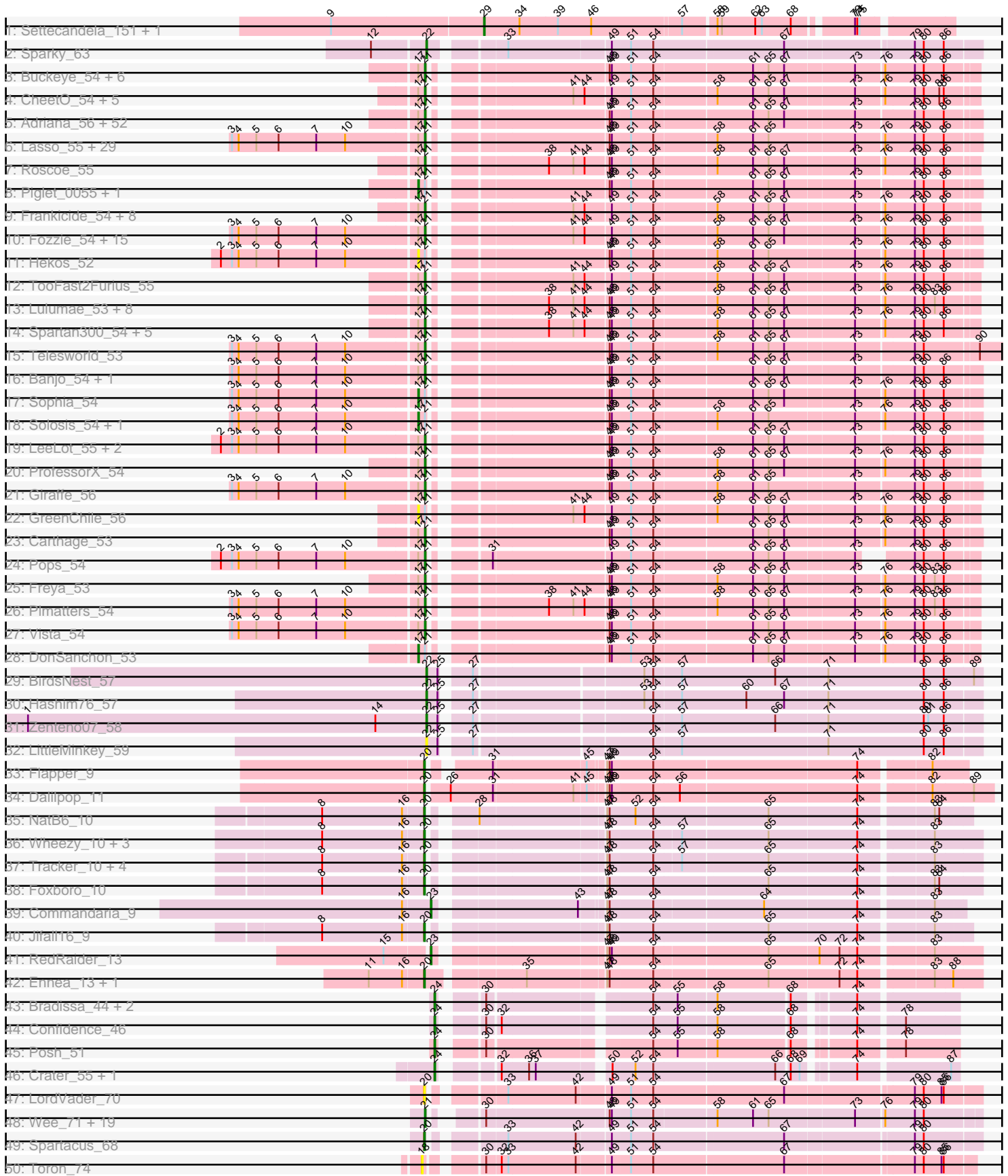


Pham 304714





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 304714 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304714 has 219 members, 21 are drafts.

Phages represented in each track:

- Track 1 : Settecandela\_151, Phrappuccino\_151
- Track 2 : Sparky\_63
- Track 3 : Buckeye\_54, SilverBell\_54, Murdoc\_54, PinheadLarry\_56, UncleHowie\_54, Matalotodo\_54, Pipsqueak\_54
- Track 4 : CheetO\_54, Schadenfreude\_54, KlimbOn\_54, Crownjwl\_55, AbsoluteMadLad\_54, Riverton\_54
- Track 5 : Adriana\_56, Thora\_55, Morty\_56, Samaymay\_55, CamL\_55, ABU\_56, Serpentine\_0055, Usavi\_55, Soile\_56, Hamish\_54, Chaelin\_56, Mulan\_55, Cher\_55, Nacho\_0056, Bishoperium\_55, ThreeOh3D2\_56, Brilliant\_57, Windsor\_55, Mecca\_55, Megatron\_56, Kahve\_55, QueenBeane\_55, Weher20\_55, Omniscient\_56, Dati\_55, Eugenia\_55, DoIOn\_59, HogWash\_55, Jesabah\_56, Vaticameos\_52, PhatCats2014\_56, Oosterbaan\_55, Happabalu\_55, Lego3393\_54, Placalicious\_55, Kimbrough\_56, IsaacEli\_56, Badfish\_56, HenryJackson\_55, FugateOSU\_55, Gareth\_55, Jillium\_55, Gwilliam\_56, PG1\_56, Hertubise\_55, Etaye\_55, Haimas\_54, Waterdiva\_55, Bluephacebaby\_55, Melc17\_55, KingTut\_47, Kikipoo\_56, Tomlarah\_56
- Track 6 : Lasso\_55, Squid\_55, Daffy\_55, Haleema\_54, MrPhizzler\_57, DaddyDaniels\_57, Held\_55, Mosaic\_54, Craff\_58, Grand2040\_55, MRabcd\_54, Potter\_54, SassyCat97\_54, Vortex\_55, Mana\_54, MitKao\_55, Timmi\_54, Chorkpop\_55, Serendipity\_55, Childish\_55, Puhltonio\_55, Cosmolli16\_56, TomBombadil\_55, TallGrassMM\_55, Maru\_55, Khan1\_56, Morgushi\_55, Surely\_55, Cannibal\_55, Kwadwo\_54
- Track 7 : Roscoe\_55
- Track 8 : Piglet\_0055, SirBeauregard\_56
- Track 9 : Frankicide\_54, Eremos\_54, Basato\_55, Horchata\_54, RedRaider89\_55, Aelin\_54, HSavage\_54, OneBrain\_56, OliverWalter\_54
- Track 10 : Fozzie\_54, ElvisPhasley\_56, Lehmann\_55, Mesh1\_56, UAch1\_54, Vaishali24\_53, Antonia\_54, Harvey\_54, OSmaximus\_56, Manad\_54, Hetaeria\_54, Cornobble\_54, Inverness\_54, Newman\_54, Triad\_55, Robyn\_54
- Track 11 : Hekos\_52
- Track 12 : TooFast2Furius\_55
- Track 13 : Lulumae\_53, Altwerkus\_53, Phunky\_54, DoesntMatter\_53, Roy17\_54, LuckyMarjie\_53, Numberten\_54, Dione\_53, Phareon\_54
- Track 14 : Spartan300\_54, Valjean\_54, Boehler\_54, Zaidler\_55, Olive\_54, EmpTee\_54
- Track 15 : Telesworld\_53
- Track 16 : Banjo\_54, FremontTroll\_56

- Track 17 : Sophia\_54
- Track 18 : Solosis\_54, Xavier\_54
- Track 19 : LeeLot\_55, JDog\_54, Zelda\_55
- Track 20 : ProfessorX\_54
- Track 21 : Giraffe\_56
- Track 22 : GreenChile\_56
- Track 23 : Carthage\_53
- Track 24 : Pops\_54
- Track 25 : Freya\_53
- Track 26 : Plmatters\_54
- Track 27 : Vista\_54
- Track 28 : DonSanchon\_53
- Track 29 : BirdsNest\_57
- Track 30 : Hashim76\_57
- Track 31 : Zenteno07\_58
- Track 32 : LittleMinkey\_59
- Track 33 : Flapper\_9
- Track 34 : Dalipop\_11
- Track 35 : NatB6\_10
- Track 36 : Wheezy\_10, Arti\_10, GrootJr\_12, NovumRegina\_10
- Track 37 : Tracker\_10, Phomeo\_9, Emianna\_10, Kurt\_10, KidneyBean\_10
- Track 38 : Foxboro\_10
- Track 39 : Commandaria\_9
- Track 40 : Jifall16\_9
- Track 41 : RedRaider\_13
- Track 42 : Ennea\_13, Lollipop1437\_12
- Track 43 : Bradissa\_44, EnalisNailo\_43, Lilas\_46
- Track 44 : Confidence\_46
- Track 45 : Posh\_51
- Track 46 : Crater\_55, Apricot\_55
- Track 47 : LordVader\_70
- Track 48 : Wee\_71, WillSterrel\_67, SilverChicken\_76, Ogopogo\_73, TDanisky\_73, UncleRicky\_65, Doomhist\_66, Poenanya\_66, Enby\_67, Oksu\_71, Llij\_62, Lorde\_66, Sparkdehlily\_73, Tootsieroll\_66, DirtMcgirt\_65, Phatniss\_64, Drago\_63, Fruitloop\_61, IrishSherpFalk\_67, Taj\_71
- Track 49 : Spartacus\_68
- Track 50 : Toron\_74
- Track 51 : Okabe\_60
- Track 52 : Chubbello\_57, BronnyJr\_56
- Track 53 : Donovan\_52
- Track 54 : TPA4\_59

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

The start number called the most often in the published annotations is 21, it was called in 160 of the 198 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ABU\_56, AbsoluteMadLad\_54, Adriana\_56, Aelin\_54, Altwerkus\_53, Antonia\_54, Badfish\_56, Banjo\_54, Basato\_55, Bishoperium\_55, Bluephacebaby\_55, Boehler\_54,

Brilliant\_57, Buckeye\_54, CamL\_55, Cannibal\_55, Carthage\_53, Chaelin\_56, CheetO\_54, Cher\_55, Childish\_55, Chorkpop\_55, Cornobble\_54, Cosmolli16\_56, Craff\_58, Crownjwl\_55, DaddyDaniels\_57, Daffy\_55, Dati\_55, Dione\_53, DirtMcgirt\_65, DoesntMatter\_53, DolOn\_59, Doomphist\_66, Drago\_63, ElvisPhasley\_56, EmpTee\_54, Enby\_67, Eremos\_54, Etaye\_55, Eugenia\_55, Fozzie\_54, Frankicide\_54, FremontTroll\_56, Freya\_53, Fruitloop\_61, FugateOSU\_55, Gareth\_55, Giraffe\_56, Grand2040\_55, Gwilliam\_56, HSavage\_54, Haimas\_54, Haleema\_54, Hamish\_54, Happabalu\_55, Harvey\_54, Held\_55, HenryJackson\_55, Hertubise\_55, Hetaeria\_54, HogWash\_55, Horchata\_54, Inverness\_54, IrishSherpFalk\_67, IsaacEli\_56, JDog\_54, Jesabah\_56, Jillium\_55, Kahve\_55, Khan1\_56, Kikipoo\_56, Kimbrough\_56, KingTut\_47, KlimbOn\_54, Kwadwo\_54, Lasso\_55, LeeLot\_55, Lego3393\_54, Lehmann\_55, Llij\_62, Lorde\_66, LuckyMarjie\_53, Lulumae\_53, MRabcd\_54, Mana\_54, Manad\_54, Maru\_55, Matalotodo\_54, Mecca\_55, Megatron\_56, Melc17\_55, Mesh1\_56, MitKao\_55, Morgushi\_55, Morty\_56, Mosaic\_54, MrPhizzler\_57, Mulan\_55, Murdoc\_54, Nacho\_0056, Newman\_54, Numberten\_54, OSmaximus\_56, Ogopogo\_73, Okabe\_60, Oksu\_71, Olive\_54, OliverWalter\_54, Omniscient\_56, OneBrain\_56, Oosterbaan\_55, PG1\_56, Phareon\_54, PhatCats2014\_56, Phatniss\_64, Phunky\_54, PinheadLarry\_56, Pipsqueak\_54, Placalicious\_55, Plmatters\_54, Poenanya\_66, Pops\_54, Potter\_54, ProfessorX\_54, Puhltonio\_55, QueenBeane\_55, RedRaider89\_55, Riverton\_54, Robyn\_54, Roscoe\_55, Roy17\_54, Samaymay\_55, SassyCat97\_54, Schadenfreude\_54, Serendipity\_55, Serpentine\_0055, SilverBell\_54, SilverChicken\_76, Soile\_56, Sparkdehlily\_73, Spartan300\_54, Squid\_55, Surely\_55, TDanisky\_73, Taj\_71, TallGrassMM\_55, Telesworld\_53, Thora\_55, ThreeOh3D2\_56, Timmi\_54, TomBombadil\_55, Tomlarah\_56, TooFast2Furius\_55, Tootsieroll\_66, Triad\_55, UAch1\_54, UncleHowie\_54, UncleRicky\_65, Usavi\_55, Vaishali24\_53, Valjean\_54, Vaticameos\_52, Vista\_54, Vortex\_55, Waterdiva\_55, Wee\_71, Weher20\_55, WillSterrel\_67, Windsor\_55, Zaider\_55, Zelda\_55,

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

- DonSanchon\_53, GreenChile\_56, Hekos\_52, Piglet\_0055, SirBeauregard\_56, Solosis\_54, Sophia\_54, Xavier\_54,

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

- Apricot\_55, Arti\_10, BirdsNest\_57, Bradissa\_44, BronnyJr\_56, Chubbello\_57, Commandaria\_9, Confidence\_46, Crater\_55, Dalilpop\_11, Donovan\_52, Emianna\_10, EnalisNailo\_43, Ennea\_13, Flapper\_9, Foxboro\_10, GrootJr\_12, Hashim76\_57, Jifall16\_9, KidneyBean\_10, Kurt\_10, Lilas\_46, LittleMinkey\_59, Lollipop1437\_12, LordVader\_70, NatB6\_10, NovumRegina\_10, Phomeo\_9, Phrappuccino\_151, Posh\_51, RedRaider\_13, Settecandela\_151, Sparky\_63, Spartacus\_68, TPA4\_59, Toron\_74, Tracker\_10, Wheezy\_10, Zenteno07\_58,

### Summary by start number:

Start 17:

- Found in 160 of 219 ( 73.1% ) of genes in pham
- Manual Annotations of this start: 5 of 198
- Called 5.0% of time when present
- Phage (with cluster) where this start called: DonSanchon\_53 (B1), GreenChile\_56 (B1), Hekos\_52 (B1), Piglet\_0055 (B1), SirBeauregard\_56 (B1), Solosis\_54 (B1), Sophia\_54 (B1), Xavier\_54 (B1),

Start 18:

- Found in 1 of 219 ( 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: Toron\_74 (F6),

Start 19:

- Found in 1 of 219 ( 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: TPA4\_59 (singleton),

Start 20:

- Found in 20 of 219 ( 9.1% ) of genes in pham
- Manual Annotations of this start: 17 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Arti\_10 (CR2), BronnyJr\_56 (P1), Chubbello\_57 (P1), Dalilpop\_11 (CR1), Emianna\_10 (CR2), Ennea\_13 (CR3), Flapper\_9 (CR1), Foxboro\_10 (CR2), GrootJr\_12 (CR2), Jifall16\_9 (CR2), KidneyBean\_10 (CR2), Kurt\_10 (CR2), Lollipop1437\_12 (CR3), LordVader\_70 (F), NatB6\_10 (CR2), NovumRegina\_10 (CR2), Phomeo\_9 (CR2), Spartacus\_68 (F1), Tracker\_10 (CR2), Wheezy\_10 (CR2),

Start 21:

- Found in 180 of 219 ( 82.2% ) of genes in pham
- Manual Annotations of this start: 160 of 198
- Called 95.6% of time when present
- Phage (with cluster) where this start called: ABU\_56 (B1), AbsoluteMadLad\_54 (B1), Adriana\_56 (B1), Aelin\_54 (B1), Altwerkus\_53 (B1), Antonia\_54 (B1), Badfish\_56 (B1), Banjo\_54 (B1), Basato\_55 (B1), Bishoperium\_55 (B1), Bluephacebaby\_55 (B1), Boehler\_54 (B1), Brilliant\_57 (B1), Buckeye\_54 (B1), CamL\_55 (B1), Cannibal\_55 (B1), Carthage\_53 (B1), Chaelin\_56 (B1), CheetO\_54 (B1), Cher\_55 (B1), Childish\_55 (B1), Chorkpop\_55 (B1), Cornobble\_54 (B1), Cosmoli16\_56 (B1), Craff\_58 (B1), Crownjwl\_55 (B1), DaddyDaniels\_57 (B1), Daffy\_55 (B1), Dati\_55 (B1), Dione\_53 (B1), DirtMcgirt\_65 (F1), DoesntMatter\_53 (B1), DolOn\_59 (B1), Doomphist\_66 (F1), Drago\_63 (F1), ElvisPhasley\_56 (B1), EmpTee\_54 (B1), Enby\_67 (F1), Eremos\_54 (B1), Etaye\_55 (B1), Eugenia\_55 (B1), Fozzie\_54 (B1), Frankicide\_54 (B1), FremontTroll\_56 (B1), Freya\_53 (B1), Fruitloop\_61 (F1), FugateOSU\_55 (B1), Gareth\_55 (B1), Giraffe\_56 (B1), Grand2040\_55 (B1), Gwilliam\_56 (B1), HSavage\_54 (B1), Haimas\_54 (B1), Haleema\_54 (B1), Hamish\_54 (B1), Happabalu\_55 (B1), Harvey\_54 (B1), Held\_55 (B1), HenryJackson\_55 (B1), Hertubise\_55 (B1), Hetaeria\_54 (B1), HogWash\_55 (B1), Horchata\_54 (B1), Inverness\_54 (B1), IrishSherpFalk\_67 (F1), IsaacEli\_56 (B1), JDog\_54 (B1), Jesabah\_56 (B1), Jillium\_55 (B1), Kahve\_55 (B1), Khan1\_56 (B1), Kikipoo\_56 (B1), Kimbrough\_56 (B1), KingTut\_47 (B1), KlimbOn\_54 (B1), Kwadwo\_54 (B1), Lasso\_55 (B1), LeeLot\_55 (B1), Lego3393\_54 (B1), Lehmann\_55 (B1), Lij\_62 (F1), Lorde\_66 (F1), LuckyMarjie\_53 (B1), Lulumae\_53 (B1), MRabcd\_54 (B1), Mana\_54 (B1), Manad\_54 (B1), Maru\_55 (B1), Matalotodo\_54 (B1), Mecca\_55 (B1), Megatron\_56 (B1), Melc17\_55 (B1), Mesh1\_56 (B1), MitKao\_55 (B1), Morgushi\_55 (B1), Morty\_56 (B1), Mosaic\_54 (B1), MrPhizzler\_57 (B1), Mulan\_55 (B1), Murdoc\_54 (B1), Nacho\_0056 (B1), Newman\_54 (B1), Numberten\_54 (B1), OSmaximus\_56 (B1), Ogopogo\_73 (F1), Okabe\_60 (F8), Oksu\_71 (F1), Olive\_54 (B1), OliverWalter\_54 (B1), Omniscient\_56 (B1), OneBrain\_56 (B1), Oosterbaan\_55 (B1), PG1\_56 (B1),

Phareon\_54 (B1), PhatCats2014\_56 (B1), Phatniss\_64 (F1), Phunky\_54 (B1), PinheadLarry\_56 (B1), Pipsqueak\_54 (B1), Placalicious\_55 (B1), Plmatters\_54 (B1), Poenanya\_66 (F1), Pops\_54 (B1), Potter\_54 (B1), ProfessorX\_54 (B1), Puhitonio\_55 (B1), QueenBeane\_55 (B1), RedRaider89\_55 (B1), Riverton\_54 (B1), Robyn\_54 (B1), Roscoe\_55 (B1), Roy17\_54 (B1), Samaymay\_55 (B1), SassyCat97\_54 (B1), Schadenfreude\_54 (B1), Serendipity\_55 (B1), Serpentine\_0055 (B1), SilverBell\_54 (B1), SilverChicken\_76 (F2), Soile\_56 (B1), Sparkdehlily\_73 (F1), Spartan300\_54 (B1), Squid\_55 (B1), Surely\_55 (B1), TDanisky\_73 (F1), Taj\_71 (F1), TallGrassMM\_55 (B1), Telesworld\_53 (B1), Thora\_55 (B1), ThreeOh3D2\_56 (B1), Timmi\_54 (B1), TomBombadil\_55 (B1), Tomlarah\_56 (B1), TooFast2Furius\_55 (B1), Tootsieroll\_66 (F1), Triad\_55 (B1), UAch1\_54 (B1), UncleHowie\_54 (B1), UncleRicky\_65 (F1), Usavi\_55 (B1), Vaishali24\_53 (B1), Valjean\_54 (B1), Vaticameos\_52 (B1), Vista\_54 (B1), Vortex\_55 (B1), Waterdiva\_55 (B1), Wee\_71 (F1), Weher20\_55 (B1), WillSterrel\_67 (F1), Windsor\_55 (B1), Zaider\_55 (B1), Zelda\_55 (B1),

#### Start 22:

- Found in 6 of 219 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 5 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BirdsNest\_57 (B13), Donovan\_52 (P1), Hashim76\_57 (B13), LittleMinkey\_59 (B13), Sparky\_63 (AF), Zenteno07\_58 (B13),

#### Start 23:

- Found in 2 of 219 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 2 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Commandaria\_9 (CR2), RedRaider\_13 (CR3),

#### Start 24:

- Found in 7 of 219 ( 3.2% ) of genes in pham
- Manual Annotations of this start: 7 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Apricot\_55 (DN3), Bradissa\_44 (CY1), Confidence\_46 (CY1), Crater\_55 (DN3), EnalisNailo\_43 (CY1), Lilas\_46 (CY1), Posh\_51 (CY4),

#### Start 29:

- Found in 2 of 219 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 2 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Phrappuccino\_151 (AA), Settecandela\_151 (AA),

### Summary by clusters:

There are 17 clusters represented in this pham: CR2, F1, F2, CR1, AA, DN3, F6, AF, F8, F, CR3, CY1, P1, B1, CY4, singleton, B13,

Info for manual annotations of cluster AA:

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

Info for manual annotations of cluster AF:

- Start number 22 was manually annotated 1 time for cluster AF.

Info for manual annotations of cluster B1:

- Start number 17 was manually annotated 5 times for cluster B1.
- Start number 21 was manually annotated 142 times for cluster B1.

Info for manual annotations of cluster B13:

- Start number 22 was manually annotated 3 times for cluster B13.

Info for manual annotations of cluster CR1:

- Start number 20 was manually annotated 2 times for cluster CR1.

Info for manual annotations of cluster CR2:

- Start number 20 was manually annotated 12 times for cluster CR2.
- Start number 23 was manually annotated 1 time for cluster CR2.

Info for manual annotations of cluster CR3:

- Start number 20 was manually annotated 2 times for cluster CR3.
- Start number 23 was manually annotated 1 time for cluster CR3.

Info for manual annotations of cluster CY1:

- Start number 24 was manually annotated 4 times for cluster CY1.

Info for manual annotations of cluster CY4:

- Start number 24 was manually annotated 1 time for cluster CY4.

Info for manual annotations of cluster DN3:

- Start number 24 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster F1:

- Start number 20 was manually annotated 1 time for cluster F1.
- Start number 21 was manually annotated 18 times for cluster F1.

Info for manual annotations of cluster P1:

- Start number 22 was manually annotated 1 time for cluster P1.

**Gene Information:**

Gene: ABU\_56 Start: 48493, Stop: 47813, Start Num: 21

Candidate Starts for ABU\_56:

(Start: 17 @48502 has 5 MA's), (Start: 21 @48493 has 160 MA's), (48, 48286), (49, 48283), (51, 48259), (54, 48229), (61, 48103), (65, 48082), (67, 48061), (73, 47971), (79, 47896), (80, 47884), (86, 47857),

Gene: AbsoluteMadLad\_54 Start: 48205, Stop: 47528, Start Num: 21

Candidate Starts for AbsoluteMadLad\_54:

(Start: 17 @48214 has 5 MA's), (Start: 21 @48205 has 160 MA's), (41, 48043), (44, 48028), (49, 47995), (51, 47971), (54, 47941), (58, 47863), (61, 47815), (65, 47794), (67, 47773), (73, 47683), (76, 47647), (79, 47608), (80, 47596), (84, 47575), (86, 47569),

Gene: Adriana\_56 Start: 48490, Stop: 47810, Start Num: 21

Candidate Starts for Adriana\_56:

(Start: 17 @48499 has 5 MA's), (Start: 21 @48490 has 160 MA's), (48, 48283), (49, 48280), (51, 48256), (54, 48226), (61, 48100), (65, 48079), (67, 48058), (73, 47968), (79, 47893), (80, 47881), (86, 47854),

Gene: Aelin\_54 Start: 47769, Stop: 47092, Start Num: 21

Candidate Starts for Aelin\_54:

(Start: 17 @47778 has 5 MA's), (Start: 21 @47769 has 160 MA's), (41, 47607), (44, 47592), (49, 47559), (51, 47535), (54, 47505), (58, 47427), (61, 47379), (65, 47358), (67, 47337), (73, 47247), (76, 47211), (79, 47172), (80, 47160), (86, 47133),

Gene: Altwerkus\_53 Start: 47657, Stop: 46980, Start Num: 21

Candidate Starts for Altwerkus\_53:

(Start: 17 @47666 has 5 MA's), (Start: 21 @47657 has 160 MA's), (38, 47528), (41, 47495), (44, 47480), (48, 47450), (49, 47447), (51, 47423), (54, 47393), (58, 47315), (61, 47267), (65, 47246), (67, 47225), (73, 47135), (76, 47099), (79, 47060), (80, 47048), (83, 47033), (86, 47021),

Gene: Antonia\_54 Start: 47769, Stop: 47092, Start Num: 21

Candidate Starts for Antonia\_54:

(3, 48021), (4, 48012), (5, 47988), (6, 47958), (7, 47907), (10, 47868), (Start: 17 @47778 has 5 MA's), (Start: 21 @47769 has 160 MA's), (41, 47607), (44, 47592), (49, 47559), (51, 47535), (54, 47505), (58, 47427), (61, 47379), (65, 47358), (67, 47337), (73, 47247), (76, 47211), (79, 47172), (80, 47160), (86, 47133),

Gene: Apricot\_55 Start: 35565, Stop: 36167, Start Num: 24

Candidate Starts for Apricot\_55:

(Start: 24 @35565 has 7 MA's), (32, 35622), (36, 35658), (37, 35667), (50, 35751), (52, 35778), (54, 35802), (66, 35958), (68, 35973), (69, 35985), (74, 36042), (87, 36156),

Gene: Arti\_10 Start: 5991, Stop: 6665, Start Num: 20

Candidate Starts for Arti\_10:

(8, 5856), (16, 5964), (Start: 20 @5991 has 17 MA's), (47, 6192), (48, 6195), (54, 6252), (57, 6285), (65, 6396), (74, 6513), (83, 6603),

Gene: Badfish\_56 Start: 48515, Stop: 47835, Start Num: 21

Candidate Starts for Badfish\_56:

(Start: 17 @48524 has 5 MA's), (Start: 21 @48515 has 160 MA's), (48, 48308), (49, 48305), (51, 48281), (54, 48251), (61, 48125), (65, 48104), (67, 48083), (73, 47993), (79, 47918), (80, 47906), (86, 47879),

Gene: Banjo\_54 Start: 47962, Stop: 47282, Start Num: 21

Candidate Starts for Banjo\_54:

(3, 48214), (4, 48205), (5, 48181), (6, 48151), (7, 48100), (10, 48061), (Start: 17 @47971 has 5 MA's), (Start: 21 @47962 has 160 MA's), (48, 47755), (49, 47752), (51, 47728), (54, 47698), (61, 47572), (65, 47551), (67, 47530), (73, 47440), (79, 47365), (80, 47353), (86, 47326),

Gene: Basato\_55 Start: 48237, Stop: 47560, Start Num: 21

Candidate Starts for Basato\_55:

(Start: 17 @48246 has 5 MA's), (Start: 21 @48237 has 160 MA's), (41, 48075), (44, 48060), (49, 48027), (51, 48003), (54, 47973), (58, 47895), (61, 47847), (65, 47826), (67, 47805), (73, 47715), (76, 47679), (79, 47640), (80, 47628), (86, 47601),

Gene: BirdsNest\_57 Start: 47703, Stop: 46999, Start Num: 22

Candidate Starts for BirdsNest\_57:

(Start: 22 @47703 has 5 MA's), (25, 47688), (27, 47658), (53, 47448), (54, 47436), (57, 47400), (66, 47274), (71, 47205), (80, 47076), (86, 47049), (89, 47010),

Gene: Bishoperium\_55 Start: 48501, Stop: 47821, Start Num: 21

Candidate Starts for Bishoperium\_55:

(Start: 17 @48510 has 5 MA's), (Start: 21 @48501 has 160 MA's), (48, 48294), (49, 48291), (51, 48267), (54, 48237), (61, 48111), (65, 48090), (67, 48069), (73, 47979), (79, 47904), (80, 47892), (86, 47865),

Gene: Bluephacebaby\_55 Start: 48504, Stop: 47824, Start Num: 21

Candidate Starts for Bluephacebaby\_55:

(Start: 17 @48513 has 5 MA's), (Start: 21 @48504 has 160 MA's), (48, 48297), (49, 48294), (51, 48270), (54, 48240), (61, 48114), (65, 48093), (67, 48072), (73, 47982), (79, 47907), (80, 47895), (86, 47868),

Gene: Boehler\_54 Start: 47946, Stop: 47269, Start Num: 21

Candidate Starts for Boehler\_54:

(Start: 17 @47955 has 5 MA's), (Start: 21 @47946 has 160 MA's), (38, 47817), (41, 47784), (44, 47769), (48, 47739), (49, 47736), (51, 47712), (54, 47682), (58, 47604), (61, 47556), (65, 47535), (67, 47514), (73, 47424), (76, 47388), (79, 47349), (80, 47337), (86, 47310),

Gene: Bradissa\_44 Start: 36341, Stop: 36946, Start Num: 24

Candidate Starts for Bradissa\_44:

(Start: 24 @36341 has 7 MA's), (30, 36383), (54, 36578), (55, 36611), (58, 36659), (68, 36752), (74, 36821),

Gene: Brilliant\_57 Start: 48504, Stop: 47824, Start Num: 21

Candidate Starts for Brilliant\_57:

(Start: 17 @48513 has 5 MA's), (Start: 21 @48504 has 160 MA's), (48, 48297), (49, 48294), (51, 48270), (54, 48240), (61, 48114), (65, 48093), (67, 48072), (73, 47982), (79, 47907), (80, 47895), (86, 47868),

Gene: BronnyJr\_56 Start: 38699, Stop: 39382, Start Num: 20

Candidate Starts for BronnyJr\_56:

(Start: 20 @38699 has 17 MA's), (33, 38777), (42, 38867), (49, 38909), (51, 38933), (54, 38963), (67, 39134), (80, 39308), (85, 39332), (86, 39335),

Gene: Buckeye\_54 Start: 48015, Stop: 47338, Start Num: 21

Candidate Starts for Buckeye\_54:

(Start: 17 @48024 has 5 MA's), (Start: 21 @48015 has 160 MA's), (48, 47808), (49, 47805), (51, 47781), (54, 47751), (61, 47625), (65, 47604), (67, 47583), (73, 47493), (76, 47457), (79, 47418), (80, 47406), (86, 47379),

Gene: CamL\_55 Start: 48269, Stop: 47589, Start Num: 21

Candidate Starts for CamL\_55:

(Start: 17 @48278 has 5 MA's), (Start: 21 @48269 has 160 MA's), (48, 48062), (49, 48059), (51, 48035), (54, 48005), (61, 47879), (65, 47858), (67, 47837), (73, 47747), (79, 47672), (80, 47660), (86,

47633),

Gene: Cannibal\_55 Start: 48252, Stop: 47572, Start Num: 21

Candidate Starts for Cannibal\_55:

(3, 48504), (4, 48495), (5, 48471), (6, 48441), (7, 48390), (10, 48351), (Start: 17 @48261 has 5 MA's), (Start: 21 @48252 has 160 MA's), (48, 48045), (49, 48042), (51, 48018), (54, 47988), (58, 47910), (61, 47862), (65, 47841), (73, 47730), (76, 47694), (79, 47655), (80, 47643), (86, 47616),

Gene: Carthage\_53 Start: 47247, Stop: 46567, Start Num: 21

Candidate Starts for Carthage\_53:

(Start: 17 @47256 has 5 MA's), (Start: 21 @47247 has 160 MA's), (48, 47040), (49, 47037), (51, 47013), (54, 46983), (61, 46857), (65, 46836), (67, 46815), (73, 46725), (76, 46689), (79, 46650), (80, 46638), (86, 46611),

Gene: Chaelin\_56 Start: 48499, Stop: 47819, Start Num: 21

Candidate Starts for Chaelin\_56:

(Start: 17 @48508 has 5 MA's), (Start: 21 @48499 has 160 MA's), (48, 48292), (49, 48289), (51, 48265), (54, 48235), (61, 48109), (65, 48088), (67, 48067), (73, 47977), (79, 47902), (80, 47890), (86, 47863),

Gene: CheetO\_54 Start: 47985, Stop: 47308, Start Num: 21

Candidate Starts for CheetO\_54:

(Start: 17 @47994 has 5 MA's), (Start: 21 @47985 has 160 MA's), (41, 47823), (44, 47808), (49, 47775), (51, 47751), (54, 47721), (58, 47643), (61, 47595), (65, 47574), (67, 47553), (73, 47463), (76, 47427), (79, 47388), (80, 47376), (84, 47355), (86, 47349),

Gene: Cher\_55 Start: 48521, Stop: 47841, Start Num: 21

Candidate Starts for Cher\_55:

(Start: 17 @48530 has 5 MA's), (Start: 21 @48521 has 160 MA's), (48, 48314), (49, 48311), (51, 48287), (54, 48257), (61, 48131), (65, 48110), (67, 48089), (73, 47999), (79, 47924), (80, 47912), (86, 47885),

Gene: Childish\_55 Start: 48531, Stop: 47851, Start Num: 21

Candidate Starts for Childish\_55:

(3, 48783), (4, 48774), (5, 48750), (6, 48720), (7, 48669), (10, 48630), (Start: 17 @48540 has 5 MA's), (Start: 21 @48531 has 160 MA's), (48, 48324), (49, 48321), (51, 48297), (54, 48267), (58, 48189), (61, 48141), (65, 48120), (73, 48009), (76, 47973), (79, 47934), (80, 47922), (86, 47895),

Gene: Chorkpop\_55 Start: 48008, Stop: 47328, Start Num: 21

Candidate Starts for Chorkpop\_55:

(3, 48260), (4, 48251), (5, 48227), (6, 48197), (7, 48146), (10, 48107), (Start: 17 @48017 has 5 MA's), (Start: 21 @48008 has 160 MA's), (48, 47801), (49, 47798), (51, 47774), (54, 47744), (58, 47666), (61, 47618), (65, 47597), (73, 47486), (76, 47450), (79, 47411), (80, 47399), (86, 47372),

Gene: Chubbello\_57 Start: 37644, Stop: 38327, Start Num: 20

Candidate Starts for Chubbello\_57:

(Start: 20 @37644 has 17 MA's), (33, 37722), (42, 37812), (49, 37854), (51, 37878), (54, 37908), (67, 38079), (80, 38253), (85, 38277), (86, 38280),

Gene: Commandaria\_9 Start: 5029, Stop: 5676, Start Num: 23

Candidate Starts for Commandaria\_9:

(16, 4993), (Start: 23 @5029 has 2 MA's), (43, 5200), (47, 5227), (48, 5230), (54, 5287), (64, 5425), (74, 5548), (83, 5638),

Gene: Confidence\_46 Start: 34232, Stop: 34837, Start Num: 24

Candidate Starts for Confidence\_46:

(Start: 24 @34232 has 7 MA's), (30, 34274), (32, 34289), (54, 34469), (55, 34502), (58, 34550), (68, 34643), (74, 34712), (78, 34766),

Gene: Cornobble\_54 Start: 47922, Stop: 47242, Start Num: 21

Candidate Starts for Cornobble\_54:

(3, 48174), (4, 48165), (5, 48141), (6, 48111), (7, 48060), (10, 48021), (Start: 17 @47931 has 5 MA's), (Start: 21 @47922 has 160 MA's), (41, 47760), (44, 47745), (49, 47712), (51, 47688), (54, 47658), (58, 47580), (61, 47532), (65, 47511), (67, 47490), (73, 47400), (76, 47364), (79, 47325), (80, 47313), (86, 47286),

Gene: Cosmolli16\_56 Start: 48711, Stop: 48031, Start Num: 21

Candidate Starts for Cosmolli16\_56:

(3, 48963), (4, 48954), (5, 48930), (6, 48900), (7, 48849), (10, 48810), (Start: 17 @48720 has 5 MA's), (Start: 21 @48711 has 160 MA's), (48, 48504), (49, 48501), (51, 48477), (54, 48447), (58, 48369), (61, 48321), (65, 48300), (73, 48189), (76, 48153), (79, 48114), (80, 48102), (86, 48075),

Gene: Craff\_58 Start: 48956, Stop: 48276, Start Num: 21

Candidate Starts for Craff\_58:

(3, 49208), (4, 49199), (5, 49175), (6, 49145), (7, 49094), (10, 49055), (Start: 17 @48965 has 5 MA's), (Start: 21 @48956 has 160 MA's), (48, 48749), (49, 48746), (51, 48722), (54, 48692), (58, 48614), (61, 48566), (65, 48545), (73, 48434), (76, 48398), (79, 48359), (80, 48347), (86, 48320),

Gene: Crater\_55 Start: 35960, Stop: 36562, Start Num: 24

Candidate Starts for Crater\_55:

(Start: 24 @35960 has 7 MA's), (32, 36017), (36, 36053), (37, 36062), (50, 36146), (52, 36173), (54, 36197), (66, 36353), (68, 36368), (69, 36380), (74, 36437), (87, 36551),

Gene: Crownjwl\_55 Start: 47988, Stop: 47311, Start Num: 21

Candidate Starts for Crownjwl\_55:

(Start: 17 @47997 has 5 MA's), (Start: 21 @47988 has 160 MA's), (41, 47826), (44, 47811), (49, 47778), (51, 47754), (54, 47724), (58, 47646), (61, 47598), (65, 47577), (67, 47556), (73, 47466), (76, 47430), (79, 47391), (80, 47379), (84, 47358), (86, 47352),

Gene: DaddyDaniels\_57 Start: 48488, Stop: 47808, Start Num: 21

Candidate Starts for DaddyDaniels\_57:

(3, 48740), (4, 48731), (5, 48707), (6, 48677), (7, 48626), (10, 48587), (Start: 17 @48497 has 5 MA's), (Start: 21 @48488 has 160 MA's), (48, 48281), (49, 48278), (51, 48254), (54, 48224), (58, 48146), (61, 48098), (65, 48077), (73, 47966), (76, 47930), (79, 47891), (80, 47879), (86, 47852),

Gene: Daffy\_55 Start: 47994, Stop: 47314, Start Num: 21

Candidate Starts for Daffy\_55:

(3, 48246), (4, 48237), (5, 48213), (6, 48183), (7, 48132), (10, 48093), (Start: 17 @48003 has 5 MA's), (Start: 21 @47994 has 160 MA's), (48, 47787), (49, 47784), (51, 47760), (54, 47730), (58, 47652), (61, 47604), (65, 47583), (73, 47472), (76, 47436), (79, 47397), (80, 47385), (86, 47358),

Gene: Dalilpop\_11 Start: 6087, Stop: 6800, Start Num: 20

Candidate Starts for Dalilpop\_11:

(Start: 20 @6087 has 17 MA's), (26, 6114), (31, 6171), (41, 6276), (45, 6291), (47, 6309), (48, 6312), (49, 6315), (54, 6369), (56, 6402), (74, 6633), (82, 6720), (89, 6774),

Gene: Dati\_55 Start: 48526, Stop: 47846, Start Num: 21

Candidate Starts for Dati\_55:

(Start: 17 @48535 has 5 MA's), (Start: 21 @48526 has 160 MA's), (48, 48319), (49, 48316), (51, 48292), (54, 48262), (61, 48136), (65, 48115), (67, 48094), (73, 48004), (79, 47929), (80, 47917), (86, 47890),

Gene: Dione\_53 Start: 47666, Stop: 46989, Start Num: 21

Candidate Starts for Dione\_53:

(Start: 17 @47675 has 5 MA's), (Start: 21 @47666 has 160 MA's), (38, 47537), (41, 47504), (44, 47489), (48, 47459), (49, 47456), (51, 47432), (54, 47402), (58, 47324), (61, 47276), (65, 47255), (67, 47234), (73, 47144), (76, 47108), (79, 47069), (80, 47057), (83, 47042), (86, 47030),

Gene: DirtMcgirt\_65 Start: 40913, Stop: 41590, Start Num: 21

Candidate Starts for DirtMcgirt\_65:

(Start: 21 @40913 has 160 MA's), (30, 40955), (48, 41114), (49, 41117), (51, 41141), (54, 41171), (58, 41249), (61, 41297), (65, 41318), (73, 41429), (76, 41465), (79, 41504), (80, 41516),

Gene: DoesntMatter\_53 Start: 47959, Stop: 47282, Start Num: 21

Candidate Starts for DoesntMatter\_53:

(Start: 17 @47968 has 5 MA's), (Start: 21 @47959 has 160 MA's), (38, 47830), (41, 47797), (44, 47782), (48, 47752), (49, 47749), (51, 47725), (54, 47695), (58, 47617), (61, 47569), (65, 47548), (67, 47527), (73, 47437), (76, 47401), (79, 47362), (80, 47350), (83, 47335), (86, 47323),

Gene: DolOn\_59 Start: 49214, Stop: 48534, Start Num: 21

Candidate Starts for DolOn\_59:

(Start: 17 @49223 has 5 MA's), (Start: 21 @49214 has 160 MA's), (48, 49007), (49, 49004), (51, 48980), (54, 48950), (61, 48824), (65, 48803), (67, 48782), (73, 48692), (79, 48617), (80, 48605), (86, 48578),

Gene: DonSanchon\_53 Start: 47700, Stop: 47014, Start Num: 17

Candidate Starts for DonSanchon\_53:

(Start: 17 @47700 has 5 MA's), (Start: 21 @47691 has 160 MA's), (48, 47484), (49, 47481), (51, 47457), (54, 47427), (61, 47301), (65, 47280), (67, 47259), (73, 47169), (76, 47133), (79, 47094), (80, 47082), (86, 47055),

Gene: Donovan\_52 Start: 35711, Stop: 36400, Start Num: 22

Candidate Starts for Donovan\_52:

(12, 35645), (Start: 22 @35711 has 5 MA's), (33, 35795), (42, 35885), (49, 35927), (51, 35951), (54, 35981), (67, 36152), (79, 36314), (80, 36326), (86, 36353),

Gene: Doomphist\_66 Start: 43323, Stop: 44000, Start Num: 21

Candidate Starts for Doomphist\_66:

(Start: 21 @43323 has 160 MA's), (30, 43365), (48, 43524), (49, 43527), (51, 43551), (54, 43581), (58, 43659), (61, 43707), (65, 43728), (73, 43839), (76, 43875), (79, 43914), (80, 43926),

Gene: Drago\_63 Start: 40916, Stop: 41593, Start Num: 21

Candidate Starts for Drago\_63:

(Start: 21 @40916 has 160 MA's), (30, 40958), (48, 41117), (49, 41120), (51, 41144), (54, 41174), (58, 41252), (61, 41300), (65, 41321), (73, 41432), (76, 41468), (79, 41507), (80, 41519),

Gene: ElvisPhasley\_56 Start: 48537, Stop: 47857, Start Num: 21

Candidate Starts for ElvisPhasley\_56:

(3, 48789), (4, 48780), (5, 48756), (6, 48726), (7, 48675), (10, 48636), (Start: 17 @48546 has 5 MA's), (Start: 21 @48537 has 160 MA's), (41, 48375), (44, 48360), (49, 48327), (51, 48303), (54, 48273), (58, 48195), (61, 48147), (65, 48126), (67, 48105), (73, 48015), (76, 47979), (79, 47940), (80, 47928), (86, 47901),

Gene: Emianna\_10 Start: 5953, Stop: 6612, Start Num: 20

Candidate Starts for Emianna\_10:

(8, 5818), (16, 5926), (Start: 20 @5953 has 17 MA's), (47, 6154), (48, 6157), (54, 6214), (57, 6247), (65, 6358), (74, 6475), (83, 6565),

Gene: EmpTee\_54 Start: 47972, Stop: 47295, Start Num: 21

Candidate Starts for EmpTee\_54:

(Start: 17 @47981 has 5 MA's), (Start: 21 @47972 has 160 MA's), (38, 47843), (41, 47810), (44, 47795), (48, 47765), (49, 47762), (51, 47738), (54, 47708), (58, 47630), (61, 47582), (65, 47561), (67, 47540), (73, 47450), (76, 47414), (79, 47375), (80, 47363), (86, 47336),

Gene: EnalisNailo\_43 Start: 35875, Stop: 36480, Start Num: 24

Candidate Starts for EnalisNailo\_43:

(Start: 24 @35875 has 7 MA's), (30, 35917), (54, 36112), (55, 36145), (58, 36193), (68, 36286), (74, 36355),

Gene: Enby\_67 Start: 41192, Stop: 41869, Start Num: 21

Candidate Starts for Enby\_67:

(Start: 21 @41192 has 160 MA's), (30, 41234), (48, 41393), (49, 41396), (51, 41420), (54, 41450), (58, 41528), (61, 41576), (65, 41597), (73, 41708), (76, 41744), (79, 41783), (80, 41795),

Gene: Ennea\_13 Start: 6764, Stop: 7453, Start Num: 20

Candidate Starts for Ennea\_13:

(11, 6692), (16, 6737), (Start: 20 @6764 has 17 MA's), (35, 6881), (47, 6980), (48, 6983), (54, 7040), (65, 7184), (72, 7277), (74, 7301), (83, 7391), (88, 7415),

Gene: Eremos\_54 Start: 47965, Stop: 47288, Start Num: 21

Candidate Starts for Eremos\_54:

(Start: 17 @47974 has 5 MA's), (Start: 21 @47965 has 160 MA's), (41, 47803), (44, 47788), (49, 47755), (51, 47731), (54, 47701), (58, 47623), (61, 47575), (65, 47554), (67, 47533), (73, 47443), (76, 47407), (79, 47368), (80, 47356), (86, 47329),

Gene: Etaye\_55 Start: 48795, Stop: 48115, Start Num: 21

Candidate Starts for Etaye\_55:

(Start: 17 @48804 has 5 MA's), (Start: 21 @48795 has 160 MA's), (48, 48588), (49, 48585), (51, 48561), (54, 48531), (61, 48405), (65, 48384), (67, 48363), (73, 48273), (79, 48198), (80, 48186), (86, 48159),

Gene: Eugenia\_55 Start: 48360, Stop: 47680, Start Num: 21

Candidate Starts for Eugenia\_55:

(Start: 17 @48369 has 5 MA's), (Start: 21 @48360 has 160 MA's), (48, 48153), (49, 48150), (51, 48126), (54, 48096), (61, 47970), (65, 47949), (67, 47928), (73, 47838), (79, 47763), (80, 47751), (86, 47724),

Gene: Flapper\_9 Start: 4974, Stop: 5633, Start Num: 20

Candidate Starts for Flapper\_9:

(Start: 20 @4974 has 17 MA's), (31, 5037), (45, 5157), (47, 5175), (48, 5178), (49, 5181), (54, 5235), (74, 5499), (82, 5586),

Gene: Foxboro\_10 Start: 5964, Stop: 6641, Start Num: 20

Candidate Starts for Foxboro\_10:

(8, 5829), (16, 5937), (Start: 20 @5964 has 17 MA's), (47, 6165), (48, 6168), (54, 6225), (65, 6372), (74, 6489), (83, 6579), (84, 6585),

Gene: Fozzie\_54 Start: 48298, Stop: 47618, Start Num: 21

Candidate Starts for Fozzie\_54:

(3, 48550), (4, 48541), (5, 48517), (6, 48487), (7, 48436), (10, 48397), (Start: 17 @48307 has 5 MA's), (Start: 21 @48298 has 160 MA's), (41, 48136), (44, 48121), (49, 48088), (51, 48064), (54, 48034), (58, 47956), (61, 47908), (65, 47887), (67, 47866), (73, 47776), (76, 47740), (79, 47701), (80, 47689), (86, 47662),

Gene: Frankicide\_54 Start: 47996, Stop: 47319, Start Num: 21

Candidate Starts for Frankicide\_54:

(Start: 17 @48005 has 5 MA's), (Start: 21 @47996 has 160 MA's), (41, 47834), (44, 47819), (49, 47786), (51, 47762), (54, 47732), (58, 47654), (61, 47606), (65, 47585), (67, 47564), (73, 47474), (76, 47438), (79, 47399), (80, 47387), (86, 47360),

Gene: FremontTroll\_56 Start: 48563, Stop: 47883, Start Num: 21

Candidate Starts for FremontTroll\_56:

(3, 48815), (4, 48806), (5, 48782), (6, 48752), (7, 48701), (10, 48662), (Start: 17 @48572 has 5 MA's), (Start: 21 @48563 has 160 MA's), (48, 48356), (49, 48353), (51, 48329), (54, 48299), (61, 48173), (65, 48152), (67, 48131), (73, 48041), (79, 47966), (80, 47954), (86, 47927),

Gene: Freya\_53 Start: 47657, Stop: 46980, Start Num: 21

Candidate Starts for Freya\_53:

(Start: 17 @47666 has 5 MA's), (Start: 21 @47657 has 160 MA's), (48, 47450), (49, 47447), (51, 47423), (54, 47393), (58, 47315), (61, 47267), (65, 47246), (67, 47225), (73, 47135), (76, 47099), (79, 47060), (80, 47048), (83, 47033), (86, 47021),

Gene: Fruitloop\_61 Start: 42550, Stop: 43227, Start Num: 21

Candidate Starts for Fruitloop\_61:

(Start: 21 @42550 has 160 MA's), (30, 42592), (48, 42751), (49, 42754), (51, 42778), (54, 42808), (58, 42886), (61, 42934), (65, 42955), (73, 43066), (76, 43102), (79, 43141), (80, 43153),

Gene: FugateOSU\_55 Start: 48502, Stop: 47822, Start Num: 21

Candidate Starts for FugateOSU\_55:

(Start: 17 @48511 has 5 MA's), (Start: 21 @48502 has 160 MA's), (48, 48295), (49, 48292), (51, 48268), (54, 48238), (61, 48112), (65, 48091), (67, 48070), (73, 47980), (79, 47905), (80, 47893), (86, 47866),

Gene: Gareth\_55 Start: 48496, Stop: 47816, Start Num: 21

Candidate Starts for Gareth\_55:

(Start: 17 @48505 has 5 MA's), (Start: 21 @48496 has 160 MA's), (48, 48289), (49, 48286), (51, 48262), (54, 48232), (61, 48106), (65, 48085), (67, 48064), (73, 47974), (79, 47899), (80, 47887), (86, 47860),

Gene: Giraffe\_56 Start: 48492, Stop: 47812, Start Num: 21

Candidate Starts for Giraffe\_56:

(3, 48744), (4, 48735), (5, 48711), (6, 48681), (7, 48630), (10, 48591), (Start: 17 @48501 has 5 MA's), (Start: 21 @48492 has 160 MA's), (48, 48285), (49, 48282), (51, 48258), (54, 48228), (58, 48150), (61, 48102), (65, 48081), (73, 47970), (79, 47895), (80, 47883), (86, 47856),

Gene: Grand2040\_55 Start: 48486, Stop: 47806, Start Num: 21

Candidate Starts for Grand2040\_55:

(3, 48738), (4, 48729), (5, 48705), (6, 48675), (7, 48624), (10, 48585), (Start: 17 @48495 has 5 MA's), (Start: 21 @48486 has 160 MA's), (48, 48279), (49, 48276), (51, 48252), (54, 48222), (58, 48144), (61, 48096), (65, 48075), (73, 47964), (76, 47928), (79, 47889), (80, 47877), (86, 47850),

Gene: GreenChile\_56 Start: 47987, Stop: 47301, Start Num: 17

Candidate Starts for GreenChile\_56:

(Start: 17 @47987 has 5 MA's), (Start: 21 @47978 has 160 MA's), (41, 47816), (44, 47801), (49, 47768), (51, 47744), (54, 47714), (58, 47636), (61, 47588), (65, 47567), (67, 47546), (73, 47456), (76, 47420), (79, 47381), (80, 47369), (86, 47342),

Gene: GrootJr\_12 Start: 6386, Stop: 7060, Start Num: 20

Candidate Starts for GrootJr\_12:

(8, 6251), (16, 6359), (Start: 20 @6386 has 17 MA's), (47, 6587), (48, 6590), (54, 6647), (57, 6680), (65, 6791), (74, 6908), (83, 6998),

Gene: Gwilliam\_56 Start: 48849, Stop: 48169, Start Num: 21

Candidate Starts for Gwilliam\_56:

(Start: 17 @48858 has 5 MA's), (Start: 21 @48849 has 160 MA's), (48, 48642), (49, 48639), (51, 48615), (54, 48585), (61, 48459), (65, 48438), (67, 48417), (73, 48327), (79, 48252), (80, 48240), (86, 48213),

Gene: HSavage\_54 Start: 47975, Stop: 47298, Start Num: 21

Candidate Starts for HSavage\_54:

(Start: 17 @47984 has 5 MA's), (Start: 21 @47975 has 160 MA's), (41, 47813), (44, 47798), (49, 47765), (51, 47741), (54, 47711), (58, 47633), (61, 47585), (65, 47564), (67, 47543), (73, 47453), (76, 47417), (79, 47378), (80, 47366), (86, 47339),

Gene: Haimas\_54 Start: 47991, Stop: 47314, Start Num: 21

Candidate Starts for Haimas\_54:

(Start: 17 @48000 has 5 MA's), (Start: 21 @47991 has 160 MA's), (48, 47784), (49, 47781), (51, 47757), (54, 47727), (61, 47601), (65, 47580), (67, 47559), (73, 47469), (79, 47394), (80, 47382), (86, 47355),

Gene: Haleema\_54 Start: 47990, Stop: 47310, Start Num: 21

Candidate Starts for Haleema\_54:

(3, 48242), (4, 48233), (5, 48209), (6, 48179), (7, 48128), (10, 48089), (Start: 17 @47999 has 5 MA's), (Start: 21 @47990 has 160 MA's), (48, 47783), (49, 47780), (51, 47756), (54, 47726), (58, 47648), (61, 47600), (65, 47579), (73, 47468), (76, 47432), (79, 47393), (80, 47381), (86, 47354),

Gene: Hamish\_54 Start: 47984, Stop: 47307, Start Num: 21

Candidate Starts for Hamish\_54:

(Start: 17 @47993 has 5 MA's), (Start: 21 @47984 has 160 MA's), (48, 47777), (49, 47774), (51, 47750), (54, 47720), (61, 47594), (65, 47573), (67, 47552), (73, 47462), (79, 47387), (80, 47375), (86, 47348),

Gene: Happabalu\_55 Start: 48526, Stop: 47846, Start Num: 21

Candidate Starts for Happabalu\_55:

(Start: 17 @48535 has 5 MA's), (Start: 21 @48526 has 160 MA's), (48, 48319), (49, 48316), (51, 48292), (54, 48262), (61, 48136), (65, 48115), (67, 48094), (73, 48004), (79, 47929), (80, 47917), (86, 47890),

Gene: Harvey\_54 Start: 48021, Stop: 47344, Start Num: 21

Candidate Starts for Harvey\_54:

(3, 48273), (4, 48264), (5, 48240), (6, 48210), (7, 48159), (10, 48120), (Start: 17 @48030 has 5 MA's), (Start: 21 @48021 has 160 MA's), (41, 47859), (44, 47844), (49, 47811), (51, 47787), (54, 47757), (58, 47679), (61, 47631), (65, 47610), (67, 47589), (73, 47499), (76, 47463), (79, 47424), (80, 47412), (86, 47385),

Gene: Hashim76\_57 Start: 48273, Stop: 47572, Start Num: 22

Candidate Starts for Hashim76\_57:

(Start: 22 @48273 has 5 MA's), (25, 48258), (27, 48228), (53, 48018), (54, 48006), (57, 47970), (60, 47883), (67, 47832), (71, 47775), (80, 47646), (86, 47619),

Gene: Hekos\_52 Start: 47372, Stop: 46683, Start Num: 17

Candidate Starts for Hekos\_52:

(2, 47630), (3, 47615), (4, 47606), (5, 47582), (6, 47552), (7, 47501), (10, 47462), (Start: 17 @47372 has 5 MA's), (Start: 21 @47363 has 160 MA's), (48, 47156), (49, 47153), (51, 47129), (54, 47099), (58, 47021), (61, 46973), (65, 46952), (73, 46841), (76, 46805), (79, 46766), (80, 46754), (86, 46727),

Gene: Held\_55 Start: 47995, Stop: 47315, Start Num: 21

Candidate Starts for Held\_55:

(3, 48247), (4, 48238), (5, 48214), (6, 48184), (7, 48133), (10, 48094), (Start: 17 @48004 has 5 MA's), (Start: 21 @47995 has 160 MA's), (48, 47788), (49, 47785), (51, 47761), (54, 47731), (58, 47653), (61, 47605), (65, 47584), (73, 47473), (76, 47437), (79, 47398), (80, 47386), (86, 47359),

Gene: HenryJackson\_55 Start: 48520, Stop: 47840, Start Num: 21

Candidate Starts for HenryJackson\_55:

(Start: 17 @48529 has 5 MA's), (Start: 21 @48520 has 160 MA's), (48, 48313), (49, 48310), (51, 48286), (54, 48256), (61, 48130), (65, 48109), (67, 48088), (73, 47998), (79, 47923), (80, 47911), (86, 47884),

Gene: Hertubise\_55 Start: 48287, Stop: 47607, Start Num: 21

Candidate Starts for Hertubise\_55:

(Start: 17 @48296 has 5 MA's), (Start: 21 @48287 has 160 MA's), (48, 48080), (49, 48077), (51, 48053), (54, 48023), (61, 47897), (65, 47876), (67, 47855), (73, 47765), (79, 47690), (80, 47678), (86, 47651),

Gene: Hetaeria\_54 Start: 48022, Stop: 47345, Start Num: 21

Candidate Starts for Hetaeria\_54:

(3, 48274), (4, 48265), (5, 48241), (6, 48211), (7, 48160), (10, 48121), (Start: 17 @48031 has 5 MA's), (Start: 21 @48022 has 160 MA's), (41, 47860), (44, 47845), (49, 47812), (51, 47788), (54, 47758), (58, 47680), (61, 47632), (65, 47611), (67, 47590), (73, 47500), (76, 47464), (79, 47425), (80, 47413), (86, 47386),

Gene: HogWash\_55 Start: 48817, Stop: 48137, Start Num: 21

Candidate Starts for HogWash\_55:

(Start: 17 @48826 has 5 MA's), (Start: 21 @48817 has 160 MA's), (48, 48610), (49, 48607), (51, 48583), (54, 48553), (61, 48427), (65, 48406), (67, 48385), (73, 48295), (79, 48220), (80, 48208), (86, 48181),

Gene: Horchata\_54 Start: 47975, Stop: 47298, Start Num: 21

Candidate Starts for Horchata\_54:

(Start: 17 @47984 has 5 MA's), (Start: 21 @47975 has 160 MA's), (41, 47813), (44, 47798), (49, 47765), (51, 47741), (54, 47711), (58, 47633), (61, 47585), (65, 47564), (67, 47543), (73, 47453), (76, 47417), (79, 47378), (80, 47366), (86, 47339),

Gene: Inverness\_54 Start: 47984, Stop: 47307, Start Num: 21

Candidate Starts for Inverness\_54:

(3, 48236), (4, 48227), (5, 48203), (6, 48173), (7, 48122), (10, 48083), (Start: 17 @47993 has 5 MA's), (Start: 21 @47984 has 160 MA's), (41, 47822), (44, 47807), (49, 47774), (51, 47750), (54, 47720), (58, 47642), (61, 47594), (65, 47573), (67, 47552), (73, 47462), (76, 47426), (79, 47387), (80, 47375), (86, 47348),

Gene: IrishSherpFalk\_67 Start: 43906, Stop: 44583, Start Num: 21

Candidate Starts for IrishSherpFalk\_67:

(Start: 21 @43906 has 160 MA's), (30, 43948), (48, 44107), (49, 44110), (51, 44134), (54, 44164), (58, 44242), (61, 44290), (65, 44311), (73, 44422), (76, 44458), (79, 44497), (80, 44509),

Gene: IsaacEli\_56 Start: 48508, Stop: 47828, Start Num: 21

Candidate Starts for IsaacEli\_56:

(Start: 17 @48517 has 5 MA's), (Start: 21 @48508 has 160 MA's), (48, 48301), (49, 48298), (51, 48274), (54, 48244), (61, 48118), (65, 48097), (67, 48076), (73, 47986), (79, 47911), (80, 47899), (86, 47872),

Gene: JDog\_54 Start: 48524, Stop: 47844, Start Num: 21

Candidate Starts for JDog\_54:

(2, 48791), (3, 48776), (4, 48767), (5, 48743), (6, 48713), (7, 48662), (10, 48623), (Start: 17 @48533 has 5 MA's), (Start: 21 @48524 has 160 MA's), (48, 48317), (49, 48314), (51, 48290), (54, 48260), (61, 48134), (65, 48113), (67, 48092), (73, 48002), (79, 47927), (80, 47915), (86, 47888),

Gene: Jesabah\_56 Start: 48525, Stop: 47845, Start Num: 21

Candidate Starts for Jesabah\_56:

(Start: 17 @48534 has 5 MA's), (Start: 21 @48525 has 160 MA's), (48, 48318), (49, 48315), (51, 48291), (54, 48261), (61, 48135), (65, 48114), (67, 48093), (73, 48003), (79, 47928), (80, 47916), (86, 47889),

Gene: Jifall16\_9 Start: 5425, Stop: 6087, Start Num: 20

Candidate Starts for Jifall16\_9:

(8, 5290), (16, 5398), (Start: 20 @5425 has 17 MA's), (47, 5626), (48, 5629), (54, 5686), (65, 5833), (74, 5950), (83, 6040),

Gene: Jillium\_55 Start: 48516, Stop: 47836, Start Num: 21

Candidate Starts for Jillium\_55:

(Start: 17 @48525 has 5 MA's), (Start: 21 @48516 has 160 MA's), (48, 48309), (49, 48306), (51, 48282), (54, 48252), (61, 48126), (65, 48105), (67, 48084), (73, 47994), (79, 47919), (80, 47907), (86, 47880),

Gene: Kahve\_55 Start: 48517, Stop: 47837, Start Num: 21

Candidate Starts for Kahve\_55:

(Start: 17 @48526 has 5 MA's), (Start: 21 @48517 has 160 MA's), (48, 48310), (49, 48307), (51, 48283), (54, 48253), (61, 48127), (65, 48106), (67, 48085), (73, 47995), (79, 47920), (80, 47908), (86, 47881),

Gene: Khan1\_56 Start: 48473, Stop: 47793, Start Num: 21

Candidate Starts for Khan1\_56:

(3, 48725), (4, 48716), (5, 48692), (6, 48662), (7, 48611), (10, 48572), (Start: 17 @48482 has 5 MA's), (Start: 21 @48473 has 160 MA's), (48, 48266), (49, 48263), (51, 48239), (54, 48209), (58, 48131), (61, 48083), (65, 48062), (73, 47951), (76, 47915), (79, 47876), (80, 47864), (86, 47837),

Gene: KidneyBean\_10 Start: 5770, Stop: 6429, Start Num: 20

Candidate Starts for KidneyBean\_10:

(8, 5635), (16, 5743), (Start: 20 @5770 has 17 MA's), (47, 5971), (48, 5974), (54, 6031), (57, 6064), (65, 6175), (74, 6292), (83, 6382),

Gene: Kikipoo\_56 Start: 48508, Stop: 47828, Start Num: 21

Candidate Starts for Kikipoo\_56:

(Start: 17 @48517 has 5 MA's), (Start: 21 @48508 has 160 MA's), (48, 48301), (49, 48298), (51, 48274), (54, 48244), (61, 48118), (65, 48097), (67, 48076), (73, 47986), (79, 47911), (80, 47899), (86, 47872),

Gene: Kimbrough\_56 Start: 48517, Stop: 47837, Start Num: 21

Candidate Starts for Kimbrough\_56:

(Start: 17 @48526 has 5 MA's), (Start: 21 @48517 has 160 MA's), (48, 48310), (49, 48307), (51, 48283), (54, 48253), (61, 48127), (65, 48106), (67, 48085), (73, 47995), (79, 47920), (80, 47908), (86, 47881),

Gene: KingTut\_47 Start: 44181, Stop: 43501, Start Num: 21

Candidate Starts for KingTut\_47:

(Start: 17 @44190 has 5 MA's), (Start: 21 @44181 has 160 MA's), (48, 43974), (49, 43971), (51, 43947), (54, 43917), (61, 43791), (65, 43770), (67, 43749), (73, 43659), (79, 43584), (80, 43572), (86, 43545),

Gene: KlimbOn\_54 Start: 47976, Stop: 47299, Start Num: 21

Candidate Starts for KlimbOn\_54:

(Start: 17 @47985 has 5 MA's), (Start: 21 @47976 has 160 MA's), (41, 47814), (44, 47799), (49, 47766), (51, 47742), (54, 47712), (58, 47634), (61, 47586), (65, 47565), (67, 47544), (73, 47454), (76, 47418), (79, 47379), (80, 47367), (84, 47346), (86, 47340),

Gene: Kurt\_10 Start: 5953, Stop: 6612, Start Num: 20

Candidate Starts for Kurt\_10:

(8, 5818), (16, 5926), (Start: 20 @5953 has 17 MA's), (47, 6154), (48, 6157), (54, 6214), (57, 6247), (65, 6358), (74, 6475), (83, 6565),

Gene: Kwadwo\_54 Start: 47969, Stop: 47289, Start Num: 21

Candidate Starts for Kwadwo\_54:

(3, 48221), (4, 48212), (5, 48188), (6, 48158), (7, 48107), (10, 48068), (Start: 17 @47978 has 5 MA's), (Start: 21 @47969 has 160 MA's), (48, 47762), (49, 47759), (51, 47735), (54, 47705), (58, 47627), (61, 47579), (65, 47558), (73, 47447), (76, 47411), (79, 47372), (80, 47360), (86, 47333),

Gene: Lasso\_55 Start: 48244, Stop: 47564, Start Num: 21

Candidate Starts for Lasso\_55:

(3, 48496), (4, 48487), (5, 48463), (6, 48433), (7, 48382), (10, 48343), (Start: 17 @48253 has 5 MA's), (Start: 21 @48244 has 160 MA's), (48, 48037), (49, 48034), (51, 48010), (54, 47980), (58, 47902), (61, 47854), (65, 47833), (73, 47722), (76, 47686), (79, 47647), (80, 47635), (86, 47608),

Gene: LeeLot\_55 Start: 48296, Stop: 47616, Start Num: 21

Candidate Starts for LeeLot\_55:

(2, 48563), (3, 48548), (4, 48539), (5, 48515), (6, 48485), (7, 48434), (10, 48395), (Start: 17 @48305 has 5 MA's), (Start: 21 @48296 has 160 MA's), (48, 48089), (49, 48086), (51, 48062), (54, 48032), (61, 47906), (65, 47885), (67, 47864), (73, 47774), (79, 47699), (80, 47687), (86, 47660),

Gene: Lego3393\_54 Start: 48508, Stop: 47828, Start Num: 21

Candidate Starts for Lego3393\_54:

(Start: 17 @48517 has 5 MA's), (Start: 21 @48508 has 160 MA's), (48, 48301), (49, 48298), (51, 48274), (54, 48244), (61, 48118), (65, 48097), (67, 48076), (73, 47986), (79, 47911), (80, 47899), (86, 47872),

Gene: Lehmann\_55 Start: 47867, Stop: 47187, Start Num: 21

Candidate Starts for Lehmann\_55:

(3, 48119), (4, 48110), (5, 48086), (6, 48056), (7, 48005), (10, 47966), (Start: 17 @47876 has 5 MA's), (Start: 21 @47867 has 160 MA's), (41, 47705), (44, 47690), (49, 47657), (51, 47633), (54, 47603), (58, 47525), (61, 47477), (65, 47456), (67, 47435), (73, 47345), (76, 47309), (79, 47270), (80, 47258), (86, 47231),

Gene: Lilas\_46 Start: 37586, Stop: 38191, Start Num: 24

Candidate Starts for Lilas\_46:

(Start: 24 @37586 has 7 MA's), (30, 37628), (54, 37823), (55, 37856), (58, 37904), (68, 37997), (74, 38066),

Gene: LittleMinkey\_59 Start: 47912, Stop: 47211, Start Num: 22

Candidate Starts for LittleMinkey\_59:

(Start: 22 @47912 has 5 MA's), (25, 47897), (27, 47867), (54, 47645), (57, 47609), (71, 47414), (80, 47285), (86, 47258),

Gene: Llij\_62 Start: 41070, Stop: 41747, Start Num: 21

Candidate Starts for Llij\_62:

(Start: 21 @41070 has 160 MA's), (30, 41112), (48, 41271), (49, 41274), (51, 41298), (54, 41328), (58, 41406), (61, 41454), (65, 41475), (73, 41586), (76, 41622), (79, 41661), (80, 41673),

Gene: Lollipop1437\_12 Start: 6752, Stop: 7441, Start Num: 20

Candidate Starts for Lollipop1437\_12:

(11, 6680), (16, 6725), (Start: 20 @6752 has 17 MA's), (35, 6869), (47, 6968), (48, 6971), (54, 7028), (65, 7172), (72, 7265), (74, 7289), (83, 7379), (88, 7403),

Gene: LordVader\_70 Start: 40689, Stop: 41372, Start Num: 20

Candidate Starts for LordVader\_70:

(Start: 20 @40689 has 17 MA's), (33, 40767), (42, 40857), (49, 40899), (51, 40923), (54, 40953), (67, 41124), (79, 41286), (80, 41298), (85, 41322), (86, 41325),

Gene: Lorde\_66 Start: 40357, Stop: 41034, Start Num: 21

Candidate Starts for Lorde\_66:

(Start: 21 @40357 has 160 MA's), (30, 40399), (48, 40558), (49, 40561), (51, 40585), (54, 40615), (58, 40693), (61, 40741), (65, 40762), (73, 40873), (76, 40909), (79, 40948), (80, 40960),

Gene: LuckyMarjie\_53 Start: 47677, Stop: 47000, Start Num: 21

Candidate Starts for LuckyMarjie\_53:

(Start: 17 @47686 has 5 MA's), (Start: 21 @47677 has 160 MA's), (38, 47548), (41, 47515), (44, 47500), (48, 47470), (49, 47467), (51, 47443), (54, 47413), (58, 47335), (61, 47287), (65, 47266), (67, 47245), (73, 47155), (76, 47119), (79, 47080), (80, 47068), (83, 47053), (86, 47041),

Gene: Lulumae\_53 Start: 47662, Stop: 46985, Start Num: 21

Candidate Starts for Lulumae\_53:

(Start: 17 @47671 has 5 MA's), (Start: 21 @47662 has 160 MA's), (38, 47533), (41, 47500), (44, 47485), (48, 47455), (49, 47452), (51, 47428), (54, 47398), (58, 47320), (61, 47272), (65, 47251), (67, 47230), (73, 47140), (76, 47104), (79, 47065), (80, 47053), (83, 47038), (86, 47026),

Gene: MRabcd\_54 Start: 48059, Stop: 47379, Start Num: 21

Candidate Starts for MRabcd\_54:

(3, 48311), (4, 48302), (5, 48278), (6, 48248), (7, 48197), (10, 48158), (Start: 17 @48068 has 5 MA's), (Start: 21 @48059 has 160 MA's), (48, 47852), (49, 47849), (51, 47825), (54, 47795), (58, 47717), (61, 47669), (65, 47648), (73, 47537), (76, 47501), (79, 47462), (80, 47450), (86, 47423),

Gene: Mana\_54 Start: 47984, Stop: 47304, Start Num: 21

Candidate Starts for Mana\_54:

(3, 48236), (4, 48227), (5, 48203), (6, 48173), (7, 48122), (10, 48083), (Start: 17 @47993 has 5 MA's), (Start: 21 @47984 has 160 MA's), (48, 47777), (49, 47774), (51, 47750), (54, 47720), (58, 47642), (61, 47594), (65, 47573), (73, 47462), (76, 47426), (79, 47387), (80, 47375), (86, 47348),

Gene: Manad\_54 Start: 47959, Stop: 47282, Start Num: 21

Candidate Starts for Manad\_54:

(3, 48211), (4, 48202), (5, 48178), (6, 48148), (7, 48097), (10, 48058), (Start: 17 @47968 has 5 MA's), (Start: 21 @47959 has 160 MA's), (41, 47797), (44, 47782), (49, 47749), (51, 47725), (54, 47695), (58, 47617), (61, 47569), (65, 47548), (67, 47527), (73, 47437), (76, 47401), (79, 47362), (80, 47350), (86, 47323),

Gene: Maru\_55 Start: 48423, Stop: 47743, Start Num: 21

Candidate Starts for Maru\_55:

(3, 48675), (4, 48666), (5, 48642), (6, 48612), (7, 48561), (10, 48522), (Start: 17 @48432 has 5 MA's), (Start: 21 @48423 has 160 MA's), (48, 48216), (49, 48213), (51, 48189), (54, 48159), (58, 48081), (61, 48033), (65, 48012), (73, 47901), (76, 47865), (79, 47826), (80, 47814), (86, 47787),

Gene: Matalotodo\_54 Start: 47994, Stop: 47317, Start Num: 21

Candidate Starts for Matalotodo\_54:

(Start: 17 @48003 has 5 MA's), (Start: 21 @47994 has 160 MA's), (48, 47787), (49, 47784), (51, 47760), (54, 47730), (61, 47604), (65, 47583), (67, 47562), (73, 47472), (76, 47436), (79, 47397), (80, 47385), (86, 47358),

Gene: Mecca\_55 Start: 48505, Stop: 47825, Start Num: 21

Candidate Starts for Mecca\_55:

(Start: 17 @48514 has 5 MA's), (Start: 21 @48505 has 160 MA's), (48, 48298), (49, 48295), (51, 48271), (54, 48241), (61, 48115), (65, 48094), (67, 48073), (73, 47983), (79, 47908), (80, 47896), (86, 47869),

Gene: Megatron\_56 Start: 48496, Stop: 47816, Start Num: 21

Candidate Starts for Megatron\_56:

(Start: 17 @48505 has 5 MA's), (Start: 21 @48496 has 160 MA's), (48, 48289), (49, 48286), (51, 48262), (54, 48232), (61, 48106), (65, 48085), (67, 48064), (73, 47974), (79, 47899), (80, 47887), (86, 47860),

Gene: Melc17\_55 Start: 48814, Stop: 48134, Start Num: 21

Candidate Starts for Melc17\_55:

(Start: 17 @48823 has 5 MA's), (Start: 21 @48814 has 160 MA's), (48, 48607), (49, 48604), (51, 48580), (54, 48550), (61, 48424), (65, 48403), (67, 48382), (73, 48292), (79, 48217), (80, 48205), (86,

48178),

Gene: Mesh1\_56 Start: 48516, Stop: 47836, Start Num: 21

Candidate Starts for Mesh1\_56:

(3, 48768), (4, 48759), (5, 48735), (6, 48705), (7, 48654), (10, 48615), (Start: 17 @48525 has 5 MA's), (Start: 21 @48516 has 160 MA's), (41, 48354), (44, 48339), (49, 48306), (51, 48282), (54, 48252), (58, 48174), (61, 48126), (65, 48105), (67, 48084), (73, 47994), (76, 47958), (79, 47919), (80, 47907), (86, 47880),

Gene: MitKao\_55 Start: 47994, Stop: 47314, Start Num: 21

Candidate Starts for MitKao\_55:

(3, 48246), (4, 48237), (5, 48213), (6, 48183), (7, 48132), (10, 48093), (Start: 17 @48003 has 5 MA's), (Start: 21 @47994 has 160 MA's), (48, 47787), (49, 47784), (51, 47760), (54, 47730), (58, 47652), (61, 47604), (65, 47583), (73, 47472), (76, 47436), (79, 47397), (80, 47385), (86, 47358),

Gene: Morgushi\_55 Start: 47983, Stop: 47303, Start Num: 21

Candidate Starts for Morgushi\_55:

(3, 48235), (4, 48226), (5, 48202), (6, 48172), (7, 48121), (10, 48082), (Start: 17 @47992 has 5 MA's), (Start: 21 @47983 has 160 MA's), (48, 47776), (49, 47773), (51, 47749), (54, 47719), (58, 47641), (61, 47593), (65, 47572), (73, 47461), (76, 47425), (79, 47386), (80, 47374), (86, 47347),

Gene: Morty\_56 Start: 48505, Stop: 47825, Start Num: 21

Candidate Starts for Morty\_56:

(Start: 17 @48514 has 5 MA's), (Start: 21 @48505 has 160 MA's), (48, 48298), (49, 48295), (51, 48271), (54, 48241), (61, 48115), (65, 48094), (67, 48073), (73, 47983), (79, 47908), (80, 47896), (86, 47869),

Gene: Mosaic\_54 Start: 47988, Stop: 47308, Start Num: 21

Candidate Starts for Mosaic\_54:

(3, 48240), (4, 48231), (5, 48207), (6, 48177), (7, 48126), (10, 48087), (Start: 17 @47997 has 5 MA's), (Start: 21 @47988 has 160 MA's), (48, 47781), (49, 47778), (51, 47754), (54, 47724), (58, 47646), (61, 47598), (65, 47577), (73, 47466), (76, 47430), (79, 47391), (80, 47379), (86, 47352),

Gene: MrPhizzler\_57 Start: 48450, Stop: 47770, Start Num: 21

Candidate Starts for MrPhizzler\_57:

(3, 48702), (4, 48693), (5, 48669), (6, 48639), (7, 48588), (10, 48549), (Start: 17 @48459 has 5 MA's), (Start: 21 @48450 has 160 MA's), (48, 48243), (49, 48240), (51, 48216), (54, 48186), (58, 48108), (61, 48060), (65, 48039), (73, 47928), (76, 47892), (79, 47853), (80, 47841), (86, 47814),

Gene: Mulan\_55 Start: 48222, Stop: 47542, Start Num: 21

Candidate Starts for Mulan\_55:

(Start: 17 @48231 has 5 MA's), (Start: 21 @48222 has 160 MA's), (48, 48015), (49, 48012), (51, 47988), (54, 47958), (61, 47832), (65, 47811), (67, 47790), (73, 47700), (79, 47625), (80, 47613), (86, 47586),

Gene: Murdoc\_54 Start: 47984, Stop: 47307, Start Num: 21

Candidate Starts for Murdoc\_54:

(Start: 17 @47993 has 5 MA's), (Start: 21 @47984 has 160 MA's), (48, 47777), (49, 47774), (51, 47750), (54, 47720), (61, 47594), (65, 47573), (67, 47552), (73, 47462), (76, 47426), (79, 47387), (80, 47375), (86, 47348),

Gene: Nacho\_0056 Start: 48499, Stop: 47819, Start Num: 21

Candidate Starts for Nacho\_0056:

(Start: 17 @48508 has 5 MA's), (Start: 21 @48499 has 160 MA's), (48, 48292), (49, 48289), (51, 48265), (54, 48235), (61, 48109), (65, 48088), (67, 48067), (73, 47977), (79, 47902), (80, 47890), (86, 47863),

Gene: NatB6\_10 Start: 6032, Stop: 6694, Start Num: 20

Candidate Starts for NatB6\_10:

(8, 5897), (16, 6005), (Start: 20 @6032 has 17 MA's), (28, 6074), (47, 6233), (48, 6236), (52, 6269), (54, 6293), (65, 6440), (74, 6557), (83, 6647), (84, 6653),

Gene: Newman\_54 Start: 47979, Stop: 47302, Start Num: 21

Candidate Starts for Newman\_54:

(3, 48231), (4, 48222), (5, 48198), (6, 48168), (7, 48117), (10, 48078), (Start: 17 @47988 has 5 MA's), (Start: 21 @47979 has 160 MA's), (41, 47817), (44, 47802), (49, 47769), (51, 47745), (54, 47715), (58, 47637), (61, 47589), (65, 47568), (67, 47547), (73, 47457), (76, 47421), (79, 47382), (80, 47370), (86, 47343),

Gene: NovumRegina\_10 Start: 6385, Stop: 7059, Start Num: 20

Candidate Starts for NovumRegina\_10:

(8, 6250), (16, 6358), (Start: 20 @6385 has 17 MA's), (47, 6586), (48, 6589), (54, 6646), (57, 6679), (65, 6790), (74, 6907), (83, 6997),

Gene: Numberten\_54 Start: 47974, Stop: 47297, Start Num: 21

Candidate Starts for Numberten\_54:

(Start: 17 @47983 has 5 MA's), (Start: 21 @47974 has 160 MA's), (38, 47845), (41, 47812), (44, 47797), (48, 47767), (49, 47764), (51, 47740), (54, 47710), (58, 47632), (61, 47584), (65, 47563), (67, 47542), (73, 47452), (76, 47416), (79, 47377), (80, 47365), (83, 47350), (86, 47338),

Gene: OSmaximus\_56 Start: 48538, Stop: 47858, Start Num: 21

Candidate Starts for OSmaximus\_56:

(3, 48790), (4, 48781), (5, 48757), (6, 48727), (7, 48676), (10, 48637), (Start: 17 @48547 has 5 MA's), (Start: 21 @48538 has 160 MA's), (41, 48376), (44, 48361), (49, 48328), (51, 48304), (54, 48274), (58, 48196), (61, 48148), (65, 48127), (67, 48106), (73, 48016), (76, 47980), (79, 47941), (80, 47929), (86, 47902),

Gene: Ogopogo\_73 Start: 43850, Stop: 44527, Start Num: 21

Candidate Starts for Ogopogo\_73:

(Start: 21 @43850 has 160 MA's), (30, 43892), (48, 44051), (49, 44054), (51, 44078), (54, 44108), (58, 44186), (61, 44234), (65, 44255), (73, 44366), (76, 44402), (79, 44441), (80, 44453),

Gene: Okabe\_60 Start: 38644, Stop: 39330, Start Num: 21

Candidate Starts for Okabe\_60:

(Start: 21 @38644 has 160 MA's), (48, 38854), (49, 38857), (51, 38881), (54, 38911), (58, 38989), (61, 39037), (65, 39058), (73, 39169), (76, 39205), (79, 39244), (80, 39256), (86, 39283),

Gene: Oksu\_71 Start: 46299, Stop: 46976, Start Num: 21

Candidate Starts for Oksu\_71:

(Start: 21 @46299 has 160 MA's), (30, 46341), (48, 46500), (49, 46503), (51, 46527), (54, 46557), (58, 46635), (61, 46683), (65, 46704), (73, 46815), (76, 46851), (79, 46890), (80, 46902),

Gene: Olive\_54 Start: 47964, Stop: 47287, Start Num: 21

Candidate Starts for Olive\_54:

(Start: 17 @47973 has 5 MA's), (Start: 21 @47964 has 160 MA's), (38, 47835), (41, 47802), (44, 47787), (48, 47757), (49, 47754), (51, 47730), (54, 47700), (58, 47622), (61, 47574), (65, 47553), (67,

47532), (73, 47442), (76, 47406), (79, 47367), (80, 47355), (86, 47328),

Gene: OliverWalter\_54 Start: 47985, Stop: 47308, Start Num: 21

Candidate Starts for OliverWalter\_54:

(Start: 17 @47994 has 5 MA's), (Start: 21 @47985 has 160 MA's), (41, 47823), (44, 47808), (49, 47775), (51, 47751), (54, 47721), (58, 47643), (61, 47595), (65, 47574), (67, 47553), (73, 47463), (76, 47427), (79, 47388), (80, 47376), (86, 47349),

Gene: Omniscient\_56 Start: 48812, Stop: 48132, Start Num: 21

Candidate Starts for Omniscient\_56:

(Start: 17 @48821 has 5 MA's), (Start: 21 @48812 has 160 MA's), (48, 48605), (49, 48602), (51, 48578), (54, 48548), (61, 48422), (65, 48401), (67, 48380), (73, 48290), (79, 48215), (80, 48203), (86, 48176),

Gene: OneBrain\_56 Start: 48016, Stop: 47336, Start Num: 21

Candidate Starts for OneBrain\_56:

(Start: 17 @48025 has 5 MA's), (Start: 21 @48016 has 160 MA's), (41, 47854), (44, 47839), (49, 47806), (51, 47782), (54, 47752), (58, 47674), (61, 47626), (65, 47605), (67, 47584), (73, 47494), (76, 47458), (79, 47419), (80, 47407), (86, 47380),

Gene: Oosterbaan\_55 Start: 48274, Stop: 47594, Start Num: 21

Candidate Starts for Oosterbaan\_55:

(Start: 17 @48283 has 5 MA's), (Start: 21 @48274 has 160 MA's), (48, 48067), (49, 48064), (51, 48040), (54, 48010), (61, 47884), (65, 47863), (67, 47842), (73, 47752), (79, 47677), (80, 47665), (86, 47638),

Gene: PG1\_56 Start: 48507, Stop: 47827, Start Num: 21

Candidate Starts for PG1\_56:

(Start: 17 @48516 has 5 MA's), (Start: 21 @48507 has 160 MA's), (48, 48300), (49, 48297), (51, 48273), (54, 48243), (61, 48117), (65, 48096), (67, 48075), (73, 47985), (79, 47910), (80, 47898), (86, 47871),

Gene: Phareon\_54 Start: 47671, Stop: 46994, Start Num: 21

Candidate Starts for Phareon\_54:

(Start: 17 @47680 has 5 MA's), (Start: 21 @47671 has 160 MA's), (38, 47542), (41, 47509), (44, 47494), (48, 47464), (49, 47461), (51, 47437), (54, 47407), (58, 47329), (61, 47281), (65, 47260), (67, 47239), (73, 47149), (76, 47113), (79, 47074), (80, 47062), (83, 47047), (86, 47035),

Gene: PhatCats2014\_56 Start: 48511, Stop: 47831, Start Num: 21

Candidate Starts for PhatCats2014\_56:

(Start: 17 @48520 has 5 MA's), (Start: 21 @48511 has 160 MA's), (48, 48304), (49, 48301), (51, 48277), (54, 48247), (61, 48121), (65, 48100), (67, 48079), (73, 47989), (79, 47914), (80, 47902), (86, 47875),

Gene: Phatniss\_64 Start: 42165, Stop: 42842, Start Num: 21

Candidate Starts for Phatniss\_64:

(Start: 21 @42165 has 160 MA's), (30, 42207), (48, 42366), (49, 42369), (51, 42393), (54, 42423), (58, 42501), (61, 42549), (65, 42570), (73, 42681), (76, 42717), (79, 42756), (80, 42768),

Gene: Phomeo\_9 Start: 5606, Stop: 6265, Start Num: 20

Candidate Starts for Phomeo\_9:

(8, 5471), (16, 5579), (Start: 20 @5606 has 17 MA's), (47, 5807), (48, 5810), (54, 5867), (57, 5900), (65, 6011), (74, 6128), (83, 6218),

Gene: Phrappuccino\_151 Start: 104613, Stop: 105200, Start Num: 29

Candidate Starts for Phrappuccino\_151:

(9, 104412), (Start: 29 @104613 has 2 MA's), (34, 104661), (39, 104712), (46, 104757), (57, 104874), (58, 104913), (59, 104919), (62, 104964), (63, 104973), (68, 105012), (73, 105081), (74, 105084), (75, 105087),

Gene: Phunky\_54 Start: 47968, Stop: 47291, Start Num: 21

Candidate Starts for Phunky\_54:

(Start: 17 @47977 has 5 MA's), (Start: 21 @47968 has 160 MA's), (38, 47839), (41, 47806), (44, 47791), (48, 47761), (49, 47758), (51, 47734), (54, 47704), (58, 47626), (61, 47578), (65, 47557), (67, 47536), (73, 47446), (76, 47410), (79, 47371), (80, 47359), (83, 47344), (86, 47332),

Gene: Piglet\_0055 Start: 48493, Stop: 47804, Start Num: 17

Candidate Starts for Piglet\_0055:

(Start: 17 @48493 has 5 MA's), (Start: 21 @48484 has 160 MA's), (48, 48277), (49, 48274), (51, 48250), (54, 48220), (61, 48094), (65, 48073), (67, 48052), (73, 47962), (79, 47887), (80, 47875), (86, 47848),

Gene: PinheadLarry\_56 Start: 48509, Stop: 47829, Start Num: 21

Candidate Starts for PinheadLarry\_56:

(Start: 17 @48518 has 5 MA's), (Start: 21 @48509 has 160 MA's), (48, 48302), (49, 48299), (51, 48275), (54, 48245), (61, 48119), (65, 48098), (67, 48077), (73, 47987), (76, 47951), (79, 47912), (80, 47900), (86, 47873),

Gene: Pipsqueak\_54 Start: 47997, Stop: 47320, Start Num: 21

Candidate Starts for Pipsqueak\_54:

(Start: 17 @48006 has 5 MA's), (Start: 21 @47997 has 160 MA's), (48, 47790), (49, 47787), (51, 47763), (54, 47733), (61, 47607), (65, 47586), (67, 47565), (73, 47475), (76, 47439), (79, 47400), (80, 47388), (86, 47361),

Gene: Placalicious\_55 Start: 48499, Stop: 47819, Start Num: 21

Candidate Starts for Placalicious\_55:

(Start: 17 @48508 has 5 MA's), (Start: 21 @48499 has 160 MA's), (48, 48292), (49, 48289), (51, 48265), (54, 48235), (61, 48109), (65, 48088), (67, 48067), (73, 47977), (79, 47902), (80, 47890), (86, 47863),

Gene: Plmatters\_54 Start: 47971, Stop: 47294, Start Num: 21

Candidate Starts for Plmatters\_54:

(3, 48223), (4, 48214), (5, 48190), (6, 48160), (7, 48109), (10, 48070), (Start: 17 @47980 has 5 MA's), (Start: 21 @47971 has 160 MA's), (38, 47842), (41, 47809), (44, 47794), (48, 47764), (49, 47761), (51, 47737), (54, 47707), (58, 47629), (61, 47581), (65, 47560), (67, 47539), (73, 47449), (76, 47413), (79, 47374), (80, 47362), (83, 47347), (86, 47335),

Gene: Poenanya\_66 Start: 43323, Stop: 44000, Start Num: 21

Candidate Starts for Poenanya\_66:

(Start: 21 @43323 has 160 MA's), (30, 43365), (48, 43524), (49, 43527), (51, 43551), (54, 43581), (58, 43659), (61, 43707), (65, 43728), (73, 43839), (76, 43875), (79, 43914), (80, 43926),

Gene: Pops\_54 Start: 47956, Stop: 47309, Start Num: 21

Candidate Starts for Pops\_54:

(2, 48223), (3, 48208), (4, 48199), (5, 48175), (6, 48145), (7, 48094), (10, 48055), (Start: 17 @47965 has 5 MA's), (Start: 21 @47956 has 160 MA's), (31, 47899), (49, 47746), (51, 47722), (54, 47692), (61,

47566), (65, 47545), (67, 47524), (73, 47434), (79, 47389), (80, 47377), (86, 47350),

Gene: Posh\_51 Start: 37991, Stop: 38596, Start Num: 24

Candidate Starts for Posh\_51:

(Start: 24 @37991 has 7 MA's), (30, 38033), (54, 38228), (55, 38261), (58, 38309), (68, 38402), (74, 38471), (78, 38525),

Gene: Potter\_54 Start: 48005, Stop: 47325, Start Num: 21

Candidate Starts for Potter\_54:

(3, 48257), (4, 48248), (5, 48224), (6, 48194), (7, 48143), (10, 48104), (Start: 17 @48014 has 5 MA's), (Start: 21 @48005 has 160 MA's), (48, 47798), (49, 47795), (51, 47771), (54, 47741), (58, 47663), (61, 47615), (65, 47594), (73, 47483), (76, 47447), (79, 47408), (80, 47396), (86, 47369),

Gene: ProfessorX\_54 Start: 47963, Stop: 47286, Start Num: 21

Candidate Starts for ProfessorX\_54:

(Start: 17 @47972 has 5 MA's), (Start: 21 @47963 has 160 MA's), (48, 47756), (49, 47753), (51, 47729), (54, 47699), (58, 47621), (61, 47573), (65, 47552), (67, 47531), (73, 47441), (76, 47405), (79, 47366), (80, 47354), (86, 47327),

Gene: Puhltonio\_55 Start: 48279, Stop: 47599, Start Num: 21

Candidate Starts for Puhltonio\_55:

(3, 48531), (4, 48522), (5, 48498), (6, 48468), (7, 48417), (10, 48378), (Start: 17 @48288 has 5 MA's), (Start: 21 @48279 has 160 MA's), (48, 48072), (49, 48069), (51, 48045), (54, 48015), (58, 47937), (61, 47889), (65, 47868), (73, 47757), (76, 47721), (79, 47682), (80, 47670), (86, 47643),

Gene: QueenBeane\_55 Start: 48269, Stop: 47589, Start Num: 21

Candidate Starts for QueenBeane\_55:

(Start: 17 @48278 has 5 MA's), (Start: 21 @48269 has 160 MA's), (48, 48062), (49, 48059), (51, 48035), (54, 48005), (61, 47879), (65, 47858), (67, 47837), (73, 47747), (79, 47672), (80, 47660), (86, 47633),

Gene: RedRaider\_13 Start: 6700, Stop: 7374, Start Num: 23

Candidate Starts for RedRaider\_13:

(15, 6646), (Start: 23 @6700 has 2 MA's), (47, 6901), (48, 6904), (49, 6907), (54, 6961), (65, 7105), (70, 7171), (72, 7198), (74, 7222), (83, 7312),

Gene: RedRaider89\_55 Start: 48196, Stop: 47519, Start Num: 21

Candidate Starts for RedRaider89\_55:

(Start: 17 @48205 has 5 MA's), (Start: 21 @48196 has 160 MA's), (41, 48034), (44, 48019), (49, 47986), (51, 47962), (54, 47932), (58, 47854), (61, 47806), (65, 47785), (67, 47764), (73, 47674), (76, 47638), (79, 47599), (80, 47587), (86, 47560),

Gene: Riverton\_54 Start: 47990, Stop: 47313, Start Num: 21

Candidate Starts for Riverton\_54:

(Start: 17 @47999 has 5 MA's), (Start: 21 @47990 has 160 MA's), (41, 47828), (44, 47813), (49, 47780), (51, 47756), (54, 47726), (58, 47648), (61, 47600), (65, 47579), (67, 47558), (73, 47468), (76, 47432), (79, 47393), (80, 47381), (84, 47360), (86, 47354),

Gene: Robyn\_54 Start: 47908, Stop: 47228, Start Num: 21

Candidate Starts for Robyn\_54:

(3, 48160), (4, 48151), (5, 48127), (6, 48097), (7, 48046), (10, 48007), (Start: 17 @47917 has 5 MA's), (Start: 21 @47908 has 160 MA's), (41, 47746), (44, 47731), (49, 47698), (51, 47674), (54, 47644), (58, 47566), (61, 47518), (65, 47497), (67, 47476), (73, 47386), (76, 47350), (79, 47311), (80, 47299), (86,

47272),

Gene: Roscoe\_55 Start: 48208, Stop: 47531, Start Num: 21

Candidate Starts for Roscoe\_55:

(Start: 17 @48217 has 5 MA's), (Start: 21 @48208 has 160 MA's), (38, 48079), (41, 48046), (44, 48031), (48, 48001), (49, 47998), (51, 47974), (54, 47944), (58, 47866), (61, 47818), (65, 47797), (67, 47776), (73, 47686), (76, 47650), (79, 47611), (80, 47599), (86, 47572),

Gene: Roy17\_54 Start: 47662, Stop: 46985, Start Num: 21

Candidate Starts for Roy17\_54:

(Start: 17 @47671 has 5 MA's), (Start: 21 @47662 has 160 MA's), (38, 47533), (41, 47500), (44, 47485), (48, 47455), (49, 47452), (51, 47428), (54, 47398), (58, 47320), (61, 47272), (65, 47251), (67, 47230), (73, 47140), (76, 47104), (79, 47065), (80, 47053), (83, 47038), (86, 47026),

Gene: Samaymay\_55 Start: 48269, Stop: 47589, Start Num: 21

Candidate Starts for Samaymay\_55:

(Start: 17 @48278 has 5 MA's), (Start: 21 @48269 has 160 MA's), (48, 48062), (49, 48059), (51, 48035), (54, 48005), (61, 47879), (65, 47858), (67, 47837), (73, 47747), (79, 47672), (80, 47660), (86, 47633),

Gene: SassyCat97\_54 Start: 47996, Stop: 47316, Start Num: 21

Candidate Starts for SassyCat97\_54:

(3, 48248), (4, 48239), (5, 48215), (6, 48185), (7, 48134), (10, 48095), (Start: 17 @48005 has 5 MA's), (Start: 21 @47996 has 160 MA's), (48, 47789), (49, 47786), (51, 47762), (54, 47732), (58, 47654), (61, 47606), (65, 47585), (73, 47474), (76, 47438), (79, 47399), (80, 47387), (86, 47360),

Gene: Schadenfreude\_54 Start: 47755, Stop: 47078, Start Num: 21

Candidate Starts for Schadenfreude\_54:

(Start: 17 @47764 has 5 MA's), (Start: 21 @47755 has 160 MA's), (41, 47593), (44, 47578), (49, 47545), (51, 47521), (54, 47491), (58, 47413), (61, 47365), (65, 47344), (67, 47323), (73, 47233), (76, 47197), (79, 47158), (80, 47146), (84, 47125), (86, 47119),

Gene: Serendipity\_55 Start: 48293, Stop: 47613, Start Num: 21

Candidate Starts for Serendipity\_55:

(3, 48545), (4, 48536), (5, 48512), (6, 48482), (7, 48431), (10, 48392), (Start: 17 @48302 has 5 MA's), (Start: 21 @48293 has 160 MA's), (48, 48086), (49, 48083), (51, 48059), (54, 48029), (58, 47951), (61, 47903), (65, 47882), (73, 47771), (76, 47735), (79, 47696), (80, 47684), (86, 47657),

Gene: Serpentine\_0055 Start: 48376, Stop: 47696, Start Num: 21

Candidate Starts for Serpentine\_0055:

(Start: 17 @48385 has 5 MA's), (Start: 21 @48376 has 160 MA's), (48, 48169), (49, 48166), (51, 48142), (54, 48112), (61, 47986), (65, 47965), (67, 47944), (73, 47854), (79, 47779), (80, 47767), (86, 47740),

Gene: Settecandela\_151 Start: 104613, Stop: 105200, Start Num: 29

Candidate Starts for Settecandela\_151:

(9, 104412), (Start: 29 @104613 has 2 MA's), (34, 104661), (39, 104712), (46, 104757), (57, 104874), (58, 104913), (59, 104919), (62, 104964), (63, 104973), (68, 105012), (73, 105081), (74, 105084), (75, 105087),

Gene: SilverBell\_54 Start: 48014, Stop: 47337, Start Num: 21

Candidate Starts for SilverBell\_54:

(Start: 17 @48023 has 5 MA's), (Start: 21 @48014 has 160 MA's), (48, 47807), (49, 47804), (51, 47780), (54, 47750), (61, 47624), (65, 47603), (67, 47582), (73, 47492), (76, 47456), (79, 47417), (80, 47405), (86, 47378),

Gene: SilverChicken\_76 Start: 42471, Stop: 43148, Start Num: 21

Candidate Starts for SilverChicken\_76:

(Start: 21 @42471 has 160 MA's), (30, 42513), (48, 42672), (49, 42675), (51, 42699), (54, 42729), (58, 42807), (61, 42855), (65, 42876), (73, 42987), (76, 43023), (79, 43062), (80, 43074),

Gene: SirBeauregard\_56 Start: 48508, Stop: 47819, Start Num: 17

Candidate Starts for SirBeauregard\_56:

(Start: 17 @48508 has 5 MA's), (Start: 21 @48499 has 160 MA's), (48, 48292), (49, 48289), (51, 48265), (54, 48235), (61, 48109), (65, 48088), (67, 48067), (73, 47977), (79, 47902), (80, 47890), (86, 47863),

Gene: Soile\_56 Start: 48517, Stop: 47837, Start Num: 21

Candidate Starts for Soile\_56:

(Start: 17 @48526 has 5 MA's), (Start: 21 @48517 has 160 MA's), (48, 48310), (49, 48307), (51, 48283), (54, 48253), (61, 48127), (65, 48106), (67, 48085), (73, 47995), (79, 47920), (80, 47908), (86, 47881),

Gene: Solosis\_54 Start: 47999, Stop: 47310, Start Num: 17

Candidate Starts for Solosis\_54:

(3, 48242), (4, 48233), (5, 48209), (6, 48179), (7, 48128), (10, 48089), (Start: 17 @47999 has 5 MA's), (Start: 21 @47990 has 160 MA's), (48, 47783), (49, 47780), (51, 47756), (54, 47726), (58, 47648), (61, 47600), (65, 47579), (73, 47468), (76, 47432), (79, 47393), (80, 47381), (86, 47354),

Gene: Sophia\_54 Start: 47993, Stop: 47304, Start Num: 17

Candidate Starts for Sophia\_54:

(3, 48236), (4, 48227), (5, 48203), (6, 48173), (7, 48122), (10, 48083), (Start: 17 @47993 has 5 MA's), (Start: 21 @47984 has 160 MA's), (48, 47777), (49, 47774), (51, 47750), (54, 47720), (61, 47594), (65, 47573), (67, 47552), (73, 47462), (76, 47426), (79, 47387), (80, 47375), (86, 47348),

Gene: Sparkdehlily\_73 Start: 43625, Stop: 44299, Start Num: 21

Candidate Starts for Sparkdehlily\_73:

(Start: 21 @43625 has 160 MA's), (30, 43667), (48, 43826), (49, 43829), (51, 43853), (54, 43883), (58, 43961), (61, 44009), (65, 44030), (73, 44141), (76, 44177), (79, 44216), (80, 44228),

Gene: Sparky\_63 Start: 43334, Stop: 44023, Start Num: 22

Candidate Starts for Sparky\_63:

(12, 43268), (Start: 22 @43334 has 5 MA's), (33, 43418), (49, 43550), (51, 43574), (54, 43604), (67, 43775), (79, 43937), (80, 43949), (86, 43976),

Gene: Spartacus\_68 Start: 42822, Stop: 43505, Start Num: 20

Candidate Starts for Spartacus\_68:

(Start: 20 @42822 has 17 MA's), (33, 42900), (42, 42990), (49, 43032), (51, 43056), (54, 43086), (67, 43257), (79, 43419), (80, 43431),

Gene: Spartan300\_54 Start: 47968, Stop: 47291, Start Num: 21

Candidate Starts for Spartan300\_54:

(Start: 17 @47977 has 5 MA's), (Start: 21 @47968 has 160 MA's), (38, 47839), (41, 47806), (44, 47791), (48, 47761), (49, 47758), (51, 47734), (54, 47704), (58, 47626), (61, 47578), (65, 47557), (67, 47536), (73, 47446), (76, 47410), (79, 47371), (80, 47359), (86, 47332),

Gene: Squid\_55 Start: 47996, Stop: 47316, Start Num: 21

Candidate Starts for Squid\_55:

(3, 48248), (4, 48239), (5, 48215), (6, 48185), (7, 48134), (10, 48095), (Start: 17 @48005 has 5 MA's), (Start: 21 @47996 has 160 MA's), (48, 47789), (49, 47786), (51, 47762), (54, 47732), (58, 47654), (61, 47606), (65, 47585), (73, 47474), (76, 47438), (79, 47399), (80, 47387), (86, 47360),

Gene: Surely\_55 Start: 48286, Stop: 47606, Start Num: 21

Candidate Starts for Surely\_55:

(3, 48538), (4, 48529), (5, 48505), (6, 48475), (7, 48424), (10, 48385), (Start: 17 @48295 has 5 MA's), (Start: 21 @48286 has 160 MA's), (48, 48079), (49, 48076), (51, 48052), (54, 48022), (58, 47944), (61, 47896), (65, 47875), (73, 47764), (76, 47728), (79, 47689), (80, 47677), (86, 47650),

Gene: TDanisky\_73 Start: 43625, Stop: 44299, Start Num: 21

Candidate Starts for TDanisky\_73:

(Start: 21 @43625 has 160 MA's), (30, 43667), (48, 43826), (49, 43829), (51, 43853), (54, 43883), (58, 43961), (61, 44009), (65, 44030), (73, 44141), (76, 44177), (79, 44216), (80, 44228),

Gene: TPA4\_59 Start: 41974, Stop: 42615, Start Num: 19

Candidate Starts for TPA4\_59:

(13, 41911), (Start: 17 @41968 has 5 MA's), (19, 41974), (30, 42043), (32, 42064), (40, 42154), (48, 42193), (54, 42238), (58, 42301), (68, 42400), (74, 42490), (77, 42520), (79, 42553), (82, 42577),

Gene: Taj\_71 Start: 44380, Stop: 45054, Start Num: 21

Candidate Starts for Taj\_71:

(Start: 21 @44380 has 160 MA's), (30, 44422), (48, 44581), (49, 44584), (51, 44608), (54, 44638), (58, 44716), (61, 44764), (65, 44785), (73, 44896), (76, 44932), (79, 44971), (80, 44983),

Gene: TallGrassMM\_55 Start: 47900, Stop: 47220, Start Num: 21

Candidate Starts for TallGrassMM\_55:

(3, 48152), (4, 48143), (5, 48119), (6, 48089), (7, 48038), (10, 47999), (Start: 17 @47909 has 5 MA's), (Start: 21 @47900 has 160 MA's), (48, 47693), (49, 47690), (51, 47666), (54, 47636), (58, 47558), (61, 47510), (65, 47489), (73, 47378), (76, 47342), (79, 47303), (80, 47291), (86, 47264),

Gene: Telesworld\_53 Start: 48063, Stop: 47170, Start Num: 21

Candidate Starts for Telesworld\_53:

(3, 48315), (4, 48306), (5, 48282), (6, 48252), (7, 48201), (10, 48162), (Start: 17 @48072 has 5 MA's), (Start: 21 @48063 has 160 MA's), (48, 47856), (49, 47853), (51, 47829), (54, 47799), (58, 47721), (61, 47673), (65, 47652), (67, 47631), (73, 47541), (79, 47466), (80, 47454), (90, 47385),

Gene: Thora\_55 Start: 48282, Stop: 47602, Start Num: 21

Candidate Starts for Thora\_55:

(Start: 17 @48291 has 5 MA's), (Start: 21 @48282 has 160 MA's), (48, 48075), (49, 48072), (51, 48048), (54, 48018), (61, 47892), (65, 47871), (67, 47850), (73, 47760), (79, 47685), (80, 47673), (86, 47646),

Gene: ThreeOh3D2\_56 Start: 48502, Stop: 47822, Start Num: 21

Candidate Starts for ThreeOh3D2\_56:

(Start: 17 @48511 has 5 MA's), (Start: 21 @48502 has 160 MA's), (48, 48295), (49, 48292), (51, 48268), (54, 48238), (61, 48112), (65, 48091), (67, 48070), (73, 47980), (79, 47905), (80, 47893), (86, 47866),

Gene: Timmi\_54 Start: 47985, Stop: 47305, Start Num: 21

Candidate Starts for Timmi\_54:

(3, 48237), (4, 48228), (5, 48204), (6, 48174), (7, 48123), (10, 48084), (Start: 17 @47994 has 5 MA's), (Start: 21 @47985 has 160 MA's), (48, 47778), (49, 47775), (51, 47751), (54, 47721), (58, 47643), (61, 47595), (65, 47574), (73, 47463), (76, 47427), (79, 47388), (80, 47376), (86, 47349),

Gene: TomBombadil\_55 Start: 48270, Stop: 47590, Start Num: 21

Candidate Starts for TomBombadil\_55:

(3, 48522), (4, 48513), (5, 48489), (6, 48459), (7, 48408), (10, 48369), (Start: 17 @48279 has 5 MA's), (Start: 21 @48270 has 160 MA's), (48, 48063), (49, 48060), (51, 48036), (54, 48006), (58, 47928), (61, 47880), (65, 47859), (73, 47748), (76, 47712), (79, 47673), (80, 47661), (86, 47634),

Gene: Tomlarah\_56 Start: 48797, Stop: 48117, Start Num: 21

Candidate Starts for Tomlarah\_56:

(Start: 17 @48806 has 5 MA's), (Start: 21 @48797 has 160 MA's), (48, 48590), (49, 48587), (51, 48563), (54, 48533), (61, 48407), (65, 48386), (67, 48365), (73, 48275), (79, 48200), (80, 48188), (86, 48161),

Gene: TooFast2Furius\_55 Start: 48209, Stop: 47532, Start Num: 21

Candidate Starts for TooFast2Furius\_55:

(Start: 17 @48218 has 5 MA's), (Start: 21 @48209 has 160 MA's), (41, 48047), (44, 48032), (49, 47999), (51, 47975), (54, 47945), (58, 47867), (61, 47819), (65, 47798), (67, 47777), (73, 47687), (76, 47651), (79, 47612), (80, 47600), (86, 47573),

Gene: Tootsieroll\_66 Start: 42088, Stop: 42765, Start Num: 21

Candidate Starts for Tootsieroll\_66:

(Start: 21 @42088 has 160 MA's), (30, 42130), (48, 42289), (49, 42292), (51, 42316), (54, 42346), (58, 42424), (61, 42472), (65, 42493), (73, 42604), (76, 42640), (79, 42679), (80, 42691),

Gene: Toron\_74 Start: 45951, Stop: 46631, Start Num: 18

Candidate Starts for Toron\_74:

(18, 45951), (30, 46008), (32, 46026), (33, 46035), (42, 46125), (49, 46167), (51, 46191), (54, 46221), (67, 46392), (79, 46554), (80, 46566), (85, 46590), (86, 46593),

Gene: Tracker\_10 Start: 5745, Stop: 6419, Start Num: 20

Candidate Starts for Tracker\_10:

(8, 5610), (16, 5718), (Start: 20 @5745 has 17 MA's), (47, 5946), (48, 5949), (54, 6006), (57, 6039), (65, 6150), (74, 6267), (83, 6357),

Gene: Triad\_55 Start: 47197, Stop: 46517, Start Num: 21

Candidate Starts for Triad\_55:

(3, 47449), (4, 47440), (5, 47416), (6, 47386), (7, 47335), (10, 47296), (Start: 17 @47206 has 5 MA's), (Start: 21 @47197 has 160 MA's), (41, 47035), (44, 47020), (49, 46987), (51, 46963), (54, 46933), (58, 46855), (61, 46807), (65, 46786), (67, 46765), (73, 46675), (76, 46639), (79, 46600), (80, 46588), (86, 46561),

Gene: UAch1\_54 Start: 48022, Stop: 47345, Start Num: 21

Candidate Starts for UAch1\_54:

(3, 48274), (4, 48265), (5, 48241), (6, 48211), (7, 48160), (10, 48121), (Start: 17 @48031 has 5 MA's), (Start: 21 @48022 has 160 MA's), (41, 47860), (44, 47845), (49, 47812), (51, 47788), (54, 47758), (58, 47680), (61, 47632), (65, 47611), (67, 47590), (73, 47500), (76, 47464), (79, 47425), (80, 47413), (86, 47386),

Gene: UncleHowie\_54 Start: 47697, Stop: 47020, Start Num: 21

Candidate Starts for UncleHowie\_54:

(Start: 17 @47706 has 5 MA's), (Start: 21 @47697 has 160 MA's), (48, 47490), (49, 47487), (51, 47463), (54, 47433), (61, 47307), (65, 47286), (67, 47265), (73, 47175), (76, 47139), (79, 47100), (80, 47088), (86, 47061),

Gene: UncleRicky\_65 Start: 42413, Stop: 43090, Start Num: 21

Candidate Starts for UncleRicky\_65:

(Start: 21 @42413 has 160 MA's), (30, 42455), (48, 42614), (49, 42617), (51, 42641), (54, 42671), (58, 42749), (61, 42797), (65, 42818), (73, 42929), (76, 42965), (79, 43004), (80, 43016),

Gene: Usavi\_55 Start: 48365, Stop: 47685, Start Num: 21

Candidate Starts for Usavi\_55:

(Start: 17 @48374 has 5 MA's), (Start: 21 @48365 has 160 MA's), (48, 48158), (49, 48155), (51, 48131), (54, 48101), (61, 47975), (65, 47954), (67, 47933), (73, 47843), (79, 47768), (80, 47756), (86, 47729),

Gene: Vaishali24\_53 Start: 47657, Stop: 46980, Start Num: 21

Candidate Starts for Vaishali24\_53:

(3, 47909), (4, 47900), (5, 47876), (6, 47846), (7, 47795), (10, 47756), (Start: 17 @47666 has 5 MA's), (Start: 21 @47657 has 160 MA's), (41, 47495), (44, 47480), (49, 47447), (51, 47423), (54, 47393), (58, 47315), (61, 47267), (65, 47246), (67, 47225), (73, 47135), (76, 47099), (79, 47060), (80, 47048), (86, 47021),

Gene: Valjean\_54 Start: 47978, Stop: 47301, Start Num: 21

Candidate Starts for Valjean\_54:

(Start: 17 @47987 has 5 MA's), (Start: 21 @47978 has 160 MA's), (38, 47849), (41, 47816), (44, 47801), (48, 47771), (49, 47768), (51, 47744), (54, 47714), (58, 47636), (61, 47588), (65, 47567), (67, 47546), (73, 47456), (76, 47420), (79, 47381), (80, 47369), (86, 47342),

Gene: Vaticameos\_52 Start: 46488, Stop: 45808, Start Num: 21

Candidate Starts for Vaticameos\_52:

(Start: 17 @46497 has 5 MA's), (Start: 21 @46488 has 160 MA's), (48, 46281), (49, 46278), (51, 46254), (54, 46224), (61, 46098), (65, 46077), (67, 46056), (73, 45966), (79, 45891), (80, 45879), (86, 45852),

Gene: Vista\_54 Start: 47998, Stop: 47321, Start Num: 21

Candidate Starts for Vista\_54:

(3, 48250), (4, 48241), (5, 48217), (6, 48187), (7, 48136), (10, 48097), (Start: 17 @48007 has 5 MA's), (Start: 21 @47998 has 160 MA's), (48, 47791), (49, 47788), (51, 47764), (54, 47734), (61, 47608), (65, 47587), (67, 47566), (73, 47476), (76, 47440), (79, 47401), (80, 47389), (86, 47362),

Gene: Vortex\_55 Start: 47980, Stop: 47300, Start Num: 21

Candidate Starts for Vortex\_55:

(3, 48232), (4, 48223), (5, 48199), (6, 48169), (7, 48118), (10, 48079), (Start: 17 @47989 has 5 MA's), (Start: 21 @47980 has 160 MA's), (48, 47773), (49, 47770), (51, 47746), (54, 47716), (58, 47638), (61, 47590), (65, 47569), (73, 47458), (76, 47422), (79, 47383), (80, 47371), (86, 47344),

Gene: Waterdiva\_55 Start: 48359, Stop: 47679, Start Num: 21

Candidate Starts for Waterdiva\_55:

(Start: 17 @48368 has 5 MA's), (Start: 21 @48359 has 160 MA's), (48, 48152), (49, 48149), (51, 48125), (54, 48095), (61, 47969), (65, 47948), (67, 47927), (73, 47837), (79, 47762), (80, 47750), (86, 47723),

Gene: Wee\_71 Start: 44456, Stop: 45130, Start Num: 21

Candidate Starts for Wee\_71:

(Start: 21 @44456 has 160 MA's), (30, 44498), (48, 44657), (49, 44660), (51, 44684), (54, 44714), (58, 44792), (61, 44840), (65, 44861), (73, 44972), (76, 45008), (79, 45047), (80, 45059),

Gene: Weher20\_55 Start: 48803, Stop: 48123, Start Num: 21

Candidate Starts for Weher20\_55:

(Start: 17 @48812 has 5 MA's), (Start: 21 @48803 has 160 MA's), (48, 48596), (49, 48593), (51, 48569), (54, 48539), (61, 48413), (65, 48392), (67, 48371), (73, 48281), (79, 48206), (80, 48194), (86, 48167),

Gene: Wheezy\_10 Start: 6003, Stop: 6677, Start Num: 20

Candidate Starts for Wheezy\_10:

(8, 5868), (16, 5976), (Start: 20 @6003 has 17 MA's), (47, 6204), (48, 6207), (54, 6264), (57, 6297), (65, 6408), (74, 6525), (83, 6615),

Gene: WillSterrel\_67 Start: 43939, Stop: 44616, Start Num: 21

Candidate Starts for WillSterrel\_67:

(Start: 21 @43939 has 160 MA's), (30, 43981), (48, 44140), (49, 44143), (51, 44167), (54, 44197), (58, 44275), (61, 44323), (65, 44344), (73, 44455), (76, 44491), (79, 44530), (80, 44542),

Gene: Windsor\_55 Start: 48503, Stop: 47823, Start Num: 21

Candidate Starts for Windsor\_55:

(Start: 17 @48512 has 5 MA's), (Start: 21 @48503 has 160 MA's), (48, 48296), (49, 48293), (51, 48269), (54, 48239), (61, 48113), (65, 48092), (67, 48071), (73, 47981), (79, 47906), (80, 47894), (86, 47867),

Gene: Xavier\_54 Start: 47996, Stop: 47307, Start Num: 17

Candidate Starts for Xavier\_54:

(3, 48239), (4, 48230), (5, 48206), (6, 48176), (7, 48125), (10, 48086), (Start: 17 @47996 has 5 MA's), (Start: 21 @47987 has 160 MA's), (48, 47780), (49, 47777), (51, 47753), (54, 47723), (58, 47645), (61, 47597), (65, 47576), (73, 47465), (76, 47429), (79, 47390), (80, 47378), (86, 47351),

Gene: Zaider\_55 Start: 48222, Stop: 47545, Start Num: 21

Candidate Starts for Zaider\_55:

(Start: 17 @48231 has 5 MA's), (Start: 21 @48222 has 160 MA's), (38, 48093), (41, 48060), (44, 48045), (48, 48015), (49, 48012), (51, 47988), (54, 47958), (58, 47880), (61, 47832), (65, 47811), (67, 47790), (73, 47700), (76, 47664), (79, 47625), (80, 47613), (86, 47586),

Gene: Zelda\_55 Start: 48324, Stop: 47644, Start Num: 21

Candidate Starts for Zelda\_55:

(2, 48591), (3, 48576), (4, 48567), (5, 48543), (6, 48513), (7, 48462), (10, 48423), (Start: 17 @48333 has 5 MA's), (Start: 21 @48324 has 160 MA's), (48, 48117), (49, 48114), (51, 48090), (54, 48060), (61, 47934), (65, 47913), (67, 47892), (73, 47802), (79, 47727), (80, 47715), (86, 47688),

Gene: Zenteno07\_58 Start: 47935, Stop: 47234, Start Num: 22

Candidate Starts for Zenteno07\_58:

(1, 48472), (14, 48004), (Start: 22 @47935 has 5 MA's), (25, 47920), (27, 47890), (54, 47668), (57, 47632), (66, 47506), (71, 47437), (80, 47308), (81, 47302), (86, 47281),