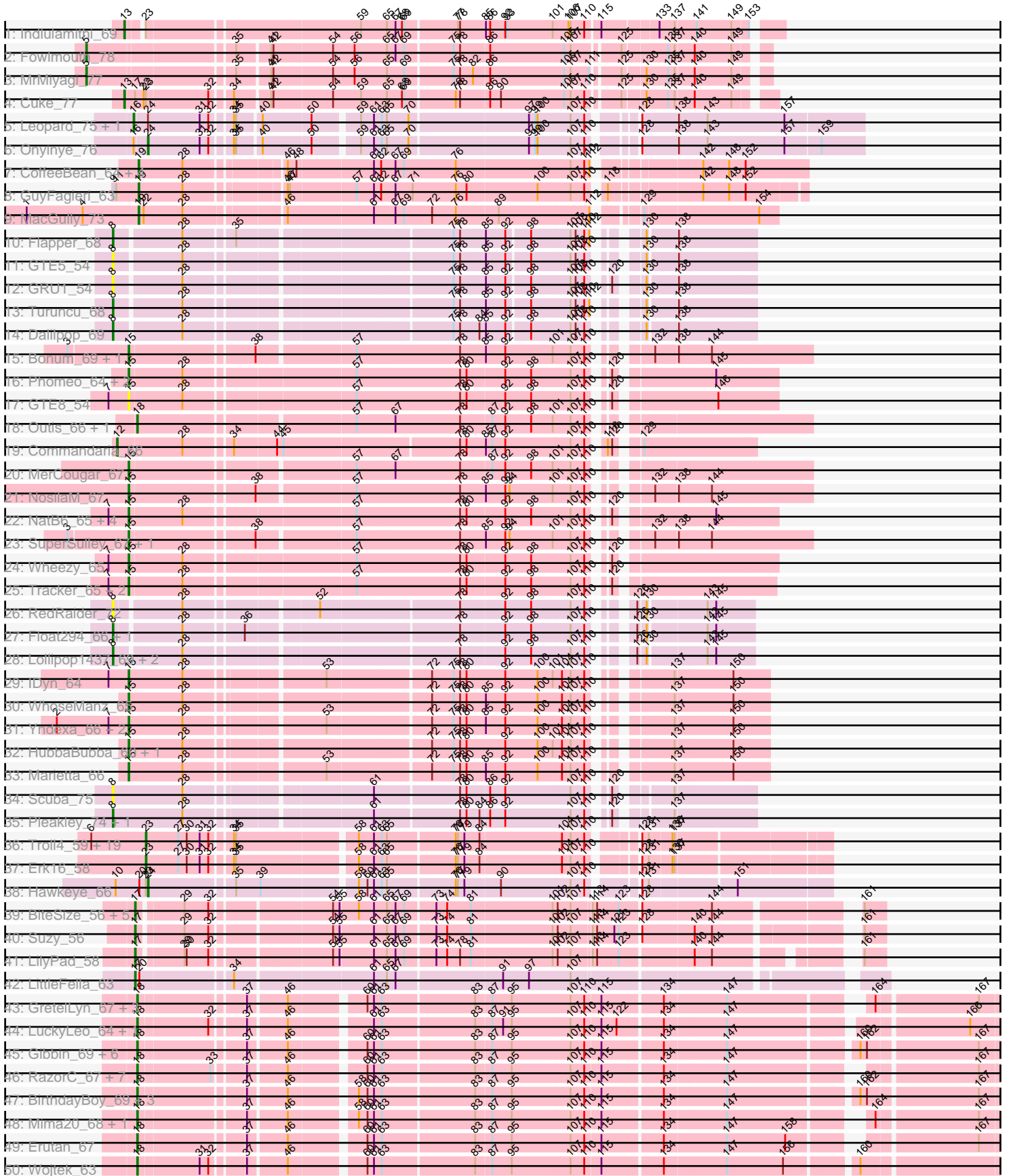
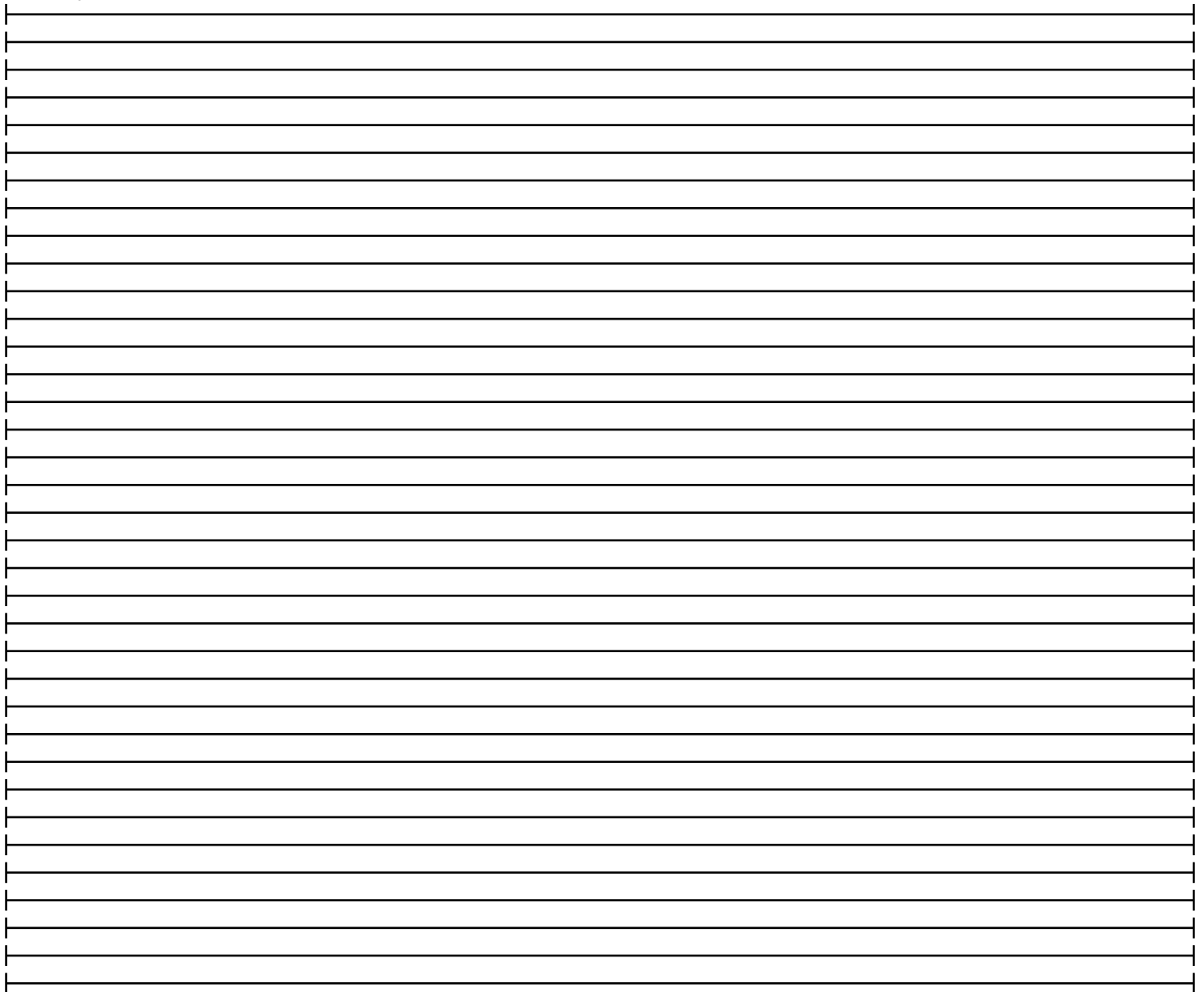
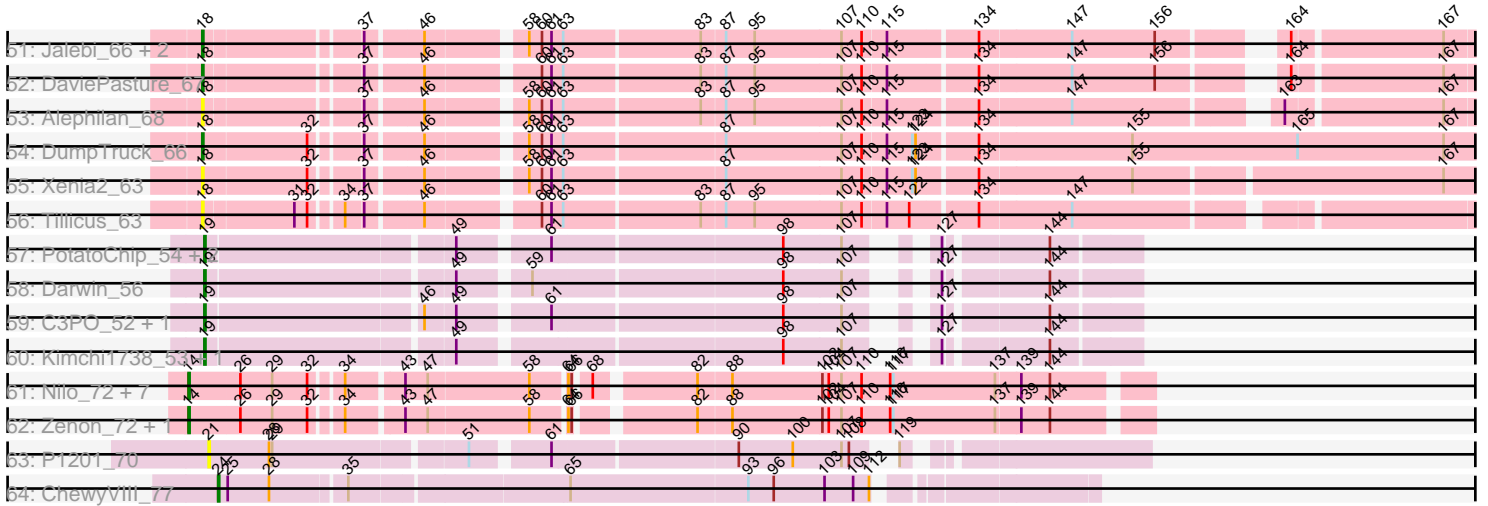


Pham 202746



Pham 202746



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 202746 Report

This analysis was run 01/18/25 on database version 583.

Pham number 202746 has 146 members, 17 are drafts.

Phages represented in each track:

- Track 1 : Indlulamithi\_69
- Track 2 : Fowlmouth\_78
- Track 3 : MrMiyagi\_77
- Track 4 : Cuke\_77
- Track 5 : Leopard\_75, Aikoy\_76
- Track 6 : Onyinye\_76
- Track 7 : CoffeeBean\_64, Maselop\_64, Apiary\_64, Braxoaddie\_64, Polyuyuki\_64
- Track 8 : GuyFagieri\_63
- Track 9 : MacGully\_73
- Track 10 : Flapper\_68
- Track 11 : GTE5\_54
- Track 12 : GRU1\_54
- Track 13 : Turuncu\_68
- Track 14 : Dalilpop\_69
- Track 15 : Bonum\_69, Kabluna\_68
- Track 16 : Phomeo\_64, Jifall16\_64, KidneyBean\_65
- Track 17 : GTE8\_54
- Track 18 : Outis\_66, StarStruck\_66
- Track 19 : Commandaria\_66
- Track 20 : MerCougar\_67
- Track 21 : NosilaM\_67
- Track 22 : NatB6\_65, Emianna\_65, Kurt\_65, NovumRegina\_65, GrootJr\_67
- Track 23 : SuperSulley\_67, Buggaboo\_67
- Track 24 : Wheezy\_65
- Track 25 : Tracker\_65, Arti\_64, Foxboro\_66
- Track 26 : RedRaider\_72
- Track 27 : Float294\_66, Skysand\_67
- Track 28 : Lollipop1437\_69, Ennea\_72, Patio\_67
- Track 29 : IDyn\_64
- Track 30 : WhoseManz\_65
- Track 31 : Yndexa\_66, Sukkupi\_66, BiPauneto\_68
- Track 32 : HubbaBubba\_60, NadineRae\_65
- Track 33 : Marietta\_66
- Track 34 : Scuba\_75
- Track 35 : Pleakley\_74, Fury\_74
- Track 36 : Troll4\_59, BigMama\_57, Prager\_59, Helpful\_62, Penelope2018\_59, Visconti\_60, Adjutor\_58, PBI1\_56, PLOT\_59, Delton\_60, WaldoWhy\_61,

Giuseppe\_60, Gumball\_59, Butterscotch\_58, SirHarley\_61, KandZ\_58, Mopey\_60, Thoth\_59, Chill\_61, Nova\_58

- Track 37 : Erk16\_58
- Track 38 : Hawkeye\_66
- Track 39 : BiteSize\_56, Terapin\_57, Beyoncage\_56, Sienna\_56, Djokovic\_56, Madi\_56
- Track 40 : Suzy\_56
- Track 41 : LilyPad\_58
- Track 42 : LittleFella\_63
- Track 43 : GretelLyn\_67, Sadboi\_68, Yikes\_69, Zany\_65
- Track 44 : LuckyLeo\_64, Apeppi\_62
- Track 45 : Gibbin\_69, Patos\_71, Lila22\_68, Ranch\_67, NorManre\_71, Lambo\_65, ParvusTarda\_66
- Track 46 : RazorC\_67, Genamy16\_70, Jamemuya19\_67, NovaSharks\_69, Astralis\_68, Avian\_66, Alyssamiracle\_70, Rumi\_68
- Track 47 : BirthdayBoy\_69, GOATification\_67, Fulcrum\_67, OtterstedtS21\_67
- Track 48 : Mima20\_68, DoobyDoo\_66
- Track 49 : Erutan\_67
- Track 50 : Wojtek\_63
- Track 51 : Jalebi\_66, MoiGyank\_70, Sampudon\_67
- Track 52 : DaviePasture\_67
- Track 53 : Alephilan\_68
- Track 54 : DumpTruck\_66
- Track 55 : Xenia2\_63
- Track 56 : Tillicus\_63
- Track 57 : PotatoChip\_54, Zion\_54, PeteyPab\_53
- Track 58 : Darwin\_56
- Track 59 : C3PO\_52, Cruella\_52
- Track 60 : Kimchi1738\_53, Stickynote\_54
- Track 61 : Nilo\_72, Papyrus\_70, Rope\_70, Yelo\_69, Weiss13\_70, Riparian\_72, Candle\_68, MontyDev\_72
- Track 62 : Zenon\_72, Send513\_70
- Track 63 : P1201\_70
- Track 64 : 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 18, it was called in 31 of the 129 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alephilan\_68, Alyssamiracle\_70, Apeppi\_62, Astralis\_68, Avian\_66, BirthdayBoy\_69, DaviePasture\_67, DoobyDoo\_66, DumpTruck\_66, Erutan\_67, Fulcrum\_67, GOATification\_67, Genamy16\_70, Gibbin\_69, GretelLyn\_67, Jalebi\_66, Jamemuya19\_67, Lambo\_65, Lila22\_68, LuckyLeo\_64, Mima20\_68, MoiGyank\_70, NorManre\_71, NovaSharks\_69, OtterstedtS21\_67, Outis\_66, ParvusTarda\_66, Patos\_71, Ranch\_67, RazorC\_67, Rumi\_68, Sadboi\_68, Sampudon\_67, StarStruck\_66, Tillicus\_63, Wojtek\_63, Xenia2\_63, Yikes\_69, Zany\_65,

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

•

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

- Adjutor\_58, Aikoy\_76, Apiary\_64, Arti\_64, Beyoncage\_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, Emianna\_65, Ennea\_72, Erk16\_58, Flapper\_68, Float294\_66, Fowlmouth\_78, Foxboro\_66, Fury\_74, GRU1\_54, GTE5\_54, GTE8\_54, Giuseppe\_60, GrootJr\_67, Gumball\_59, GuyFagieri\_63, Hawkeye\_66, Helpful\_62, HubbaBubba\_60, IDyn\_64, Indlulamithi\_69, Jifall16\_64, Kabluna\_68, KandZ\_58, KidneyBean\_65, Kimchi1738\_53, Kurt\_65, Leopard\_75, LilyPad\_58, LittleFella\_63, Lollipop1437\_69, MacGully\_73, Madi\_56, Marietta\_66, Maselop\_64, MerCougar\_67, MontyDev\_72, Mopey\_60, MrMiyagi\_77, NadineRae\_65, NatB6\_65, Nilo\_72, NosilaM\_67, Nova\_58, NovumRegina\_65, Onyinye\_76, P1201\_70, PBI1\_56, PLOT\_59, Papyrus\_70, Patio\_67, Penelope2018\_59, PeteyPab\_53, Phomeo\_64, Pleakley\_74, Polyuyuki\_64, PotatoChip\_54, Prager\_59, RedRaider\_72, Riparian\_72, Rope\_70, Scuba\_75, Send513\_70, Sienna\_56, SirHarley\_61, Skysand\_67, Stickynote\_54, Sukkupi\_66, SuperSulley\_67, Suzy\_56, Terapin\_57, Thoth\_59, Tracker\_65, Troll4\_59, Turuncu\_68, Visconti\_60, WaldoWhy\_61, Weiss13\_70, Wheezy\_65, WhoseManz\_65, Yelo\_69, Yndexa\_66, Zenon\_72, Zion\_54,

### Summary by start number:

Start 5:

- Found in 2 of 146 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 129
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fowlmouth\_78 (AC), MrMiyagi\_77 (AC),

Start 8:

- Found in 14 of 146 ( 9.6% ) of genes in pham
- Manual Annotations of this start: 10 of 129
- 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), RedRaider\_72 (CR3), Scuba\_75 (CR5), Skysand\_67 (CR3), Turuncu\_68 (CR1),

Start 12:

- Found in 1 of 146 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 129
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Commandaria\_66 (CR2),

Start 13:

- Found in 2 of 146 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 129
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cuke\_77 (AC), Indlulamithi\_69 (AC),

Start 14:

- Found in 10 of 146 ( 6.8% ) of genes in pham

- Manual Annotations of this start: 9 of 129
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Candle\_68 (R), MontyDev\_72 (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 15:

- Found in 27 of 146 ( 18.5% ) of genes in pham
- Manual Annotations of this start: 24 of 129
- 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 16:

- Found in 3 of 146 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 2 of 129
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Aikoy\_76 (AE), Leopard\_75 (AE),

#### Start 17:

- Found in 10 of 146 ( 6.8% ) of genes in pham
- Manual Annotations of this start: 9 of 129
- Called 90.0% of time when present
- Phage (with cluster) where this start called: Beyoncage\_56 (DG1), BiteSize\_56 (DG1), Djokovic\_56 (DG1), LilyPad\_58 (DG1), LittleFella\_63 (DG2), Madi\_56 (DG1), Sienna\_56 (DG1), Suzy\_56 (DG1), Terapin\_57 (DG1),

#### Start 18:

- Found in 39 of 146 ( 26.7% ) of genes in pham
- Manual Annotations of this start: 31 of 129
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alephilan\_68 (DV), Alyssamiracle\_70 (DV), Apeppi\_62 (DV), Astralis\_68 (DV), Avian\_66 (DV), BirthdayBoy\_69 (DV), DaviePasture\_67 (DV), DoobyDoo\_66 (DV), DumpTruck\_66 (DV), Erutan\_67 (DV), Fulcrum\_67 (DV), GOATification\_67 (DV), Genamy16\_70 (DV), Gibbin\_69 (DV), Gretellyn\_67 (DV), Jalebi\_66 (DV), Jamemuya19\_67 (DV), Lambo\_65 (DV), Lila22\_68 (DV), LuckyLeo\_64 (DV), Mima20\_68 (DV), MoiGyank\_70 (DV), NorManre\_71 (DV), NovaSharks\_69 (DV), OtterstedtS21\_67 (DV), Outis\_66 (CR2), ParvusTarda\_66 (DV), Patos\_71 (DV), Ranch\_67 (DV), RazorC\_67 (DV), Rumi\_68 (DV), Sadboi\_68 (DV), Sampudon\_67 (DV), StarStruck\_66 (CR2), Tillicus\_63 (DV), Wojtek\_63 (DV), Xenia2\_63 (DV), Yikes\_69 (DV), Zany\_65 (DV),

#### Start 19:

- Found in 15 of 146 ( 10.3% ) of genes in pham
- Manual Annotations of this start: 15 of 129
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Apiary\_64 (CR), Braxoaddie\_64 (CR), C3PO\_52 (EN), CoffeeBean\_64 (CR), Cruella\_52 (EN), Darwin\_56 (EN), GuyFagieri\_63 (CR), Kimchi1738\_53 (EN), MacGully\_73 (CR), Maselop\_64 (CR), PeteyPab\_53 (EN), Polyuyki\_64 (CR), PotatoChip\_54 (EN), Stickynote\_54 (EN), Zion\_54 (EN),

Start 21:

- Found in 1 of 146 ( 0.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: P1201\_70 (singleton),

Start 23:

- Found in 24 of 146 ( 16.4% ) of genes in pham
- Manual Annotations of this start: 21 of 129
- Called 87.5% 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), PB11\_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),

Start 24:

- Found in 5 of 146 ( 3.4% ) of genes in pham
- Manual Annotations of this start: 3 of 129
- Called 60.0% 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 16 clusters represented in this pham: CR2, CR3, AC, EN, AE, CR4, CR5, CR1, singleton, DG2, R, DV, CR, DG1, D2, D1,

Info for manual annotations of cluster AC:

- Start number 5 was manually annotated 2 times for cluster AC.
- Start number 13 was manually annotated 2 times for cluster AC.

Info for manual annotations of cluster AE:

- Start number 16 was manually annotated 2 times for cluster AE.
- Start number 24 was manually annotated 1 time for cluster AE.

Info for manual annotations of cluster CR:

- Start number 19 was manually annotated 7 times for cluster CR.

Info for manual annotations of cluster CR1:

- Start number 8 was manually annotated 3 times for cluster CR1.

Info for manual annotations of cluster CR2:

- Start number 12 was manually annotated 1 time for cluster CR2.
- Start number 15 was manually annotated 17 times for cluster CR2.
- Start number 18 was manually annotated 2 times for cluster CR2.

Info for manual annotations of cluster CR3:

- Start number 8 was manually annotated 5 times for cluster CR3.

Info for manual annotations of cluster CR4:

- Start number 15 was manually annotated 7 times for cluster CR4.

Info for manual annotations of cluster CR5:

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

Info for manual annotations of cluster D1:

- Start number 23 was manually annotated 21 times for cluster D1.

Info for manual annotations of cluster D2:

- Start number 24 was manually annotated 1 time for cluster D2.

Info for manual annotations of cluster DG1:

- Start number 17 was manually annotated 8 times for cluster DG1.

Info for manual annotations of cluster DG2:

- Start number 17 was manually annotated 1 time for cluster DG2.

Info for manual annotations of cluster DV:

- Start number 18 was manually annotated 29 times for cluster DV.

Info for manual annotations of cluster EN:

- Start number 19 was manually annotated 8 times for cluster EN.

Info for manual annotations of cluster R:

- Start number 14 was manually annotated 9 times for cluster R.

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

Gene: Adjutor\_58 Start: 44429, Stop: 45289, Start Num: 23

Candidate Starts for Adjutor\_58:

(6, 44357), (Start: 23 @44429 has 21 MA's), (27, 44474), (30, 44486), (31, 44504), (32, 44516), (34, 44540), (35, 44543), (58, 44696), (61, 44717), (63, 44726), (65, 44732), (76, 44822), (77, 44825), (79, 44834), (84, 44855), (104, 44966), (107, 44978), (110, 44996), (128, 45047), (131, 45056), (136, 45086), (137, 45089),

Gene: Aikoy\_76 Start: 51990, Stop: 52910, Start Num: 16

Candidate Starts for Aikoy\_76:

(Start: 16 @51990 has 2 MA's), (Start: 24 @52005 has 3 MA's), (31, 52077), (32, 52089), (34, 52113), (35, 52116), (40, 52146), (50, 52209), (59, 52266), (61, 52284), (63, 52293), (65, 52299), (70, 52329), (97, 52488), (99, 52497), (100, 52500), (107, 52545), (110, 52563), (128, 52611), (138, 52659), (143, 52698), (157, 52803),

Gene: Alephilan\_68 Start: 45485, Stop: 46561, Start Num: 18

Candidate Starts for Alephilan\_68:

(Start: 18 @45485 has 31 MA's), (37, 45617), (46, 45665), (58, 45746), (60, 45758), (61, 45767), (63, 45776), (83, 45899), (87, 45920), (95, 45947), (107, 46028), (110, 46046), (115, 46067), (134, 46145),



(147, 46229), (163, 46394), (167, 46532),

Gene: Alyssamiracle\_70 Start: 44487, Stop: 45557, Start Num: 18

Candidate Starts for Alyssamiracle\_70:

(Start: 18 @44487 has 31 MA's), (33, 44583), (37, 44619), (46, 44667), (60, 44760), (61, 44769), (63, 44778), (83, 44901), (87, 44922), (95, 44949), (107, 45030), (110, 45048), (115, 45069), (134, 45147), (147, 45231), (167, 45528),

Gene: Apeppi\_62 Start: 44646, Stop: 45731, Start Num: 18

Candidate Starts for Apeppi\_62:

(Start: 18 @44646 has 31 MA's), (32, 44739), (37, 44778), (46, 44826), (61, 44928), (63, 44937), (83, 45060), (87, 45081), (91, 45096), (95, 45108), (107, 45189), (110, 45207), (115, 45228), (122, 45249), (134, 45306), (147, 45390), (166, 45690),

Gene: Apiary\_64 Start: 48400, Stop: 47549, Start Num: 19

Candidate Starts for Apiary\_64:

(Start: 19 @48400 has 15 MA's), (28, 48340), (46, 48220), (48, 48208), (61, 48106), (62, 48097), (67, 48079), (69, 48067), (76, 47995), (107, 47839), (110, 47821), (112, 47815), (142, 47692), (148, 47656), (152, 47635),

Gene: Arti\_64 Start: 50810, Stop: 49992, Start Num: 15

Candidate Starts for Arti\_64:

(7, 50837), (Start: 15 @50810 has 24 MA's), (28, 50738), (57, 50516), (78, 50375), (80, 50366), (92, 50315), (98, 50279), (107, 50225), (110, 50207), (120, 50192),

Gene: Astralis\_68 Start: 44066, Stop: 45136, Start Num: 18

Candidate Starts for Astralis\_68:

(Start: 18 @44066 has 31 MA's), (33, 44162), (37, 44198), (46, 44246), (60, 44339), (61, 44348), (63, 44357), (83, 44480), (87, 44501), (95, 44528), (107, 44609), (110, 44627), (115, 44648), (134, 44726), (147, 44810), (167, 45107),

Gene: Avian\_66 Start: 44215, Stop: 45285, Start Num: 18

Candidate Starts for Avian\_66:

(Start: 18 @44215 has 31 MA's), (33, 44311), (37, 44347), (46, 44395), (60, 44488), (61, 44497), (63, 44506), (83, 44629), (87, 44650), (95, 44677), (107, 44758), (110, 44776), (115, 44797), (134, 44875), (147, 44959), (167, 45256),

Gene: Beyoncage\_56 Start: 41805, Stop: 42734, Start Num: 17

Candidate Starts for Beyoncage\_56:

(Start: 17 @41805 has 9 MA's), (29, 41862), (32, 41895), (54, 42045), (55, 42054), (58, 42078), (61, 42099), (65, 42114), (67, 42126), (69, 42138), (73, 42177), (74, 42192), (81, 42225), (101, 42336), (102, 42342), (107, 42360), (113, 42384), (114, 42390), (123, 42420), (128, 42444), (144, 42537), (161, 42705),

Gene: BiPauneto\_68 Start: 50402, Stop: 49605, Start Num: 15

Candidate Starts for BiPauneto\_68:

(2, 50501), (7, 50429), (Start: 15 @50402 has 24 MA's), (28, 50327), (53, 50153), (72, 50021), (75, 49991), (78, 49982), (80, 49973), (85, 49946), (92, 49919), (100, 49874), (104, 49841), (107, 49829), (110, 49811), (137, 49730), (150, 49652),

Gene: BigMama\_57 Start: 44505, Stop: 45365, Start Num: 23

Candidate Starts for BigMama\_57:

(6, 44433), (Start: 23 @44505 has 21 MA's), (27, 44550), (30, 44562), (31, 44580), (32, 44592), (34, 44616), (35, 44619), (58, 44772), (61, 44793), (63, 44802), (65, 44808), (76, 44898), (77, 44901), (79, 44910), (84, 44931), (104, 45042), (107, 45054), (110, 45072), (128, 45123), (131, 45132), (136, 45162), (137, 45165),

Gene: BirthdayBoy\_69 Start: 45791, Stop: 46882, Start Num: 18

Candidate Starts for BirthdayBoy\_69:

(Start: 18 @45791 has 31 MA's), (37, 45923), (46, 45971), (58, 46052), (60, 46064), (61, 46073), (63, 46082), (83, 46205), (87, 46226), (95, 46253), (107, 46334), (110, 46352), (115, 46373), (134, 46451), (147, 46535), (160, 46700), (162, 46709), (167, 46853),

Gene: BiteSize\_56 Start: 41891, Stop: 42820, Start Num: 17

Candidate Starts for BiteSize\_56:

(Start: 17 @41891 has 9 MA's), (29, 41948), (32, 41981), (54, 42131), (55, 42140), (58, 42164), (61, 42185), (65, 42200), (67, 42212), (69, 42224), (73, 42263), (74, 42278), (81, 42311), (101, 42422), (102, 42428), (107, 42446), (113, 42470), (114, 42476), (123, 42506), (128, 42530), (144, 42623), (161, 42791),

Gene: Bonum\_69 Start: 51702, Stop: 50839, Start Num: 15

Candidate Starts for Bonum\_69:

(3, 51780), (Start: 15 @51702 has 24 MA's), (38, 51540), (57, 51414), (78, 51273), (85, 51240), (92, 51213), (101, 51147), (107, 51123), (110, 51105), (132, 51051), (138, 51021), (144, 50976),

Gene: Braxoaddie\_64 Start: 48389, Stop: 47538, Start Num: 19

Candidate Starts for Braxoaddie\_64:

(Start: 19 @48389 has 15 MA's), (28, 48329), (46, 48209), (48, 48197), (61, 48095), (62, 48086), (67, 48068), (69, 48056), (76, 47984), (107, 47828), (110, 47810), (112, 47804), (142, 47681), (148, 47645), (152, 47624),

Gene: Buggaboo\_67 Start: 52253, Stop: 51390, Start Num: 15

Candidate Starts for Buggaboo\_67:

(3, 52331), (Start: 15 @52253 has 24 MA's), (38, 52091), (57, 51965), (78, 51824), (85, 51791), (92, 51764), (94, 51758), (101, 51698), (107, 51674), (110, 51656), (132, 51602), (138, 51572), (144, 51527),

Gene: Butterscotch\_58 Start: 44489, Stop: 45349, Start Num: 23

Candidate Starts for Butterscotch\_58:

(6, 44417), (Start: 23 @44489 has 21 MA's), (27, 44534), (30, 44546), (31, 44564), (32, 44576), (34, 44600), (35, 44603), (58, 44756), (61, 44777), (63, 44786), (65, 44792), (76, 44882), (77, 44885), (79, 44894), (84, 44915), (104, 45026), (107, 45038), (110, 45056), (128, 45107), (131, 45116), (136, 45146), (137, 45149),

Gene: C3PO\_52 Start: 45078, Stop: 44314, Start Num: 19

Candidate Starts for C3PO\_52:

(Start: 19 @45078 has 15 MA's), (46, 44886), (49, 44859), (61, 44784), (98, 44577), (107, 44523), (127, 44478), (144, 44394),

Gene: Candle\_68 Start: 52987, Stop: 53817, Start Num: 14

Candidate Starts for Candle\_68:

(Start: 14 @52987 has 9 MA's), (26, 53032), (29, 53062), (32, 53095), (34, 53119), (43, 53167), (47, 53188), (58, 53281), (64, 53311), (66, 53314), (68, 53326), (82, 53410), (88, 53440), (102, 53524), (104, 53530), (107, 53542), (110, 53560), (116, 53587), (117, 53590), (137, 53686), (139, 53707), (144, 53734),

Gene: ChewyVIII\_77 Start: 56830, Stop: 56066, Start Num: 24

Candidate Starts for ChewyVIII\_77:

(Start: 24 @56830 has 3 MA's), (25, 56821), (28, 56782), (35, 56716), (65, 56524), (93, 56359), (96, 56335), (103, 56287), (109, 56260), (112, 56245),

Gene: Chill\_61 Start: 44552, Stop: 45412, Start Num: 23

Candidate Starts for Chill\_61:

(6, 44480), (Start: 23 @44552 has 21 MA's), (27, 44597), (30, 44609), (31, 44627), (32, 44639), (34, 44663), (35, 44666), (58, 44819), (61, 44840), (63, 44849), (65, 44855), (76, 44945), (77, 44948), (79, 44957), (84, 44978), (104, 45089), (107, 45101), (110, 45119), (128, 45170), (131, 45179), (136, 45209), (137, 45212),

Gene: CoffeeBean\_64 Start: 48347, Stop: 47496, Start Num: 19

Candidate Starts for CoffeeBean\_64:

(Start: 19 @48347 has 15 MA's), (28, 48287), (46, 48167), (48, 48155), (61, 48053), (62, 48044), (67, 48026), (69, 48014), (76, 47942), (107, 47786), (110, 47768), (112, 47762), (142, 47639), (148, 47603), (152, 47582),

Gene: Commandaria\_66 Start: 52055, Stop: 51243, Start Num: 12

Candidate Starts for Commandaria\_66:

(Start: 12 @52055 has 1 MA's), (28, 51968), (34, 51908), (44, 51851), (45, 51842), (78, 51608), (80, 51599), (85, 51575), (87, 51566), (92, 51548), (107, 51458), (110, 51440), (118, 51425), (120, 51419), (129, 51395),

Gene: Cruella\_52 Start: 45078, Stop: 44314, Start Num: 19

Candidate Starts for Cruella\_52:

(Start: 19 @45078 has 15 MA's), (46, 44886), (49, 44859), (61, 44784), (98, 44577), (107, 44523), (127, 44478), (144, 44394),

Gene: Cuke\_77 Start: 46278, Stop: 47102, Start Num: 13

Candidate Starts for Cuke\_77:

(Start: 13 @46278 has 2 MA's), (Start: 17 @46290 has 9 MA's), (22, 46302), (Start: 23 @46305 has 21 MA's), (32, 46389), (34, 46413), (41, 46458), (42, 46461), (54, 46539), (59, 46578), (65, 46611), (68, 46632), (69, 46635), (76, 46701), (78, 46707), (86, 46746), (90, 46761), (105, 46848), (107, 46857), (110, 46875), (125, 46914), (130, 46941), (135, 46971), (137, 46980), (140, 47004), (149, 47055),

Gene: Dalilpop\_69 Start: 52942, Stop: 52163, Start Num: 8

Candidate Starts for Dalilpop\_69:

(Start: 8 @52942 has 10 MA's), (28, 52855), (75, 52516), (78, 52507), (84, 52480), (85, 52474), (92, 52447), (98, 52417), (107, 52363), (108, 52357), (110, 52345), (130, 52303), (138, 52267),

Gene: Darwin\_56 Start: 44559, Stop: 43795, Start Num: 19

Candidate Starts for Darwin\_56:

(Start: 19 @44559 has 15 MA's), (49, 44340), (59, 44283), (98, 44058), (107, 44004), (127, 43959), (144, 43875),

Gene: DaviePasture\_67 Start: 45399, Stop: 46469, Start Num: 18

Candidate Starts for DaviePasture\_67:

(Start: 18 @45399 has 31 MA's), (37, 45531), (46, 45579), (60, 45672), (61, 45681), (63, 45690), (83, 45813), (87, 45834), (95, 45861), (107, 45942), (110, 45960), (115, 45981), (134, 46059), (147, 46143), (156, 46221), (164, 46308), (167, 46440),

Gene: Delton\_60 Start: 44887, Stop: 45747, Start Num: 23

Candidate Starts for Delton\_60:

(6, 44815), (Start: 23 @44887 has 21 MA's), (27, 44932), (30, 44944), (31, 44962), (32, 44974), (34, 44998), (35, 45001), (58, 45154), (61, 45175), (63, 45184), (65, 45190), (76, 45280), (77, 45283), (79, 45292), (84, 45313), (104, 45424), (107, 45436), (110, 45454), (128, 45505), (131, 45514), (136, 45544), (137, 45547),

Gene: Djokovic\_56 Start: 41804, Stop: 42733, Start Num: 17

Candidate Starts for Djokovic\_56:

(Start: 17 @41804 has 9 MA's), (29, 41861), (32, 41894), (54, 42044), (55, 42053), (58, 42077), (61, 42098), (65, 42113), (67, 42125), (69, 42137), (73, 42176), (74, 42191), (81, 42224), (101, 42335), (102, 42341), (107, 42359), (113, 42383), (114, 42389), (123, 42419), (128, 42443), (144, 42536), (161, 42704),

Gene: DoobyDoo\_66 Start: 44375, Stop: 45445, Start Num: 18

Candidate Starts for DoobyDoo\_66:

(Start: 18 @44375 has 31 MA's), (37, 44507), (46, 44555), (58, 44636), (60, 44648), (61, 44657), (63, 44666), (83, 44789), (87, 44810), (95, 44837), (107, 44918), (110, 44936), (115, 44957), (134, 45035), (147, 45119), (164, 45284), (167, 45416),

Gene: DumpTruck\_66 Start: 44187, Stop: 45317, Start Num: 18

Candidate Starts for DumpTruck\_66:

(Start: 18 @44187 has 31 MA's), (32, 44283), (37, 44322), (46, 44370), (58, 44451), (60, 44463), (61, 44472), (63, 44481), (87, 44625), (107, 44733), (110, 44751), (115, 44772), (123, 44796), (124, 44799), (134, 44850), (155, 44991), (165, 45147), (167, 45285),

Gene: Emianna\_65 Start: 52042, Stop: 51221, Start Num: 15

Candidate Starts for Emianna\_65:

(7, 52069), (Start: 15 @52042 has 24 MA's), (28, 51970), (57, 51748), (78, 51607), (80, 51598), (92, 51547), (98, 51511), (107, 51457), (110, 51439), (120, 51424), (145, 51301),

Gene: Ennea\_72 Start: 53024, Stop: 52245, Start Num: 8

Candidate Starts for Ennea\_72:

(Start: 8 @53024 has 10 MA's), (28, 52940), (78, 52592), (92, 52532), (98, 52496), (107, 52442), (110, 52424), (126, 52391), (130, 52382), (143, 52307), (145, 52295),

Gene: Erk16\_58 Start: 44591, Stop: 45451, Start Num: 23

Candidate Starts for Erk16\_58:

(Start: 23 @44591 has 21 MA's), (27, 44636), (30, 44648), (31, 44666), (32, 44678), (34, 44702), (35, 44705), (58, 44858), (61, 44879), (63, 44888), (65, 44894), (76, 44984), (77, 44987), (79, 44996), (84, 45017), (104, 45128), (107, 45140), (110, 45158), (128, 45209), (131, 45218), (136, 45248), (137, 45251),

Gene: Erutan\_67 Start: 45017, Stop: 46087, Start Num: 18

Candidate Starts for Erutan\_67:

(Start: 18 @45017 has 31 MA's), (37, 45149), (46, 45197), (60, 45290), (61, 45299), (63, 45308), (83, 45431), (87, 45452), (95, 45479), (107, 45560), (110, 45578), (115, 45599), (134, 45677), (147, 45761), (158, 45842), (167, 46058),

Gene: Flapper\_68 Start: 52133, Stop: 51354, Start Num: 8

Candidate Starts for Flapper\_68:

(Start: 8 @52133 has 10 MA's), (28, 52046), (35, 51983), (75, 51707), (78, 51698), (85, 51665), (92, 51638), (98, 51608), (107, 51554), (108, 51548), (110, 51536), (112, 51530), (130, 51494), (138,

51458),

Gene: Float294\_66 Start: 52739, Stop: 51960, Start Num: 8

Candidate Starts for Float294\_66:

(Start: 8 @52739 has 10 MA's), (28, 52655), (36, 52580), (78, 52307), (92, 52247), (98, 52211), (107, 52157), (110, 52139), (126, 52106), (130, 52097), (143, 52022), (145, 52010),

Gene: Fowlmouth\_78 Start: 48807, Stop: 49670, Start Num: 5

Candidate Starts for Fowlmouth\_78:

(Start: 5 @48807 has 2 MA's), (35, 48993), (41, 49035), (42, 49038), (54, 49116), (56, 49146), (65, 49188), (67, 49200), (69, 49212), (75, 49275), (78, 49284), (86, 49323), (105, 49425), (107, 49434), (125, 49491), (135, 49548), (137, 49557), (140, 49581), (149, 49632),

Gene: Foxboro\_66 Start: 52567, Stop: 51746, Start Num: 15

Candidate Starts for Foxboro\_66:

(7, 52594), (Start: 15 @52567 has 24 MA's), (28, 52495), (57, 52273), (78, 52132), (80, 52123), (92, 52072), (98, 52036), (107, 51982), (110, 51964), (120, 51949),

Gene: Fulcrum\_67 Start: 45099, Stop: 46190, Start Num: 18

Candidate Starts for Fulcrum\_67:

(Start: 18 @45099 has 31 MA's), (37, 45231), (46, 45279), (58, 45360), (60, 45372), (61, 45381), (63, 45390), (83, 45513), (87, 45534), (95, 45561), (107, 45642), (110, 45660), (115, 45681), (134, 45759), (147, 45843), (160, 46008), (162, 46017), (167, 46161),

Gene: Fury\_74 Start: 51253, Stop: 50462, Start Num: 8

Candidate Starts for Fury\_74:

(Start: 8 @51253 has 10 MA's), (28, 51157), (61, 50923), (78, 50812), (80, 50803), (84, 50785), (86, 50773), (92, 50752), (107, 50662), (110, 50644), (120, 50629), (137, 50569),

Gene: GOATification\_67 Start: 45099, Stop: 46190, Start Num: 18

Candidate Starts for GOATification\_67:

(Start: 18 @45099 has 31 MA's), (37, 45231), (46, 45279), (58, 45360), (60, 45372), (61, 45381), (63, 45390), (83, 45513), (87, 45534), (95, 45561), (107, 45642), (110, 45660), (115, 45681), (134, 45759), (147, 45843), (160, 46008), (162, 46017), (167, 46161),

Gene: GRU1\_54 Start: 43981, Stop: 43202, Start Num: 8

Candidate Starts for GRU1\_54:

(Start: 8 @43981 has 10 MA's), (28, 43894), (75, 43555), (78, 43546), (85, 43513), (92, 43486), (98, 43456), (107, 43402), (108, 43396), (110, 43384), (120, 43369), (130, 43342), (138, 43306),

Gene: GTE5\_54 Start: 45013, Stop: 44234, Start Num: 8

Candidate Starts for GTE5\_54:

(Start: 8 @45013 has 10 MA's), (28, 44926), (75, 44587), (78, 44578), (85, 44545), (92, 44518), (98, 44488), (107, 44434), (108, 44428), (110, 44416), (130, 44374), (138, 44338),

Gene: GTE8\_54 Start: 45279, Stop: 44458, Start Num: 15

Candidate Starts for GTE8\_54:

(7, 45306), (Start: 15 @45279 has 24 MA's), (28, 45207), (57, 44985), (78, 44844), (80, 44835), (92, 44784), (98, 44748), (107, 44694), (110, 44676), (120, 44661), (146, 44535),

Gene: Genamy16\_70 Start: 44473, Stop: 45543, Start Num: 18

Candidate Starts for Genamy16\_70:

(Start: 18 @44473 has 31 MA's), (33, 44569), (37, 44605), (46, 44653), (60, 44746), (61, 44755), (63, 44764), (83, 44887), (87, 44908), (95, 44935), (107, 45016), (110, 45034), (115, 45055), (134, 45133), (147, 45217), (167, 45514),

Gene: Gibbin\_69 Start: 45904, Stop: 46995, Start Num: 18

Candidate Starts for Gibbin\_69:

(Start: 18 @45904 has 31 MA's), (37, 46036), (46, 46084), (60, 46177), (61, 46186), (63, 46195), (83, 46318), (87, 46339), (95, 46366), (107, 46447), (110, 46465), (115, 46486), (134, 46564), (147, 46648), (160, 46813), (162, 46822), (167, 46966),

Gene: Giuseppe\_60 Start: 44457, Stop: 45317, Start Num: 23

Candidate Starts for Giuseppe\_60:

(6, 44385), (Start: 23 @44457 has 21 MA's), (27, 44502), (30, 44514), (31, 44532), (32, 44544), (34, 44568), (35, 44571), (58, 44724), (61, 44745), (63, 44754), (65, 44760), (76, 44850), (77, 44853), (79, 44862), (84, 44883), (104, 44994), (107, 45006), (110, 45024), (128, 45075), (131, 45084), (136, 45114), (137, 45117),

Gene: GretelLyn\_67 Start: 45889, Stop: 46959, Start Num: 18

Candidate Starts for GretelLyn\_67:

(Start: 18 @45889 has 31 MA's), (37, 46021), (46, 46069), (60, 46162), (61, 46171), (63, 46180), (83, 46303), (87, 46324), (95, 46351), (107, 46432), (110, 46450), (115, 46471), (134, 46549), (147, 46633), (164, 46798), (167, 46930),

Gene: GrootJr\_67 Start: 51436, Stop: 50615, Start Num: 15

Candidate Starts for GrootJr\_67:

(7, 51463), (Start: 15 @51436 has 24 MA's), (28, 51364), (57, 51142), (78, 51001), (80, 50992), (92, 50941), (98, 50905), (107, 50851), (110, 50833), (120, 50818), (145, 50695),

Gene: Gumball\_59 Start: 44949, Stop: 45809, Start Num: 23

Candidate Starts for Gumball\_59:

(6, 44877), (Start: 23 @44949 has 21 MA's), (27, 44994), (30, 45006), (31, 45024), (32, 45036), (34, 45060), (35, 45063), (58, 45216), (61, 45237), (63, 45246), (65, 45252), (76, 45342), (77, 45345), (79, 45354), (84, 45375), (104, 45486), (107, 45498), (110, 45516), (128, 45567), (131, 45576), (136, 45606), (137, 45609),

Gene: GuyFagieri\_63 Start: 48427, Stop: 47585, Start Num: 19

Candidate Starts for GuyFagieri\_63:

(9, 48457), (11, 48454), (Start: 19 @48427 has 15 MA's), (28, 48367), (46, 48247), (47, 48244), (57, 48157), (61, 48133), (62, 48124), (67, 48106), (71, 48082), (76, 48022), (80, 48007), (100, 47911), (107, 47866), (110, 47848), (118, 47833), (142, 47719), (148, 47683), (152, 47662),

Gene: Hawkeye\_66 Start: 44818, Stop: 45684, Start Num: 24

Candidate Starts for Hawkeye\_66:

(10, 44773), (20, 44806), (Start: 23 @44815 has 21 MA's), (Start: 24 @44818 has 3 MA's), (35, 44929), (39, 44962), (58, 45082), (60, 45094), (61, 45103), (63, 45112), (65, 45118), (76, 45208), (77, 45211), (79, 45220), (90, 45268), (107, 45364), (110, 45382), (128, 45436), (131, 45445), (151, 45556),

Gene: Helpful\_62 Start: 44818, Stop: 45678, Start Num: 23

Candidate Starts for Helpful\_62:

(6, 44746), (Start: 23 @44818 has 21 MA's), (27, 44863), (30, 44875), (31, 44893), (32, 44905), (34, 44929), (35, 44932), (58, 45085), (61, 45106), (63, 45115), (65, 45121), (76, 45211), (77, 45214), (79, 45223), (84, 45244), (104, 45355), (107, 45367), (110, 45385), (128, 45436), (131, 45445), (136, 45475), (137, 45478),

Gene: HubbaBubba\_60 Start: 46888, Stop: 46091, Start Num: 15

Candidate Starts for HubbaBubba\_60:

(Start: 15 @46888 has 24 MA's), (28, 46813), (72, 46507), (75, 46477), (78, 46468), (80, 46459), (92, 46405), (100, 46360), (101, 46339), (104, 46327), (107, 46315), (110, 46297), (137, 46216), (150, 46138),

Gene: IDyn\_64 Start: 48323, Stop: 47526, Start Num: 15

Candidate Starts for IDyn\_64:

(7, 48350), (Start: 15 @48323 has 24 MA's), (28, 48248), (53, 48074), (72, 47942), (75, 47912), (78, 47903), (80, 47894), (92, 47840), (100, 47795), (101, 47774), (104, 47762), (107, 47750), (110, 47732), (137, 47651), (150, 47573),

Gene: Indlulamithi\_69 Start: 49597, Stop: 50433, Start Num: 13

Candidate Starts for Indlulamithi\_69:

(Start: 13 @49597 has 2 MA's), (Start: 23 @49612 has 21 MA's), (59, 49894), (65, 49930), (67, 49942), (68, 49951), (69, 49954), (77, 50023), (78, 50026), (85, 50059), (86, 50065), (92, 50086), (93, 50089), (101, 50152), (106, 50173), (107, 50176), (110, 50194), (115, 50212), (133, 50281), (137, 50302), (141, 50329), (149, 50377), (153, 50398),

Gene: Jalebi\_66 Start: 46242, Stop: 47312, Start Num: 18

Candidate Starts for Jalebi\_66:

(Start: 18 @46242 has 31 MA's), (37, 46374), (46, 46422), (58, 46503), (60, 46515), (61, 46524), (63, 46533), (83, 46656), (87, 46677), (95, 46704), (107, 46785), (110, 46803), (115, 46824), (134, 46902), (147, 46986), (156, 47064), (164, 47151), (167, 47283),

Gene: Jamemuya19\_67 Start: 44078, Stop: 45148, Start Num: 18

Candidate Starts for Jamemuya19\_67:

(Start: 18 @44078 has 31 MA's), (33, 44174), (37, 44210), (46, 44258), (60, 44351), (61, 44360), (63, 44369), (83, 44492), (87, 44513), (95, 44540), (107, 44621), (110, 44639), (115, 44660), (134, 44738), (147, 44822), (167, 45119),

Gene: Jifall16\_64 Start: 51698, Stop: 50877, Start Num: 15

Candidate Starts for Jifall16\_64:

(Start: 15 @51698 has 24 MA's), (28, 51626), (57, 51404), (78, 51263), (80, 51254), (92, 51203), (98, 51167), (107, 51113), (110, 51095), (120, 51080), (145, 50957),

Gene: Kabluna\_68 Start: 51031, Stop: 50168, Start Num: 15

Candidate Starts for Kabluna\_68:

(3, 51109), (Start: 15 @51031 has 24 MA's), (38, 50869), (57, 50743), (78, 50602), (85, 50569), (92, 50542), (101, 50476), (107, 50452), (110, 50434), (132, 50380), (138, 50350), (144, 50305),

Gene: KandZ\_58 Start: 44615, Stop: 45475, Start Num: 23

Candidate Starts for KandZ\_58:

(6, 44543), (Start: 23 @44615 has 21 MA's), (27, 44660), (30, 44672), (31, 44690), (32, 44702), (34, 44726), (35, 44729), (58, 44882), (61, 44903), (63, 44912), (65, 44918), (76, 45008), (77, 45011), (79, 45020), (84, 45041), (104, 45152), (107, 45164), (110, 45182), (128, 45233), (131, 45242), (136, 45272), (137, 45275),

Gene: KidneyBean\_65 Start: 51822, Stop: 51001, Start Num: 15

Candidate Starts for KidneyBean\_65:

(Start: 15 @51822 has 24 MA's), (28, 51750), (57, 51528), (78, 51387), (80, 51378), (92, 51327), (98, 51291), (107, 51237), (110, 51219), (120, 51204), (145, 51081),

Gene: Kimchi1738\_53 Start: 45055, Stop: 44291, Start Num: 19

Candidate Starts for Kimchi1738\_53:

(Start: 19 @45055 has 15 MA's), (49, 44836), (98, 44554), (107, 44500), (127, 44455), (144, 44371),

Gene: Kurt\_65 Start: 52057, Stop: 51236, Start Num: 15

Candidate Starts for Kurt\_65:

(7, 52084), (Start: 15 @52057 has 24 MA's), (28, 51985), (57, 51763), (78, 51622), (80, 51613), (92, 51562), (98, 51526), (107, 51472), (110, 51454), (120, 51439), (145, 51316),

Gene: Lambo\_65 Start: 44896, Stop: 45987, Start Num: 18

Candidate Starts for Lambo\_65:

(Start: 18 @44896 has 31 MA's), (37, 45028), (46, 45076), (60, 45169), (61, 45178), (63, 45187), (83, 45310), (87, 45331), (95, 45358), (107, 45439), (110, 45457), (115, 45478), (134, 45556), (147, 45640), (160, 45805), (162, 45814), (167, 45958),

Gene: Leopard\_75 Start: 52296, Stop: 53216, Start Num: 16

Candidate Starts for Leopard\_75:

(Start: 16 @52296 has 2 MA's), (Start: 24 @52311 has 3 MA's), (31, 52383), (32, 52395), (34, 52419), (35, 52422), (40, 52452), (50, 52515), (59, 52572), (61, 52590), (63, 52599), (65, 52605), (70, 52635), (97, 52794), (99, 52803), (100, 52806), (107, 52851), (110, 52869), (128, 52917), (138, 52965), (143, 53004), (157, 53109),

Gene: Lila22\_68 Start: 45848, Stop: 46939, Start Num: 18

Candidate Starts for Lila22\_68:

(Start: 18 @45848 has 31 MA's), (37, 45980), (46, 46028), (60, 46121), (61, 46130), (63, 46139), (83, 46262), (87, 46283), (95, 46310), (107, 46391), (110, 46409), (115, 46430), (134, 46508), (147, 46592), (160, 46757), (162, 46766), (167, 46910),

Gene: LilyPad\_58 Start: 43001, Stop: 43912, Start Num: 17

Candidate Starts for LilyPad\_58:

(Start: 17 @43001 has 9 MA's), (29, 43058), (30, 43061), (32, 43091), (54, 43241), (55, 43250), (61, 43295), (65, 43310), (67, 43322), (69, 43334), (73, 43373), (74, 43388), (78, 43406), (81, 43421), (101, 43532), (102, 43538), (107, 43556), (113, 43580), (114, 43586), (123, 43616), (140, 43709), (144, 43733), (161, 43883),

Gene: LittleFella\_63 Start: 44521, Stop: 45468, Start Num: 17

Candidate Starts for LittleFella\_63:

(Start: 17 @44521 has 9 MA's), (20, 44527), (34, 44644), (61, 44824), (65, 44839), (67, 44851), (91, 44992), (97, 45028), (107, 45085),

Gene: Lollipop1437\_69 Start: 52704, Stop: 51925, Start Num: 8

Candidate Starts for Lollipop1437\_69:

(Start: 8 @52704 has 10 MA's), (28, 52620), (78, 52272), (92, 52212), (98, 52176), (107, 52122), (110, 52104), (126, 52071), (130, 52062), (143, 51987), (145, 51975),

Gene: LuckyLeo\_64 Start: 44646, Stop: 45731, Start Num: 18

Candidate Starts for LuckyLeo\_64:

(Start: 18 @44646 has 31 MA's), (32, 44739), (37, 44778), (46, 44826), (61, 44928), (63, 44937), (83, 45060), (87, 45081), (91, 45096), (95, 45108), (107, 45189), (110, 45207), (115, 45228), (122, 45249), (134, 45306), (147, 45390), (166, 45690),

Gene: MacGully\_73 Start: 51597, Stop: 50779, Start Num: 19



Candidate Starts for MacGully\_73:

(1, 51750), (4, 51672), (Start: 19 @51597 has 15 MA's), (22, 51591), (28, 51537), (46, 51411), (61, 51294), (67, 51267), (69, 51255), (72, 51216), (76, 51183), (89, 51126), (112, 51003), (129, 50958), (154, 50805),

Gene: Madi\_56 Start: 41882, Stop: 42811, Start Num: 17

Candidate Starts for Madi\_56:

(Start: 17 @41882 has 9 MA's), (29, 41939), (32, 41972), (54, 42122), (55, 42131), (58, 42155), (61, 42176), (65, 42191), (67, 42203), (69, 42215), (73, 42254), (74, 42269), (81, 42302), (101, 42413), (102, 42419), (107, 42437), (113, 42461), (114, 42467), (123, 42497), (128, 42521), (144, 42614), (161, 42782),

Gene: Marietta\_66 Start: 48435, Stop: 47638, Start Num: 15

Candidate Starts for Marietta\_66:

(Start: 15 @48435 has 24 MA's), (28, 48360), (53, 48186), (72, 48054), (75, 48024), (78, 48015), (80, 48006), (85, 47979), (92, 47952), (100, 47907), (104, 47874), (107, 47862), (110, 47844), (137, 47763), (150, 47685),

Gene: Maselop\_64 Start: 48423, Stop: 47572, Start Num: 19

Candidate Starts for Maselop\_64:

(Start: 19 @48423 has 15 MA's), (28, 48363), (46, 48243), (48, 48231), (61, 48129), (62, 48120), (67, 48102), (69, 48090), (76, 48018), (107, 47862), (110, 47844), (112, 47838), (142, 47715), (148, 47679), (152, 47658),

Gene: MerCougar\_67 Start: 52388, Stop: 51525, Start Num: 15

Candidate Starts for MerCougar\_67:

(Start: 15 @52388 has 24 MA's), (57, 52100), (67, 52049), (78, 51959), (87, 51917), (92, 51899), (98, 51863), (101, 51833), (107, 51809), (110, 51791),

Gene: Mima20\_68 Start: 45405, Stop: 46475, Start Num: 18

Candidate Starts for Mima20\_68:

(Start: 18 @45405 has 31 MA's), (37, 45537), (46, 45585), (58, 45666), (60, 45678), (61, 45687), (63, 45696), (83, 45819), (87, 45840), (95, 45867), (107, 45948), (110, 45966), (115, 45987), (134, 46065), (147, 46149), (164, 46314), (167, 46446),

Gene: MoiGyank\_70 Start: 46170, Stop: 47240, Start Num: 18

Candidate Starts for MoiGyank\_70:

(Start: 18 @46170 has 31 MA's), (37, 46302), (46, 46350), (58, 46431), (60, 46443), (61, 46452), (63, 46461), (83, 46584), (87, 46605), (95, 46632), (107, 46713), (110, 46731), (115, 46752), (134, 46830), (147, 46914), (156, 46992), (164, 47079), (167, 47211),

Gene: MontyDev\_72 Start: 52628, Stop: 53458, Start Num: 14

Candidate Starts for MontyDev\_72:

(Start: 14 @52628 has 9 MA's), (26, 52673), (29, 52703), (32, 52736), (34, 52760), (43, 52808), (47, 52829), (58, 52922), (64, 52952), (66, 52955), (68, 52967), (82, 53051), (88, 53081), (102, 53165), (104, 53171), (107, 53183), (110, 53201), (116, 53228), (117, 53231), (137, 53327), (139, 53348), (144, 53375),

Gene: Mopey\_60 Start: 44493, Stop: 45353, Start Num: 23

Candidate Starts for Mopey\_60:

(6, 44421), (Start: 23 @44493 has 21 MA's), (27, 44538), (30, 44550), (31, 44568), (32, 44580), (34, 44604), (35, 44607), (58, 44760), (61, 44781), (63, 44790), (65, 44796), (76, 44886), (77, 44889), (79, 44898), (84, 44919), (104, 45030), (107, 45042), (110, 45060), (128, 45111), (131, 45120), (136,

45150), (137, 45153),

Gene: MrMiyagi\_77 Start: 49209, Stop: 50072, Start Num: 5

Candidate Starts for MrMiyagi\_77:

(Start: 5 @49209 has 2 MA's), (35, 49395), (41, 49437), (42, 49440), (54, 49518), (56, 49548), (65, 49590), (69, 49614), (75, 49677), (78, 49686), (82, 49704), (86, 49725), (105, 49827), (107, 49836), (111, 49860), (125, 49893), (130, 49920), (135, 49950), (137, 49959), (140, 49983), (149, 50034),

Gene: NadineRae\_65 Start: 48044, Stop: 47247, Start Num: 15

Candidate Starts for NadineRae\_65:

(Start: 15 @48044 has 24 MA's), (28, 47969), (72, 47663), (75, 47633), (78, 47624), (80, 47615), (92, 47561), (100, 47516), (101, 47495), (104, 47483), (107, 47471), (110, 47453), (137, 47372), (150, 47294),

Gene: NatB6\_65 Start: 51126, Stop: 50305, Start Num: 15

Candidate Starts for NatB6\_65:

(7, 51153), (Start: 15 @51126 has 24 MA's), (28, 51054), (57, 50832), (78, 50691), (80, 50682), (92, 50631), (98, 50595), (107, 50541), (110, 50523), (120, 50508), (145, 50385),

Gene: Nilo\_72 Start: 52985, Stop: 53815, Start Num: 14

Candidate Starts for Nilo\_72:

(Start: 14 @52985 has 9 MA's), (26, 53030), (29, 53060), (32, 53093), (34, 53117), (43, 53165), (47, 53186), (58, 53279), (64, 53309), (66, 53312), (68, 53324), (82, 53408), (88, 53438), (102, 53522), (104, 53528), (107, 53540), (110, 53558), (116, 53585), (117, 53588), (137, 53684), (139, 53705), (144, 53732),

Gene: NorManre\_71 Start: 46296, Stop: 47387, Start Num: 18

Candidate Starts for NorManre\_71:

(Start: 18 @46296 has 31 MA's), (37, 46428), (46, 46476), (60, 46569), (61, 46578), (63, 46587), (83, 46710), (87, 46731), (95, 46758), (107, 46839), (110, 46857), (115, 46878), (134, 46956), (147, 47040), (160, 47205), (162, 47214), (167, 47358),

Gene: NosilaM\_67 Start: 51702, Stop: 50839, Start Num: 15

Candidate Starts for NosilaM\_67:

(Start: 15 @51702 has 24 MA's), (38, 51540), (57, 51414), (78, 51273), (85, 51240), (92, 51213), (94, 51207), (101, 51147), (107, 51123), (110, 51105), (132, 51051), (138, 51021), (144, 50976),

Gene: Nova\_58 Start: 44945, Stop: 45805, Start Num: 23

Candidate Starts for Nova\_58:

(6, 44873), (Start: 23 @44945 has 21 MA's), (27, 44990), (30, 45002), (31, 45020), (32, 45032), (34, 45056), (35, 45059), (58, 45212), (61, 45233), (63, 45242), (65, 45248), (76, 45338), (77, 45341), (79, 45350), (84, 45371), (104, 45482), (107, 45494), (110, 45512), (128, 45563), (131, 45572), (136, 45602), (137, 45605),

Gene: NovaSharks\_69 Start: 44064, Stop: 45134, Start Num: 18

Candidate Starts for NovaSharks\_69:

(Start: 18 @44064 has 31 MA's), (33, 44160), (37, 44196), (46, 44244), (60, 44337), (61, 44346), (63, 44355), (83, 44478), (87, 44499), (95, 44526), (107, 44607), (110, 44625), (115, 44646), (134, 44724), (147, 44808), (167, 45105),

Gene: NovumRegina\_65 Start: 51435, Stop: 50614, Start Num: 15

Candidate Starts for NovumRegina\_65:

(7, 51462), (Start: 15 @51435 has 24 MA's), (28, 51363), (57, 51141), (78, 51000), (80, 50991), (92, 50940), (98, 50904), (107, 50850), (110, 50832), (120, 50817), (145, 50694),

Gene: Onyinye\_76 Start: 52178, Stop: 53083, Start Num: 24

Candidate Starts for Onyinye\_76:

(Start: 16 @52163 has 2 MA's), (Start: 24 @52178 has 3 MA's), (31, 52250), (32, 52262), (34, 52286), (35, 52289), (40, 52319), (50, 52382), (59, 52439), (61, 52457), (63, 52466), (65, 52472), (70, 52502), (97, 52661), (99, 52670), (100, 52673), (107, 52718), (110, 52736), (128, 52784), (138, 52832), (143, 52871), (157, 52976), (159, 53024),

Gene: OtterstedtS21\_67 Start: 45230, Stop: 46321, Start Num: 18

Candidate Starts for OtterstedtS21\_67:

(Start: 18 @45230 has 31 MA's), (37, 45362), (46, 45410), (58, 45491), (60, 45503), (61, 45512), (63, 45521), (83, 45644), (87, 45665), (95, 45692), (107, 45773), (110, 45791), (115, 45812), (134, 45890), (147, 45974), (160, 46139), (162, 46148), (167, 46292),

Gene: Outis\_66 Start: 51894, Stop: 51040, Start Num: 18

Candidate Starts for Outis\_66:

(Start: 18 @51894 has 31 MA's), (57, 51615), (67, 51564), (78, 51474), (87, 51432), (92, 51414), (98, 51378), (101, 51348), (107, 51324), (110, 51306),

Gene: P1201\_70 Start: 52915, Stop: 52136, Start Num: 21

Candidate Starts for P1201\_70:

(21, 52915), (28, 52858), (29, 52855), (51, 52684), (61, 52621), (90, 52456), (100, 52405), (107, 52360), (108, 52354), (119, 52336),

Gene: PBI1\_56 Start: 44420, Stop: 45280, Start Num: 23

Candidate Starts for PBI1\_56:

(6, 44348), (Start: 23 @44420 has 21 MA's), (27, 44465), (30, 44477), (31, 44495), (32, 44507), (34, 44531), (35, 44534), (58, 44687), (61, 44708), (63, 44717), (65, 44723), (76, 44813), (77, 44816), (79, 44825), (84, 44846), (104, 44957), (107, 44969), (110, 44987), (128, 45038), (131, 45047), (136, 45077), (137, 45080),

Gene: PLOT\_59 Start: 44472, Stop: 45332, Start Num: 23

Candidate Starts for PLOT\_59:

(6, 44400), (Start: 23 @44472 has 21 MA's), (27, 44517), (30, 44529), (31, 44547), (32, 44559), (34, 44583), (35, 44586), (58, 44739), (61, 44760), (63, 44769), (65, 44775), (76, 44865), (77, 44868), (79, 44877), (84, 44898), (104, 45009), (107, 45021), (110, 45039), (128, 45090), (131, 45099), (136, 45129), (137, 45132),

Gene: Papyrus\_70 Start: 52595, Stop: 53425, Start Num: 14

Candidate Starts for Papyrus\_70:

(Start: 14 @52595 has 9 MA's), (26, 52640), (29, 52670), (32, 52703), (34, 52727), (43, 52775), (47, 52796), (58, 52889), (64, 52919), (66, 52922), (68, 52934), (82, 53018), (88, 53048), (102, 53132), (104, 53138), (107, 53150), (110, 53168), (116, 53195), (117, 53198), (137, 53294), (139, 53315), (144, 53342),

Gene: ParvusTarda\_66 Start: 44602, Stop: 45693, Start Num: 18

Candidate Starts for ParvusTarda\_66:

(Start: 18 @44602 has 31 MA's), (37, 44734), (46, 44782), (60, 44875), (61, 44884), (63, 44893), (83, 45016), (87, 45037), (95, 45064), (107, 45145), (110, 45163), (115, 45184), (134, 45262), (147, 45346), (160, 45511), (162, 45520), (167, 45664),

Gene: Patio\_67 Start: 51761, Stop: 50982, Start Num: 8

Candidate Starts for Patio\_67:

(Start: 8 @51761 has 10 MA's), (28, 51677), (78, 51329), (92, 51269), (98, 51233), (107, 51179), (110, 51161), (126, 51128), (130, 51119), (143, 51044), (145, 51032),

Gene: Patos\_71 Start: 46295, Stop: 47386, Start Num: 18

Candidate Starts for Patos\_71:

(Start: 18 @46295 has 31 MA's), (37, 46427), (46, 46475), (60, 46568), (61, 46577), (63, 46586), (83, 46709), (87, 46730), (95, 46757), (107, 46838), (110, 46856), (115, 46877), (134, 46955), (147, 47039), (160, 47204), (162, 47213), (167, 47357),

Gene: Penelope2018\_59 Start: 44490, Stop: 45350, Start Num: 23

Candidate Starts for Penelope2018\_59:

(6, 44418), (Start: 23 @44490 has 21 MA's), (27, 44535), (30, 44547), (31, 44565), (32, 44577), (34, 44601), (35, 44604), (58, 44757), (61, 44778), (63, 44787), (65, 44793), (76, 44883), (77, 44886), (79, 44895), (84, 44916), (104, 45027), (107, 45039), (110, 45057), (128, 45108), (131, 45117), (136, 45147), (137, 45150),

Gene: PeteyPab\_53 Start: 45339, Stop: 44575, Start Num: 19

Candidate Starts for PeteyPab\_53:

(Start: 19 @45339 has 15 MA's), (49, 45120), (61, 45045), (98, 44838), (107, 44784), (127, 44739), (144, 44655),

Gene: Phomeo\_64 Start: 51694, Stop: 50873, Start Num: 15

Candidate Starts for Phomeo\_64:

(Start: 15 @51694 has 24 MA's), (28, 51622), (57, 51400), (78, 51259), (80, 51250), (92, 51199), (98, 51163), (107, 51109), (110, 51091), (120, 51076), (145, 50953),

Gene: Pleakley\_74 Start: 51254, Stop: 50463, Start Num: 8

Candidate Starts for Pleakley\_74:

(Start: 8 @51254 has 10 MA's), (28, 51158), (61, 50924), (78, 50813), (80, 50804), (84, 50786), (86, 50774), (92, 50753), (107, 50663), (110, 50645), (120, 50630), (137, 50570),

Gene: Polyuyki\_64 Start: 48412, Stop: 47561, Start Num: 19

Candidate Starts for Polyuyki\_64:

(Start: 19 @48412 has 15 MA's), (28, 48352), (46, 48232), (48, 48220), (61, 48118), (62, 48109), (67, 48091), (69, 48079), (76, 48007), (107, 47851), (110, 47833), (112, 47827), (142, 47704), (148, 47668), (152, 47647),

Gene: PotatoChip\_54 Start: 45341, Stop: 44577, Start Num: 19

Candidate Starts for PotatoChip\_54:

(Start: 19 @45341 has 15 MA's), (49, 45122), (61, 45047), (98, 44840), (107, 44786), (127, 44741), (144, 44657),

Gene: Prager\_59 Start: 44509, Stop: 45369, Start Num: 23

Candidate Starts for Prager\_59:

(6, 44437), (Start: 23 @44509 has 21 MA's), (27, 44554), (30, 44566), (31, 44584), (32, 44596), (34, 44620), (35, 44623), (58, 44776), (61, 44797), (63, 44806), (65, 44812), (76, 44902), (77, 44905), (79, 44914), (84, 44935), (104, 45046), (107, 45058), (110, 45076), (128, 45127), (131, 45136), (136, 45166), (137, 45169),

Gene: Ranch\_67 Start: 44074, Stop: 45165, Start Num: 18

Candidate Starts for Ranch\_67:

(Start: 18 @44074 has 31 MA's), (37, 44206), (46, 44254), (60, 44347), (61, 44356), (63, 44365), (83, 44488), (87, 44509), (95, 44536), (107, 44617), (110, 44635), (115, 44656), (134, 44734), (147, 44818), (160, 44983), (162, 44992), (167, 45136),

Gene: RazorC\_67 Start: 44218, Stop: 45288, Start Num: 18

Candidate Starts for RazorC\_67:

(Start: 18 @44218 has 31 MA's), (33, 44314), (37, 44350), (46, 44398), (60, 44491), (61, 44500), (63, 44509), (83, 44632), (87, 44653), (95, 44680), (107, 44761), (110, 44779), (115, 44800), (134, 44878), (147, 44962), (167, 45259),

Gene: RedRaider\_72 Start: 54080, Stop: 53301, Start Num: 8

Candidate Starts for RedRaider\_72:

(Start: 8 @54080 has 10 MA's), (28, 53996), (52, 53831), (78, 53648), (92, 53588), (98, 53552), (107, 53498), (110, 53480), (126, 53447), (130, 53438), (143, 53363), (145, 53351),

Gene: Riparian\_72 Start: 52432, Stop: 53262, Start Num: 14

Candidate Starts for Riparian\_72:

(Start: 14 @52432 has 9 MA's), (26, 52477), (29, 52507), (32, 52540), (34, 52564), (43, 52612), (47, 52633), (58, 52726), (64, 52756), (66, 52759), (68, 52771), (82, 52855), (88, 52885), (102, 52969), (104, 52975), (107, 52987), (110, 53005), (116, 53032), (117, 53035), (137, 53131), (139, 53152), (144, 53179),

Gene: Rope\_70 Start: 52588, Stop: 53418, Start Num: 14

Candidate Starts for Rope\_70:

(Start: 14 @52588 has 9 MA's), (26, 52633), (29, 52663), (32, 52696), (34, 52720), (43, 52768), (47, 52789), (58, 52882), (64, 52912), (66, 52915), (68, 52927), (82, 53011), (88, 53041), (102, 53125), (104, 53131), (107, 53143), (110, 53161), (116, 53188), (117, 53191), (137, 53287), (139, 53308), (144, 53335),

Gene: Rumi\_68 Start: 43761, Stop: 44831, Start Num: 18

Candidate Starts for Rumi\_68:

(Start: 18 @43761 has 31 MA's), (33, 43857), (37, 43893), (46, 43941), (60, 44034), (61, 44043), (63, 44052), (83, 44175), (87, 44196), (95, 44223), (107, 44304), (110, 44322), (115, 44343), (134, 44421), (147, 44505), (167, 44802),

Gene: Sadboi\_68 Start: 45890, Stop: 46960, Start Num: 18

Candidate Starts for Sadboi\_68:

(Start: 18 @45890 has 31 MA's), (37, 46022), (46, 46070), (60, 46163), (61, 46172), (63, 46181), (83, 46304), (87, 46325), (95, 46352), (107, 46433), (110, 46451), (115, 46472), (134, 46550), (147, 46634), (164, 46799), (167, 46931),

Gene: Sampudon\_67 Start: 46242, Stop: 47312, Start Num: 18

Candidate Starts for Sampudon\_67:

(Start: 18 @46242 has 31 MA's), (37, 46374), (46, 46422), (58, 46503), (60, 46515), (61, 46524), (63, 46533), (83, 46656), (87, 46677), (95, 46704), (107, 46785), (110, 46803), (115, 46824), (134, 46902), (147, 46986), (156, 47064), (164, 47151), (167, 47283),

Gene: Scuba\_75 Start: 51339, Stop: 50548, Start Num: 8

Candidate Starts for Scuba\_75:

(Start: 8 @51339 has 10 MA's), (28, 51243), (61, 51009), (78, 50898), (80, 50889), (86, 50859), (92, 50838), (107, 50748), (110, 50730), (120, 50715), (137, 50655),

Gene: Send513\_70 Start: 52966, Stop: 53796, Start Num: 14

Candidate Starts for Send513\_70:

(Start: 14 @52966 has 9 MA's), (26, 53011), (29, 53041), (32, 53074), (34, 53098), (43, 53146), (47, 53167), (58, 53260), (64, 53290), (66, 53293), (82, 53389), (88, 53419), (102, 53503), (104, 53509), (107, 53521), (110, 53539), (116, 53566), (117, 53569), (137, 53665), (139, 53686), (144, 53713),

Gene: Sienna\_56 Start: 41882, Stop: 42811, Start Num: 17

Candidate Starts for Sienna\_56:

(Start: 17 @41882 has 9 MA's), (29, 41939), (32, 41972), (54, 42122), (55, 42131), (58, 42155), (61, 42176), (65, 42191), (67, 42203), (69, 42215), (73, 42254), (74, 42269), (81, 42302), (101, 42413), (102, 42419), (107, 42437), (113, 42461), (114, 42467), (123, 42497), (128, 42521), (144, 42614), (161, 42782),

Gene: SirHarley\_61 Start: 44932, Stop: 45792, Start Num: 23

Candidate Starts for SirHarley\_61:

(6, 44860), (Start: 23 @44932 has 21 MA's), (27, 44977), (30, 44989), (31, 45007), (32, 45019), (34, 45043), (35, 45046), (58, 45199), (61, 45220), (63, 45229), (65, 45235), (76, 45325), (77, 45328), (79, 45337), (84, 45358), (104, 45469), (107, 45481), (110, 45499), (128, 45550), (131, 45559), (136, 45589), (137, 45592),

Gene: Skysand\_67 Start: 52239, Stop: 51460, Start Num: 8

Candidate Starts for Skysand\_67:

(Start: 8 @52239 has 10 MA's), (28, 52155), (36, 52080), (78, 51807), (92, 51747), (98, 51711), (107, 51657), (110, 51639), (126, 51606), (130, 51597), (143, 51522), (145, 51510),

Gene: StarStruck\_66 Start: 51894, Stop: 51040, Start Num: 18

Candidate Starts for StarStruck\_66:

(Start: 18 @51894 has 31 MA's), (57, 51615), (67, 51564), (78, 51474), (87, 51432), (92, 51414), (98, 51378), (101, 51348), (107, 51324), (110, 51306),

Gene: Stickynote\_54 Start: 45345, Stop: 44581, Start Num: 19

Candidate Starts for Stickynote\_54:

(Start: 19 @45345 has 15 MA's), (49, 45126), (98, 44844), (107, 44790), (127, 44745), (144, 44661),

Gene: Sukkupi\_66 Start: 50275, Stop: 49478, Start Num: 15

Candidate Starts for Sukkupi\_66:

(2, 50374), (7, 50302), (Start: 15 @50275 has 24 MA's), (28, 50200), (53, 50026), (72, 49894), (75, 49864), (78, 49855), (80, 49846), (85, 49819), (92, 49792), (100, 49747), (104, 49714), (107, 49702), (110, 49684), (137, 49603), (150, 49525),

Gene: SuperSulley\_67 Start: 52253, Stop: 51390, Start Num: 15

Candidate Starts for SuperSulley\_67:

(3, 52331), (Start: 15 @52253 has 24 MA's), (38, 52091), (57, 51965), (78, 51824), (85, 51791), (92, 51764), (94, 51758), (101, 51698), (107, 51674), (110, 51656), (132, 51602), (138, 51572), (144, 51527),

Gene: Suzy\_56 Start: 43075, Stop: 44001, Start Num: 17

Candidate Starts for Suzy\_56:

(Start: 17 @43075 has 9 MA's), (29, 43132), (32, 43165), (54, 43315), (55, 43324), (61, 43369), (65, 43384), (67, 43396), (69, 43408), (73, 43447), (74, 43462), (81, 43495), (101, 43606), (102, 43612), (107, 43630), (113, 43654), (114, 43660), (121, 43684), (123, 43690), (128, 43714), (140, 43783), (144, 43807), (161, 43972),

Gene: Terapin\_57 Start: 41806, Stop: 42735, Start Num: 17

Candidate Starts for Terapin\_57:

(Start: 17 @41806 has 9 MA's), (29, 41863), (32, 41896), (54, 42046), (55, 42055), (58, 42079), (61, 42100), (65, 42115), (67, 42127), (69, 42139), (73, 42178), (74, 42193), (81, 42226), (101, 42337), (102, 42343), (107, 42361), (113, 42385), (114, 42391), (123, 42421), (128, 42445), (144, 42538), (161, 42706),

Gene: Thoth\_59 Start: 44488, Stop: 45348, Start Num: 23

Candidate Starts for Thoth\_59:

(6, 44416), (Start: 23 @44488 has 21 MA's), (27, 44533), (30, 44545), (31, 44563), (32, 44575), (34, 44599), (35, 44602), (58, 44755), (61, 44776), (63, 44785), (65, 44791), (76, 44881), (77, 44884), (79, 44893), (84, 44914), (104, 45025), (107, 45037), (110, 45055), (128, 45106), (131, 45115), (136, 45145), (137, 45148),

Gene: Tillicus\_63 Start: 44587, Stop: 45672, Start Num: 18

Candidate Starts for Tillicus\_63:

(Start: 18 @44587 has 31 MA's), (31, 44668), (32, 44680), (34, 44704), (37, 44719), (46, 44767), (60, 44860), (61, 44869), (63, 44878), (83, 45001), (87, 45022), (95, 45049), (107, 45130), (110, 45148), (115, 45169), (122, 45190), (134, 45247), (147, 45331),

Gene: Tracker\_65 Start: 50870, Stop: 50052, Start Num: 15

Candidate Starts for Tracker\_65:

(7, 50897), (Start: 15 @50870 has 24 MA's), (28, 50798), (57, 50576), (78, 50435), (80, 50426), (92, 50375), (98, 50339), (107, 50285), (110, 50267), (120, 50252),

Gene: Troll4\_59 Start: 44619, Stop: 45479, Start Num: 23

Candidate Starts for Troll4\_59:

(6, 44547), (Start: 23 @44619 has 21 MA's), (27, 44664), (30, 44676), (31, 44694), (32, 44706), (34, 44730), (35, 44733), (58, 44886), (61, 44907), (63, 44916), (65, 44922), (76, 45012), (77, 45015), (79, 45024), (84, 45045), (104, 45156), (107, 45168), (110, 45186), (128, 45237), (131, 45246), (136, 45276), (137, 45279),

Gene: Turuncu\_68 Start: 51816, Stop: 51037, Start Num: 8

Candidate Starts for Turuncu\_68:

(Start: 8 @51816 has 10 MA's), (28, 51729), (75, 51390), (78, 51381), (85, 51348), (92, 51321), (98, 51291), (107, 51237), (108, 51231), (110, 51219), (112, 51213), (130, 51177), (138, 51141),

Gene: Visconti\_60 Start: 44499, Stop: 45359, Start Num: 23

Candidate Starts for Visconti\_60:

(6, 44427), (Start: 23 @44499 has 21 MA's), (27, 44544), (30, 44556), (31, 44574), (32, 44586), (34, 44610), (35, 44613), (58, 44766), (61, 44787), (63, 44796), (65, 44802), (76, 44892), (77, 44895), (79, 44904), (84, 44925), (104, 45036), (107, 45048), (110, 45066), (128, 45117), (131, 45126), (136, 45156), (137, 45159),

Gene: WaldoWhy\_61 Start: 44552, Stop: 45412, Start Num: 23

Candidate Starts for WaldoWhy\_61:

(6, 44480), (Start: 23 @44552 has 21 MA's), (27, 44597), (30, 44609), (31, 44627), (32, 44639), (34, 44663), (35, 44666), (58, 44819), (61, 44840), (63, 44849), (65, 44855), (76, 44945), (77, 44948), (79, 44957), (84, 44978), (104, 45089), (107, 45101), (110, 45119), (128, 45170), (131, 45179), (136, 45209), (137, 45212),

Gene: Weiss13\_70 Start: 52669, Stop: 53499, Start Num: 14

Candidate Starts for Weiss13\_70:

(Start: 14 @52669 has 9 MA's), (26, 52714), (29, 52744), (32, 52777), (34, 52801), (43, 52849), (47, 52870), (58, 52963), (64, 52993), (66, 52996), (68, 53008), (82, 53092), (88, 53122), (102, 53206), (104, 53212), (107, 53224), (110, 53242), (116, 53269), (117, 53272), (137, 53368), (139, 53389), (144, 53416),

Gene: Wheezy\_65 Start: 51084, Stop: 50263, Start Num: 15

Candidate Starts for Wheezy\_65:

(7, 51111), (Start: 15 @51084 has 24 MA's), (28, 51012), (57, 50790), (78, 50649), (80, 50640), (92, 50589), (98, 50553), (107, 50499), (110, 50481), (120, 50466),

Gene: WhoseManz\_65 Start: 48102, Stop: 47305, Start Num: 15

Candidate Starts for WhoseManz\_65:

(Start: 15 @48102 has 24 MA's), (28, 48027), (72, 47721), (75, 47691), (78, 47682), (80, 47673), (85, 47646), (92, 47619), (100, 47574), (104, 47541), (107, 47529), (110, 47511), (137, 47430), (150, 47352),

Gene: Wojtek\_63 Start: 44323, Stop: 45414, Start Num: 18

Candidate Starts for Wojtek\_63:

(Start: 18 @44323 has 31 MA's), (31, 44404), (32, 44416), (37, 44455), (46, 44503), (60, 44596), (61, 44605), (63, 44614), (83, 44737), (87, 44758), (95, 44785), (107, 44866), (110, 44884), (115, 44905), (134, 44983), (147, 45067), (156, 45145), (160, 45232),

Gene: Xenia2\_63 Start: 44090, Stop: 45202, Start Num: 18

Candidate Starts for Xenia2\_63:

(Start: 18 @44090 has 31 MA's), (32, 44186), (37, 44225), (46, 44273), (58, 44354), (60, 44366), (61, 44375), (63, 44384), (87, 44528), (107, 44636), (110, 44654), (115, 44675), (123, 44699), (124, 44702), (134, 44753), (155, 44894), (167, 45170),

Gene: Yelo\_69 Start: 53048, Stop: 53878, Start Num: 14

Candidate Starts for Yelo\_69:

(Start: 14 @53048 has 9 MA's), (26, 53093), (29, 53123), (32, 53156), (34, 53180), (43, 53228), (47, 53249), (58, 53342), (64, 53372), (66, 53375), (68, 53387), (82, 53471), (88, 53501), (102, 53585), (104, 53591), (107, 53603), (110, 53621), (116, 53648), (117, 53651), (137, 53747), (139, 53768), (144, 53795),

Gene: Yikes\_69 Start: 46336, Stop: 47406, Start Num: 18

Candidate Starts for Yikes\_69:

(Start: 18 @46336 has 31 MA's), (37, 46468), (46, 46516), (60, 46609), (61, 46618), (63, 46627), (83, 46750), (87, 46771), (95, 46798), (107, 46879), (110, 46897), (115, 46918), (134, 46996), (147, 47080), (164, 47245), (167, 47377),

Gene: Yndexa\_66 Start: 50275, Stop: 49478, Start Num: 15

Candidate Starts for Yndexa\_66:

(2, 50374), (7, 50302), (Start: 15 @50275 has 24 MA's), (28, 50200), (53, 50026), (72, 49894), (75, 49864), (78, 49855), (80, 49846), (85, 49819), (92, 49792), (100, 49747), (104, 49714), (107, 49702), (110, 49684), (137, 49603), (150, 49525),

Gene: Zany\_65 Start: 45737, Stop: 46807, Start Num: 18

Candidate Starts for Zany\_65:

(Start: 18 @45737 has 31 MA's), (37, 45869), (46, 45917), (60, 46010), (61, 46019), (63, 46028), (83, 46151), (87, 46172), (95, 46199), (107, 46280), (110, 46298), (115, 46319), (134, 46397), (147, 46481), (164, 46646), (167, 46778),



Gene: Zenon\_72 Start: 52992, Stop: 53822, Start Num: 14

Candidate Starts for Zenon\_72:

(Start: 14 @52992 has 9 MA's), (26, 53037), (29, 53067), (32, 53100), (34, 53124), (43, 53172), (47, 53193), (58, 53286), (64, 53316), (66, 53319), (82, 53415), (88, 53445), (102, 53529), (104, 53535), (107, 53547), (110, 53565), (116, 53592), (117, 53595), (137, 53691), (139, 53712), (144, 53739),

Gene: Zion\_54 Start: 45339, Stop: 44575, Start Num: 19

Candidate Starts for Zion\_54:

(Start: 19 @45339 has 15 MA's), (49, 45120), (61, 45045), (98, 44838), (107, 44784), (127, 44739), (144, 44655),