, 52661), (133, 52670), (134, 52673), (142, 52718), (146, 52736), (166, 52784), (177, 52832), (185, 52871), (199, 52976), (203, 53024),

Gene: OtterstedtS21\_67 Start: 45230, Stop: 46321, Start Num: 36

Candidate Starts for OtterstedtS21\_67:

(Start: 36 @45230 has 59 MA's), (61, 45362), (68, 45410), (82, 45491), (84, 45503), (85, 45512), (86, 45521), (116, 45644), (120, 45665), (128, 45692), (142, 45773), (145, 45791), (152, 45812), (173, 45890), (189, 45974), (207, 46139), (209, 46148), (218, 46292),

Gene: Outis\_66 Start: 51894, Stop: 51040, Start Num: 34

Candidate Starts for Outis\_66:

(Start: 34 @51894 has 14 MA's), (81, 51615), (93, 51564), (109, 51474), (120, 51432), (125, 51414), (132, 51378), (135, 51348), (142, 51324), (152, 51306),

Gene: OverHedge\_45 Start: 30134, Stop: 30982, Start Num: 36

Candidate Starts for OverHedge\_45:

(6, 29708), (10, 29738), (13, 29870), (Start: 36 @30134 has 59 MA's), (49, 30188), (54, 30224), (56, 30251), (64, 30296), (65, 30299), (71, 30344), (100, 30500), (107, 30536), (110, 30545), (111, 30548), (138, 30677), (142, 30692), (174, 30797), (183, 30839),

Gene: P1201\_70 Start: 52915, Stop: 52136, Start Num: 33

Candidate Starts for P1201\_70:

(Start: 33 @52915 has 8 MA's), (49, 52858), (50, 52855), (73, 52684), (85, 52621), (123, 52456), (134, 52405), (142, 52360), (143, 52354), (152, 52336),

Gene: PBI1\_56 Start: 44420, Stop: 45280, Start Num: 40

Candidate Starts for PBI1\_56:

(21, 44348), (Start: 40 @44420 has 21 MA's), (48, 44465), (51, 44477), (53, 44495), (54, 44507), (56, 44531), (57, 44534), (82, 44687), (85, 44708), (87, 44717), (89, 44723), (107, 44813), (108, 44816), (111, 44825), (117, 44846), (139, 44957), (142, 44969), (146, 44987), (166, 45038), (169, 45047), (175, 45077), (176, 45080),

Gene: PHTowN\_64 Start: 46001, Stop: 45219, Start Num: 33

Candidate Starts for PHTowN\_64:

(Start: 33 @46001 has 8 MA's), (49, 45947), (52, 45938), (54, 45911), (56, 45887), (65, 45839), (83, 45734), (102, 45635), (103, 45629), (113, 45590), (118, 45569), (134, 45497), (142, 45452), (143, 45446), (152, 45428), (164, 45392), (178, 45329),

Gene: PLOT\_59 Start: 44472, Stop: 45332, Start Num: 40

Candidate Starts for PLOT\_59:

(21, 44400), (Start: 40 @44472 has 21 MA's), (48, 44517), (51, 44529), (53, 44547), (54, 44559), (56, 44583), (57, 44586), (82, 44739), (85, 44760), (87, 44769), (89, 44775), (107, 44865), (108, 44868), (111, 44877), (117, 44898), (139, 45009), (142, 45021), (146, 45039), (166, 45090), (169, 45099), (175, 45129), (176, 45132),

Gene: Papyrus\_70 Start: 52595, Stop: 53425, Start Num: 27

Candidate Starts for Papyrus\_70:

(Start: 27 @52595 has 9 MA's), (45, 52640), (50, 52670), (54, 52703), (56, 52727), (65, 52775), (69, 52796), (82, 52889), (87, 52919), (88, 52922), (92, 52934), (115, 53018), (121, 53048), (136, 53132), (139, 53138), (142, 53150), (145, 53168), (153, 53195), (154, 53198), (176, 53294), (180, 53315), (186, 53342),

Gene: ParvusTarda\_66 Start: 44602, Stop: 45693, Start Num: 36

Candidate Starts for ParvusTarda\_66:

(Start: 36 @44602 has 59 MA's), (61, 44734), (68, 44782), (84, 44875), (85, 44884), (86, 44893), (116, 45016), (120, 45037), (128, 45064), (142, 45145), (145, 45163), (152, 45184), (173, 45262), (189, 45346), (207, 45511), (209, 45520), (218, 45664),

Gene: Patience\_85 Start: 55493, Stop: 56551, Start Num: 34

Candidate Starts for Patience\_85:

(Start: 34 @55493 has 14 MA's), (50, 55550), (51, 55553), (54, 55583), (63, 55640), (65, 55655), (85, 55784), (91, 55808), (101, 55862), (105, 55886), (135, 56030), (136, 56036), (139, 56042), (141, 56051), (142, 56054), (145, 56072), (154, 56099), (171, 56159), (180, 56207), (189, 56255), (193, 56273), (198, 56333), (202, 56354), (211, 56462), (212, 56477),

Gene: Patio\_67 Start: 51761, Stop: 50982, Start Num: 23

Candidate Starts for Patio\_67:

(Start: 23 @51761 has 10 MA's), (49, 51677), (109, 51329), (125, 51269), (132, 51233), (142, 51179), (152, 51161), (165, 51128), (167, 51119), (185, 51044), (187, 51032),

Gene: Patos\_71 Start: 46295, Stop: 47386, Start Num: 36

Candidate Starts for Patos\_71:

(Start: 36 @46295 has 59 MA's), (61, 46427), (68, 46475), (84, 46568), (85, 46577), (86, 46586), (116, 46709), (120, 46730), (128, 46757), (142, 46838), (145, 46856), (152, 46877), (173, 46955), (189, 47039), (207, 47204), (209, 47213), (218, 47357),

Gene: Penelope2018\_59 Start: 44490, Stop: 45350, Start Num: 40

Candidate Starts for Penelope2018\_59:

(21, 44418), (Start: 40 @44490 has 21 MA's), (48, 44535), (51, 44547), (53, 44565), (54, 44577), (56, 44601), (57, 44604), (82, 44757), (85, 44778), (87, 44787), (89, 44793), (107, 44883), (108, 44886), (111, 44895), (117, 44916), (139, 45027), (142, 45039), (146, 45057), (166, 45108), (169, 45117), (175, 45147), (176, 45150),

Gene: PeteyPab\_53 Start: 45339, Stop: 44575, Start Num: 31

Candidate Starts for PeteyPab\_53:

(Start: 31 @45339 has 8 MA's), (71, 45120), (85, 45045), (132, 44838), (142, 44784), (160, 44739), (179, 44655),

Gene: Pharpay\_45 Start: 30189, Stop: 31037, Start Num: 36

Candidate Starts for Pharpay\_45:

(6, 29763), (10, 29793), (13, 29925), (Start: 36 @30189 has 59 MA's), (49, 30243), (54, 30279), (56, 30306), (64, 30351), (65, 30354), (71, 30399), (100, 30555), (107, 30591), (110, 30600), (111, 30603), (138, 30732), (142, 30747), (174, 30852), (183, 30894),

Gene: Phomeo\_64 Start: 51694, Stop: 50873, Start Num: 28

Candidate Starts for Phomeo\_64:

(Start: 28 @51694 has 24 MA's), (49, 51622), (81, 51400), (109, 51259), (112, 51250), (125, 51199), (132, 51163), (142, 51109), (152, 51091), (156, 51076), (187, 50953),

Gene: Phreeze\_71 Start: 52138, Stop: 53217, Start Num: 36

Candidate Starts for Phreeze\_71:

(Start: 36 @52138 has 59 MA's), (39, 52144), (49, 52192), (65, 52300), (72, 52348), (77, 52378), (85, 52435), (86, 52444), (89, 52450), (111, 52552), (119, 52585), (123, 52600), (131, 52639), (136, 52678), (142, 52696), (145, 52714), (147, 52717), (150, 52726), (171, 52792), (175, 52816), (206, 53008), (216, 53155), (217, 53158), (219, 53197), (220, 53206),

Gene: PhunaPhoke\_45 Start: 30162, Stop: 31010, Start Num: 36

Candidate Starts for PhunaPhoke\_45:

(6, 29736), (10, 29766), (13, 29898), (Start: 36 @30162 has 59 MA's), (49, 30216), (54, 30252), (56, 30279), (64, 30324), (65, 30327), (71, 30372), (100, 30528), (107, 30564), (110, 30573), (111, 30576), (138, 30705), (142, 30720), (174, 30825), (183, 30867),

Gene: Pleakley\_74 Start: 51254, Stop: 50463, Start Num: 23

Candidate Starts for Pleakley\_74:

(Start: 23 @51254 has 10 MA's), (49, 51158), (85, 50924), (109, 50813), (112, 50804), (117, 50786), (119, 50774), (125, 50753), (142, 50663), (152, 50645), (156, 50630), (175, 50570),

Gene: Polyzuki\_64 Start: 48412, Stop: 47561, Start Num: 35

Candidate Starts for Polyzuki\_64:

(Start: 35 @48412 has 7 MA's), (49, 48352), (68, 48232), (70, 48220), (85, 48118), (87, 48109), (93, 48091), (97, 48079), (107, 48007), (142, 47851), (145, 47833), (152, 47827), (184, 47704), (191, 47668), (195, 47647),

Gene: PotatoChip\_54 Start: 45341, Stop: 44577, Start Num: 31

Candidate Starts for PotatoChip\_54:

(Start: 31 @45341 has 8 MA's), (71, 45122), (85, 45047), (132, 44840), (142, 44786), (160, 44741), (179, 44657),

Gene: Potty\_45 Start: 30167, Stop: 31015, Start Num: 36

Candidate Starts for Potty\_45:

(6, 29741), (10, 29771), (13, 29903), (Start: 36 @30167 has 59 MA's), (49, 30221), (54, 30257), (56, 30284), (64, 30329), (65, 30332), (71, 30377), (100, 30533), (107, 30569), (110, 30578), (111, 30581), (138, 30710), (142, 30725), (174, 30830), (183, 30872),

Gene: Poultruss\_45 Start: 30482, Stop: 31330, Start Num: 36

Candidate Starts for Poultruss\_45:

(1, 29921), (5, 30017), (6, 30056), (10, 30086), (12, 30182), (13, 30218), (Start: 36 @30482 has 59 MA's), (49, 30536), (54, 30572), (56, 30599), (64, 30644), (65, 30647), (71, 30692), (100, 30848), (107, 30884), (110, 30893), (111, 30896), (138, 31025), (142, 31040), (174, 31145), (183, 31187),

Gene: Prager\_59 Start: 44509, Stop: 45369, Start Num: 40

Candidate Starts for Prager\_59:

(21, 44437), (Start: 40 @44509 has 21 MA's), (48, 44554), (51, 44566), (53, 44584), (54, 44596), (56, 44620), (57, 44623), (82, 44776), (85, 44797), (87, 44806), (89, 44812), (107, 44902), (108, 44905), (111, 44914), (117, 44935), (139, 45046), (142, 45058), (146, 45076), (166, 45127), (169, 45136), (175, 45166), (176, 45169),

Gene: Predator\_71 Start: 51699, Stop: 52709, Start Num: 36

Candidate Starts for Predator\_71:

(Start: 36 @51699 has 59 MA's), (39, 51705), (49, 51753), (51, 51759), (65, 51861), (72, 51909), (85, 51996), (86, 52005), (89, 52011), (96, 52032), (107, 52101), (111, 52113), (118, 52140), (119, 52146), (123, 52161), (131, 52200), (136, 52239), (142, 52257), (145, 52275), (147, 52278), (168, 52350), (171, 52362), (214, 52683),

Gene: Puissant\_73 Start: 52254, Stop: 53387, Start Num: 36

Candidate Starts for Puissant\_73:

(Start: 36 @52254 has 59 MA's), (39, 52260), (49, 52308), (65, 52416), (72, 52464), (77, 52494), (85, 52551), (86, 52560), (89, 52566), (111, 52668), (119, 52701), (123, 52716), (131, 52755), (136, 52794), (142, 52812), (145, 52830), (147, 52833), (150, 52842), (171, 52908), (175, 52932), (213, 53289), (219, 53367),

Gene: Rachella\_45 Start: 30170, Stop: 31018, Start Num: 36

Candidate Starts for Rachella\_45:

(6, 29744), (10, 29774), (13, 29906), (Start: 36 @30170 has 59 MA's), (49, 30224), (54, 30260), (56, 30287), (64, 30332), (65, 30335), (71, 30380), (100, 30536), (107, 30572), (110, 30581), (111, 30584), (138, 30713), (142, 30728), (174, 30833), (183, 30875),

Gene: Ranch\_67 Start: 44074, Stop: 45165, Start Num: 36

Candidate Starts for Ranch\_67:

(Start: 36 @44074 has 59 MA's), (61, 44206), (68, 44254), (84, 44347), (85, 44356), (86, 44365), (116, 44488), (120, 44509), (128, 44536), (142, 44617), (145, 44635), (152, 44656), (173, 44734), (189, 44818), (207, 44983), (209, 44992), (218, 45136),

Gene: Rie18\_45 Start: 29667, Stop: 30512, Start Num: 36

Candidate Starts for Rie18\_45:

(8, 29262), (10, 29271), (Start: 36 @29667 has 59 MA's), (47, 29709), (49, 29721), (54, 29757), (56, 29784), (64, 29829), (65, 29832), (71, 29877), (100, 30033), (107, 30069), (110, 30078), (111, 30081), (138, 30210), (142, 30225), (174, 30330), (183, 30372),

Gene: RikSengupta\_49 Start: 31227, Stop: 32069, Start Num: 30

Candidate Starts for RikSengupta\_49:

(14, 30993), (Start: 30 @31227 has 4 MA's), (51, 31290), (63, 31374), (64, 31386), (65, 31389), (94, 31551), (100, 31587), (107, 31623), (124, 31686), (127, 31695), (138, 31764), (142, 31779), (183, 31926),

Gene: Riparian\_72 Start: 52432, Stop: 53262, Start Num: 27

Candidate Starts for Riparian\_72:

(Start: 27 @52432 has 9 MA's), (45, 52477), (50, 52507), (54, 52540), (56, 52564), (65, 52612), (69, 52633), (82, 52726), (87, 52756), (88, 52759), (92, 52771), (115, 52855), (121, 52885), (136, 52969), (139, 52975), (142, 52987), (145, 53005), (153, 53032), (154, 53035), (176, 53131), (180, 53152), (186, 53179),

Gene: Rooney\_64 Start: 46156, Stop: 45371, Start Num: 33

Candidate Starts for Rooney\_64:

(Start: 33 @46156 has 8 MA's), (49, 46102), (52, 46093), (54, 46066), (56, 46042), (65, 45994), (83, 45889), (102, 45790), (103, 45784), (113, 45745), (118, 45724), (134, 45652), (142, 45607), (143, 45601), (152, 45583), (163, 45556), (178, 45484),

Gene: Rope\_70 Start: 52588, Stop: 53418, Start Num: 27

Candidate Starts for Rope\_70:

(Start: 27 @52588 has 9 MA's), (45, 52633), (50, 52663), (54, 52696), (56, 52720), (65, 52768), (69, 52789), (82, 52882), (87, 52912), (88, 52915), (92, 52927), (115, 53011), (121, 53041), (136, 53125), (139, 53131), (142, 53143), (145, 53161), (153, 53188), (154, 53191), (176, 53287), (180, 53308), (186, 53335),

Gene: Rumi\_68 Start: 43761, Stop: 44831, Start Num: 36

Candidate Starts for Rumi\_68:

(Start: 36 @43761 has 59 MA's), (55, 43857), (61, 43893), (68, 43941), (84, 44034), (85, 44043), (86, 44052), (116, 44175), (120, 44196), (128, 44223), (142, 44304), (145, 44322), (152, 44343), (173, 44421), (189, 44505), (218, 44802),

Gene: Sadboi\_68 Start: 45890, Stop: 46960, Start Num: 36

Candidate Starts for Sadboi\_68:

(Start: 36 @45890 has 59 MA's), (61, 46022), (68, 46070), (84, 46163), (85, 46172), (86, 46181), (116, 46304), (120, 46325), (128, 46352), (142, 46433), (145, 46451), (152, 46472), (173, 46550), (189, 46634), (208, 46799), (218, 46931),

Gene: Sampudon\_67 Start: 46242, Stop: 47312, Start Num: 36

Candidate Starts for Sampudon\_67:

(Start: 36 @46242 has 59 MA's), (61, 46374), (68, 46422), (82, 46503), (84, 46515), (85, 46524), (86, 46533), (116, 46656), (120, 46677), (128, 46704), (142, 46785), (145, 46803), (152, 46824), (173, 46902), (189, 46986), (200, 47064), (208, 47151), (218, 47283),

Gene: Send513\_70 Start: 52966, Stop: 53796, Start Num: 27

Candidate Starts for Send513\_70:

(Start: 27 @52966 has 9 MA's), (45, 53011), (50, 53041), (54, 53074), (56, 53098), (65, 53146), (69, 53167), (82, 53260), (87, 53290), (88, 53293), (115, 53389), (121, 53419), (136, 53503), (139, 53509), (142, 53521), (145, 53539), (153, 53566), (154, 53569), (176, 53665), (180, 53686), (186, 53713),

Gene: ShakeNBake\_64 Start: 46028, Stop: 45246, Start Num: 33

Candidate Starts for ShakeNBake\_64:

(Start: 33 @46028 has 8 MA's), (49, 45974), (52, 45965), (54, 45938), (56, 45914), (65, 45866), (83, 45761), (102, 45662), (103, 45656), (113, 45617), (118, 45596), (134, 45524), (142, 45479), (143, 45473), (152, 45455), (164, 45419), (178, 45356),

Gene: Sienna\_56 Start: 41882, Stop: 42811, Start Num: 34

Candidate Starts for Sienna\_56:

(Start: 34 @41882 has 14 MA's), (50, 41939), (54, 41972), (78, 42122), (79, 42131), (82, 42155), (85, 42176), (89, 42191), (93, 42203), (97, 42215), (102, 42254), (104, 42269), (114, 42302), (135, 42413), (136, 42419), (142, 42437), (149, 42461), (151, 42467), (159, 42497), (166, 42521), (186, 42614), (205, 42782),

Gene: SirHarley\_61 Start: 44932, Stop: 45792, Start Num: 40

Candidate Starts for SirHarley\_61:

(21, 44860), (Start: 40 @44932 has 21 MA's), (48, 44977), (51, 44989), (53, 45007), (54, 45019), (56, 45043), (57, 45046), (82, 45199), (85, 45220), (87, 45229), (89, 45235), (107, 45325), (108, 45328), (111, 45337), (117, 45358), (139, 45469), (142, 45481), (146, 45499), (166, 45550), (169, 45559),

(175, 45589), (176, 45592),

Gene: Skysand\_67 Start: 52239, Stop: 51460, Start Num: 23

Candidate Starts for Skysand\_67:

(Start: 23 @52239 has 10 MA's), (49, 52155), (61, 52080), (109, 51807), (125, 51747), (132, 51711), (142, 51657), (152, 51639), (165, 51606), (167, 51597), (185, 51522), (187, 51510),

Gene: Snakehole\_45 Start: 29347, Stop: 30192, Start Num: 36

Candidate Starts for Snakehole\_45:

(6, 28921), (7, 28927), (10, 28951), (13, 29083), (Start: 36 @29347 has 59 MA's), (49, 29401), (54, 29437), (56, 29464), (64, 29509), (65, 29512), (71, 29557), (100, 29713), (107, 29749), (110, 29758), (111, 29761), (138, 29890), (142, 29905), (174, 30010), (183, 30052),

Gene: Sparcetus\_49 Start: 31104, Stop: 31946, Start Num: 30

Candidate Starts for Sparcetus\_49:

(Start: 30 @31104 has 4 MA's), (51, 31167), (63, 31251), (64, 31263), (65, 31266), (94, 31428), (100, 31464), (107, 31500), (124, 31563), (127, 31572), (138, 31641), (142, 31656), (183, 31803),

Gene: StarStruck\_66 Start: 51894, Stop: 51040, Start Num: 34

Candidate Starts for StarStruck\_66:

(Start: 34 @51894 has 14 MA's), (81, 51615), (93, 51564), (109, 51474), (120, 51432), (125, 51414), (132, 51378), (135, 51348), (142, 51324), (152, 51306),

Gene: Stickynote\_54 Start: 45345, Stop: 44581, Start Num: 31

Candidate Starts for Stickynote\_54:

(Start: 31 @45345 has 8 MA's), (71, 45126), (132, 44844), (142, 44790), (160, 44745), (179, 44661),

Gene: Sukkupi\_66 Start: 50275, Stop: 49478, Start Num: 28

Candidate Starts for Sukkupi\_66:

(16, 50374), (22, 50302), (Start: 28 @50275 has 24 MA's), (49, 50200), (74, 50026), (101, 49894), (106, 49864), (109, 49855), (112, 49846), (118, 49819), (125, 49792), (134, 49747), (139, 49714), (142, 49702), (152, 49684), (175, 49603), (192, 49525),

Gene: SuperSulley\_67 Start: 52253, Stop: 51390, Start Num: 28

Candidate Starts for SuperSulley\_67:

(18, 52331), (Start: 28 @52253 has 24 MA's), (63, 52091), (81, 51965), (109, 51824), (118, 51791), (125, 51764), (127, 51758), (135, 51698), (142, 51674), (152, 51656), (170, 51602), (177, 51572), (186, 51527),

Gene: Suzy\_56 Start: 43075, Stop: 44001, Start Num: 34

Candidate Starts for Suzy\_56:

(Start: 34 @43075 has 14 MA's), (50, 43132), (54, 43165), (78, 43315), (79, 43324), (85, 43369), (89, 43384), (93, 43396), (97, 43408), (102, 43447), (104, 43462), (114, 43495), (135, 43606), (136, 43612), (142, 43630), (149, 43654), (151, 43660), (157, 43684), (159, 43690), (166, 43714), (181, 43783), (186, 43807), (205, 43972),

Gene: Tedro\_45 Start: 29601, Stop: 30446, Start Num: 36

Candidate Starts for Tedro\_45:

(6, 29175), (10, 29205), (12, 29301), (13, 29337), (Start: 36 @29601 has 59 MA's), (49, 29655), (54, 29691), (56, 29718), (64, 29763), (65, 29766), (71, 29811), (100, 29967), (107, 30003), (110, 30012), (111, 30015), (138, 30144), (142, 30159), (174, 30264), (183, 30306),

Gene: Terapin\_57 Start: 41806, Stop: 42735, Start Num: 34

Candidate Starts for Terapin\_57:

(Start: 34 @41806 has 14 MA's), (50, 41863), (54, 41896), (78, 42046), (79, 42055), (82, 42079), (85, 42100), (89, 42115), (93, 42127), (97, 42139), (102, 42178), (104, 42193), (114, 42226), (135, 42337), (136, 42343), (142, 42361), (149, 42385), (151, 42391), (159, 42421), (166, 42445), (186, 42538), (205, 42706),

Gene: Thoth\_59 Start: 44488, Stop: 45348, Start Num: 40

Candidate Starts for Thoth\_59:

(21, 44416), (Start: 40 @44488 has 21 MA's), (48, 44533), (51, 44545), (53, 44563), (54, 44575), (56, 44599), (57, 44602), (82, 44755), (85, 44776), (87, 44785), (89, 44791), (107, 44881), (108, 44884), (111, 44893), (117, 44914), (139, 45025), (142, 45037), (146, 45055), (166, 45106), (169, 45115), (175, 45145), (176, 45148),

Gene: Thumb\_73 Start: 52573, Stop: 53652, Start Num: 36

Candidate Starts for Thumb\_73:

(Start: 36 @52573 has 59 MA's), (39, 52579), (49, 52627), (65, 52735), (72, 52783), (77, 52813), (85, 52870), (86, 52879), (89, 52885), (111, 52987), (119, 53020), (123, 53035), (131, 53074), (136, 53113), (142, 53131), (145, 53149), (147, 53152), (150, 53161), (171, 53227), (175, 53251), (206, 53443), (216, 53590), (217, 53593), (219, 53632), (220, 53641),

Gene: Tillicus\_63 Start: 44587, Stop: 45672, Start Num: 36

Candidate Starts for Tillicus\_63:

(Start: 36 @44587 has 59 MA's), (53, 44668), (54, 44680), (56, 44704), (61, 44719), (68, 44767), (84, 44860), (85, 44869), (86, 44878), (116, 45001), (120, 45022), (128, 45049), (142, 45130), (145, 45148), (152, 45169), (158, 45190), (173, 45247), (189, 45331),

Gene: TinyMiny\_49 Start: 31125, Stop: 31967, Start Num: 30

Candidate Starts for TinyMiny\_49:

(14, 30891), (Start: 30 @31125 has 4 MA's), (51, 31188), (63, 31272), (64, 31284), (65, 31287), (94, 31449), (100, 31485), (107, 31521), (124, 31584), (127, 31593), (138, 31662), (142, 31677), (183, 31824),

Gene: Tracker\_65 Start: 50870, Stop: 50052, Start Num: 28

Candidate Starts for Tracker\_65:

(22, 50897), (Start: 28 @50870 has 24 MA's), (49, 50798), (81, 50576), (109, 50435), (112, 50426), (125, 50375), (132, 50339), (142, 50285), (152, 50267), (156, 50252),

Gene: Troll4\_59 Start: 44619, Stop: 45479, Start Num: 40

Candidate Starts for Troll4\_59:

(21, 44547), (Start: 40 @44619 has 21 MA's), (48, 44664), (51, 44676), (53, 44694), (54, 44706), (56, 44730), (57, 44733), (82, 44886), (85, 44907), (87, 44916), (89, 44922), (107, 45012), (108, 45015), (111, 45024), (117, 45045), (139, 45156), (142, 45168), (146, 45186), (166, 45237), (169, 45246), (175, 45276), (176, 45279),

Gene: Turuncu\_68 Start: 51816, Stop: 51037, Start Num: 23

Candidate Starts for Turuncu\_68:

(Start: 23 @51816 has 10 MA's), (49, 51729), (106, 51390), (109, 51381), (118, 51348), (125, 51321), (132, 51291), (142, 51237), (143, 51231), (152, 51219), (154, 51213), (167, 51177), (177, 51141),

Gene: Visconti\_60 Start: 44499, Stop: 45359, Start Num: 40

Candidate Starts for Visconti\_60:

(21, 44427), (Start: 40 @44499 has 21 MA's), (48, 44544), (51, 44556), (53, 44574), (54, 44586), (56, 44610), (57, 44613), (82, 44766), (85, 44787), (87, 44796), (89, 44802), (107, 44892), (108, 44895),

(111, 44904), (117, 44925), (139, 45036), (142, 45048), (146, 45066), (166, 45117), (169, 45126),  
(175, 45156), (176, 45159),

Gene: WaldoWhy\_61 Start: 44552, Stop: 45412, Start Num: 40

Candidate Starts for WaldoWhy\_61:

(21, 44480), (Start: 40 @44552 has 21 MA's), (48, 44597), (51, 44609), (53, 44627), (54, 44639), (56, 44663), (57, 44666), (82, 44819), (85, 44840), (87, 44849), (89, 44855), (107, 44945), (108, 44948), (111, 44957), (117, 44978), (139, 45089), (142, 45101), (146, 45119), (166, 45170), (169, 45179), (175, 45209), (176, 45212),

Gene: Weiss13\_70 Start: 52669, Stop: 53499, Start Num: 27

Candidate Starts for Weiss13\_70:

(Start: 27 @52669 has 9 MA's), (45, 52714), (50, 52744), (54, 52777), (56, 52801), (65, 52849), (69, 52870), (82, 52963), (87, 52993), (88, 52996), (92, 53008), (115, 53092), (121, 53122), (136, 53206), (139, 53212), (142, 53224), (145, 53242), (153, 53269), (154, 53272), (176, 53368), (180, 53389), (186, 53416),

Gene: Wentworth\_64 Start: 46130, Stop: 45360, Start Num: 33

Candidate Starts for Wentworth\_64:

(Start: 33 @46130 has 8 MA's), (46, 46088), (49, 46076), (50, 46073), (54, 46040), (65, 45968), (81, 45869), (102, 45764), (103, 45758), (113, 45719), (118, 45698), (130, 45641), (142, 45581), (143, 45575), (163, 45530), (164, 45521),

Gene: Wheezy\_65 Start: 51084, Stop: 50263, Start Num: 28

Candidate Starts for Wheezy\_65:

(22, 51111), (Start: 28 @51084 has 24 MA's), (49, 51012), (81, 50790), (109, 50649), (112, 50640), (125, 50589), (132, 50553), (142, 50499), (152, 50481), (156, 50466),

Gene: WhoseManz\_65 Start: 48102, Stop: 47305, Start Num: 28

Candidate Starts for WhoseManz\_65:

(Start: 28 @48102 has 24 MA's), (49, 48027), (101, 47721), (106, 47691), (109, 47682), (112, 47673), (118, 47646), (125, 47619), (134, 47574), (139, 47541), (142, 47529), (152, 47511), (175, 47430), (192, 47352),

Gene: Wilkos\_66 Start: 46285, Stop: 45515, Start Num: 33

Candidate Starts for Wilkos\_66:

(Start: 33 @46285 has 8 MA's), (44, 46258), (46, 46243), (49, 46231), (50, 46228), (54, 46195), (56, 46171), (57, 46168), (63, 46138), (81, 46024), (102, 45919), (103, 45913), (113, 45874), (118, 45853), (130, 45796), (142, 45736), (143, 45730), (164, 45676),

Gene: Wojtek\_63 Start: 44323, Stop: 45414, Start Num: 36

Candidate Starts for Wojtek\_63:

(Start: 36 @44323 has 59 MA's), (53, 44404), (54, 44416), (61, 44455), (68, 44503), (84, 44596), (85, 44605), (86, 44614), (116, 44737), (120, 44758), (128, 44785), (142, 44866), (145, 44884), (152, 44905), (173, 44983), (189, 45067), (200, 45145), (208, 45232),

Gene: Wollypog\_48 Start: 34784, Stop: 35608, Start Num: 40

Candidate Starts for Wollypog\_48:

(Start: 40 @34784 has 21 MA's), (48, 34832), (49, 34838), (50, 34841), (56, 34898), (89, 35081), (90, 35084), (106, 35174), (115, 35201), (119, 35222), (140, 35324), (142, 35333),

Gene: Xenia2\_63 Start: 44090, Stop: 45202, Start Num: 36

Candidate Starts for Xenia2\_63:



(Start: 36 @44090 has 59 MA's), (54, 44186), (61, 44225), (68, 44273), (82, 44354), (84, 44366), (85, 44375), (86, 44384), (120, 44528), (142, 44636), (145, 44654), (152, 44675), (159, 44699), (161, 44702), (173, 44753), (197, 44894), (218, 45170),

Gene: Yara\_60 Start: 44990, Stop: 44223, Start Num: 33

Candidate Starts for Yara\_60:

(Start: 33 @44990 has 8 MA's), (44, 44963), (49, 44936), (52, 44927), (54, 44900), (113, 44579), (114, 44576), (118, 44558), (125, 44531), (143, 44435), (183, 44297),

Gene: Yelo\_69 Start: 53048, Stop: 53878, Start Num: 27

Candidate Starts for Yelo\_69:

(Start: 27 @53048 has 9 MA's), (45, 53093), (50, 53123), (54, 53156), (56, 53180), (65, 53228), (69, 53249), (82, 53342), (87, 53372), (88, 53375), (92, 53387), (115, 53471), (121, 53501), (136, 53585), (139, 53591), (142, 53603), (145, 53621), (153, 53648), (154, 53651), (176, 53747), (180, 53768), (186, 53795),

Gene: Yikes\_69 Start: 46336, Stop: 47406, Start Num: 36

Candidate Starts for Yikes\_69:

(Start: 36 @46336 has 59 MA's), (61, 46468), (68, 46516), (84, 46609), (85, 46618), (86, 46627), (116, 46750), (120, 46771), (128, 46798), (142, 46879), (145, 46897), (152, 46918), (173, 46996), (189, 47080), (208, 47245), (218, 47377),

Gene: Yndexa\_66 Start: 50275, Stop: 49478, Start Num: 28

Candidate Starts for Yndexa\_66:

(16, 50374), (22, 50302), (Start: 28 @50275 has 24 MA's), (49, 50200), (74, 50026), (101, 49894), (106, 49864), (109, 49855), (112, 49846), (118, 49819), (125, 49792), (134, 49747), (139, 49714), (142, 49702), (152, 49684), (175, 49603), (192, 49525),

Gene: Zany\_65 Start: 45737, Stop: 46807, Start Num: 36

Candidate Starts for Zany\_65:

(Start: 36 @45737 has 59 MA's), (61, 45869), (68, 45917), (84, 46010), (85, 46019), (86, 46028), (116, 46151), (120, 46172), (128, 46199), (142, 46280), (145, 46298), (152, 46319), (173, 46397), (189, 46481), (208, 46646), (218, 46778),

Gene: Zenon\_72 Start: 52992, Stop: 53822, Start Num: 27

Candidate Starts for Zenon\_72:

(Start: 27 @52992 has 9 MA's), (45, 53037), (50, 53067), (54, 53100), (56, 53124), (65, 53172), (69, 53193), (82, 53286), (87, 53316), (88, 53319), (115, 53415), (121, 53445), (136, 53529), (139, 53535), (142, 53547), (145, 53565), (153, 53592), (154, 53595), (176, 53691), (180, 53712), (186, 53739),

Gene: Zion\_54 Start: 45339, Stop: 44575, Start Num: 31

Candidate Starts for Zion\_54:

(Start: 31 @45339 has 8 MA's), (71, 45120), (85, 45045), (132, 44838), (142, 44784), (160, 44739), (179, 44655),