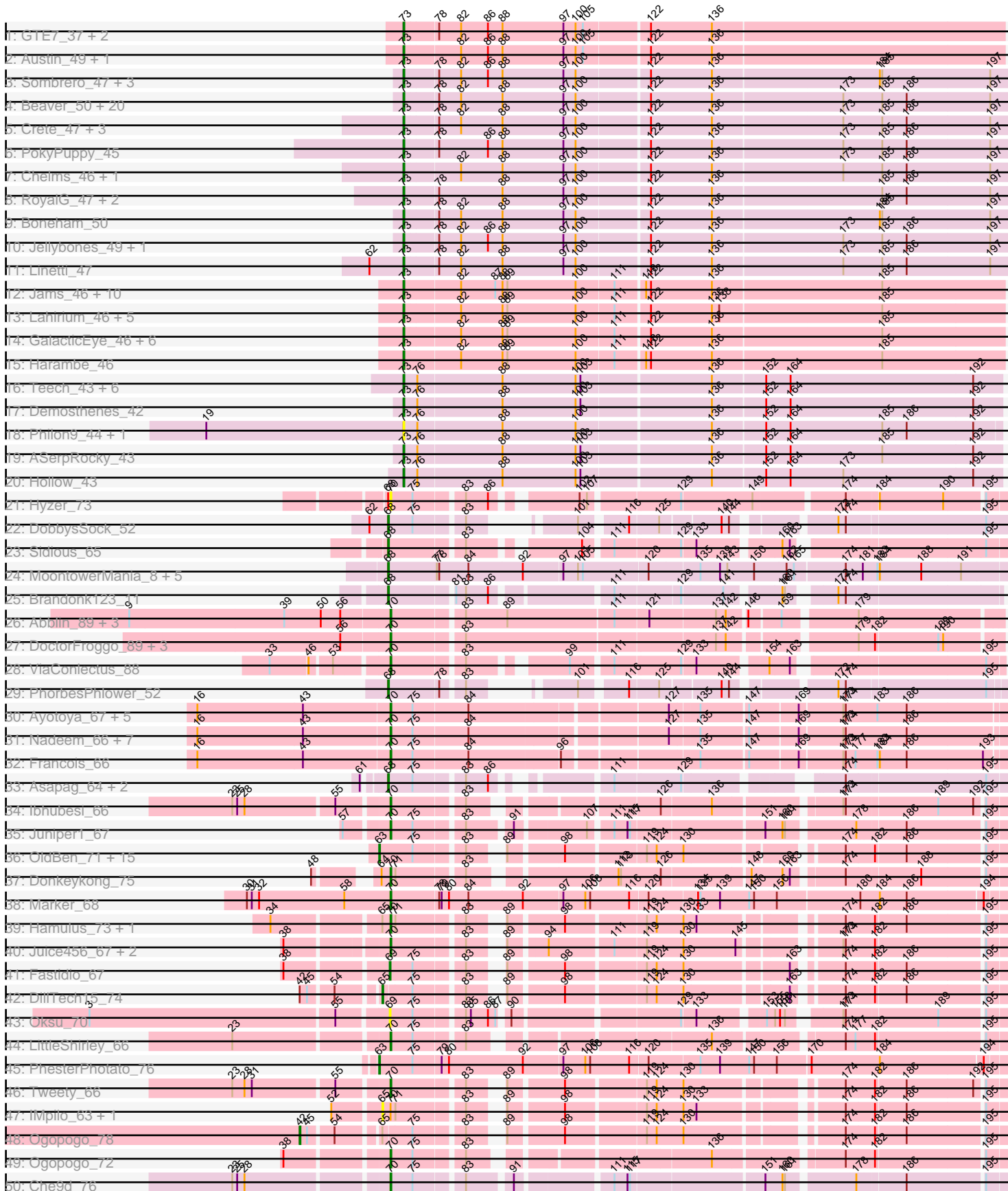
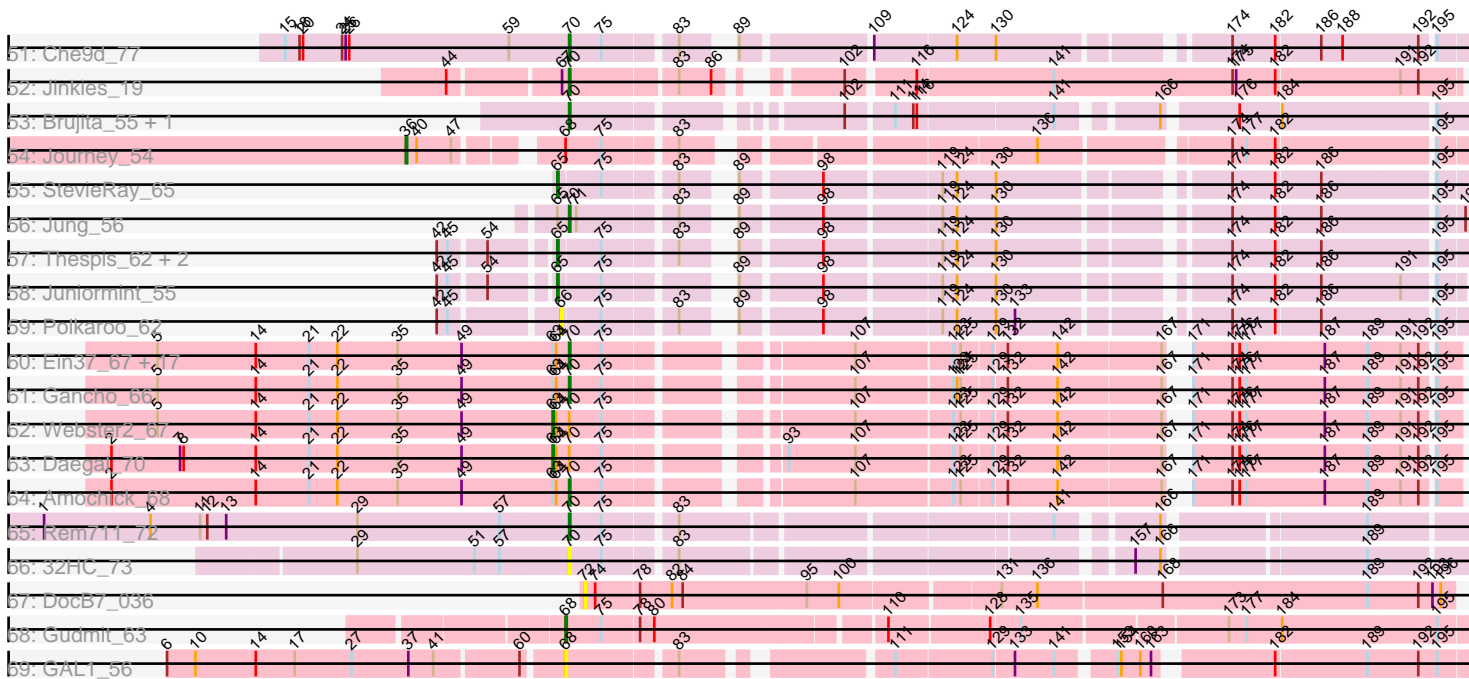


Pham 215866



Pham 215866



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 215866 Report

This analysis was run 02/22/25 on database version 588.

Pham number 215866 has 194 members, 25 are drafts.

Phages represented in each track:

- Track 1 : GTE7\_37, Amore2\_49, HayZem\_48
- Track 2 : Austin\_49, GMA7\_38
- Track 3 : Sombrero\_47, FelixAlejandro\_51, CinnamonToast\_52, Butterball\_50
- Track 4 : Beaver\_50, CathyBurgh\_46, Poland\_51, Adgers\_48, John316\_50, RemRem\_47, GourdThymes\_46, Hotorobo\_46, Barbochs\_47, Ekhein\_47, Flakey\_46, Gorko\_46, BirksAndSocks\_51, Worcestershire\_47, Lizzo\_46, Exiguo\_46, Breezic\_46, Monty\_45, Squibbles\_46, Msay19\_51, Sam12\_46
- Track 5 : Crete\_47, BigShaq\_46, PierreThree\_46, BenoitCattle\_47
- Track 6 : PokyPuppy\_45
- Track 7 : Chelms\_46, Dakiti\_47
- Track 8 : RoyalG\_47, Diabla\_50, SteveFrench\_46
- Track 9 : Boneham\_50
- Track 10 : Jellybones\_49, Eggsie\_45
- Track 11 : Linetti\_47
- Track 12 : Jams\_46, Charianelly\_46, Shelley\_46, MrWormie\_46, Newt\_47, Kaseim\_46, Nimi13\_46, Teal\_46, Lidong\_46, Minos\_47, Bianmat\_46
- Track 13 : Lahirium\_46, Jormungandr\_46, Anamika\_46, Sticker17\_46, Hail2Pitt\_45, Guillaume\_46
- Track 14 : GalacticEye\_46, Luker\_47, Damp\_46, Berries\_46, Hello\_46, Neoevie\_46, Woes\_46
- Track 15 : Harambe\_46
- Track 16 : Teech\_43, Katyusha\_42, Teatealatte\_43, Benczkowski14\_42, Tredge\_43, Niagara\_42, Kvothe\_42
- Track 17 : Demosthenes\_42
- Track 18 : Philon9\_44, Vitaenoi\_44
- Track 19 : ASerpRocky\_43
- Track 20 : Hollow\_43
- Track 21 : Hyzer\_73
- Track 22 : DobbysSock\_52
- Track 23 : Sidious\_65
- Track 24 : MoontowerMania\_8, Thing3\_10, Paries\_10, Kamashten\_10, Galadriel\_11, Love\_11
- Track 25 : Brandonk123\_11
- Track 26 : Abblin\_89, Natkenzie\_89, Sampson\_91, Scioto\_89
- Track 27 : DoctorFroggo\_89, Verity\_88, Zipp\_89, Delrey21\_89
- Track 28 : ViaConlectus\_88
- Track 29 : PhorbesPhlower\_52

- Track 30 : Ayotoya\_67, DelRio\_67, GrandSlam\_68, Hamood\_68, Chop\_68, Pimento\_69
- Track 31 : Nadeem\_66, BetterKatz\_66, Brylie\_66, Parada\_66, NancyRae\_65, Mulch\_66, WheatThin\_65, Bock\_68
- Track 32 : Francois\_66
- Track 33 : Asapag\_64, BotCity\_71, Getalong\_67
- Track 34 : lbhubesi\_66
- Track 35 : Juniper1\_67
- Track 36 : OldBen\_71, JoeyJr\_74, Doomphist\_77, KingMidas\_73, PHappiness\_74, Leperchaun\_72, Geralt\_67, Poenanya\_77, Daenerys\_73, Inventum\_72, Polka14\_78, Empress\_72, Nimbo\_66, RitaG\_74, Scottish\_72, Sassafras\_75
- Track 37 : Donkeykong\_75
- Track 38 : Marker\_68
- Track 39 : Hamulus\_73, LittleShirley\_73
- Track 40 : Juice456\_67, JalFarm20\_79, KristaRAM\_69
- Track 41 : Fastidio\_67
- Track 42 : DillTech15\_74
- Track 43 : Oksu\_70
- Track 44 : LittleShirley\_66
- Track 45 : PhesterPhotato\_76
- Track 46 : Tweety\_66
- Track 47 : IMpilo\_63, DaddyRickover\_77
- Track 48 : Ogopogo\_78
- Track 49 : Ogopogo\_72
- Track 50 : Che9d\_76
- Track 51 : Che9d\_77
- Track 52 : Jinkies\_19
- Track 53 : Brujita\_55, Island3\_55
- Track 54 : Journey\_54
- Track 55 : StevieRay\_65
- Track 56 : Jung\_56
- Track 57 : Thespis\_62, Brusacoram\_62, Atcoo\_62
- Track 58 : Juniormint\_55
- Track 59 : Polkaroo\_62
- Track 60 : Ein37\_67, HH92\_66, Wishmaker\_62, Kinbote\_65, DeepSoil15\_67, OBUpride\_67, Giles\_62, Luke\_66, Forge\_62, LilHazelNut\_67, Hail\_62, Hadrien\_66, Gravaillia\_63, Ubuntu\_67, Amymech\_67, Luna22\_62, Dewey\_62, Evanesce\_66
- Track 61 : Gancho\_66
- Track 62 : Webster2\_67
- Track 63 : Daegal\_70
- Track 64 : Amochick\_68
- Track 65 : Rem711\_72
- Track 66 : 32HC\_73
- Track 67 : DocB7\_036
- Track 68 : Gudmit\_63
- Track 69 : GAL1\_56

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

The start number called the most often in the published annotations is 73, it was called in 69 of the 169 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ASerpRocky\_43, Adgers\_48, Amore2\_49, Anamika\_46, Austin\_49, Barbochs\_47, Beaver\_50, Benczkowski14\_42, BenoitCattle\_47, Berries\_46, Bianmat\_46, BigShaq\_46, BirksAndSocks\_51, Boneham\_50, Breezic\_46, Butterball\_50, CathyBurgh\_46, Charianelly\_46, Chelms\_46, CinnamonToast\_52, Crete\_47, Dakiti\_47, Damp\_46, Demosthenes\_42, Diabla\_50, Eggsie\_45, Ekhein\_47, Exiguo\_46, FelixAlejandro\_51, Flakey\_46, GMA7\_38, GTE7\_37, GalacticEye\_46, Gorko\_46, GourdThymes\_46, Guillaume\_46, Hail2Pitt\_45, Harambe\_46, HayZem\_48, Hello\_46, Hollow\_43, Hotorobo\_46, Jams\_46, Jellybones\_49, John316\_50, Jormungandr\_46, Kaseim\_46, Katyusha\_42, Kvothe\_42, Lahirium\_46, Lidong\_46, Linetti\_47, Lizzo\_46, Luker\_47, Minos\_47, Monty\_45, MrWormie\_46, Msay19\_51, Neoevie\_46, Newt\_47, Niagara\_42, Nimi13\_46, Philon9\_44, PierreThree\_46, PokyPuppy\_45, Poland\_51, RemRem\_47, RoyalG\_47, Sam12\_46, Shelley\_46, Sombrero\_47, Squibbles\_46, SteveFrench\_46, Sticker17\_46, Teal\_46, Teatealatte\_43, Teech\_43, Tredge\_43, Vitaenoi\_44, Woes\_46, Worcestershire\_47,

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

- 

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

- 32HC\_73, Abblin\_89, Amochick\_68, Amymech\_67, Asapag\_64, Atcoo\_62, Ayotoya\_67, BetterKatz\_66, Bock\_68, BotCity\_71, Brandonk123\_11, Brujita\_55, Brusacoram\_62, Brylie\_66, Che9d\_76, Che9d\_77, Chop\_68, DaddyRickover\_77, Daegal\_70, Daenerys\_73, DeepSoil15\_67, DelRio\_67, Delrey21\_89, Dewey\_62, DillTech15\_74, DobbysSock\_52, DocB7\_036, DoctorFroggo\_89, Donkeykong\_75, Doomphist\_77, Ein37\_67, Empress\_72, Evanesce\_66, Fastidio\_67, Forge\_62, Francois\_66, GAL1\_56, Galadriel\_11, Gancho\_66, Geralt\_67, Getalong\_67, Giles\_62, GrandSlam\_68, Gravaillia\_63, Gudmit\_63, HH92\_66, Hadrien\_66, Hail\_62, Hamood\_68, Hamulus\_73, Hyzer\_73, IMpilo\_63, Ibhubesi\_66, Inventum\_72, Island3\_55, JalFarm20\_79, Jinkies\_19, JoeyJr\_74, Journey\_54, Juice456\_67, Jung\_56, Juniormint\_55, Juniper1\_67, Kamashten\_10, Kinbote\_65, KingMidas\_73, KristaRAM\_69, Leperchaun\_72, LilHazelNut\_67, LittleShirley\_66, LittleShirley\_73, Love\_11, Luke\_66, Luna22\_62, Marker\_68, MoontowerMania\_8, Mulch\_66, Nadeem\_66, NancyRae\_65, Natkenzie\_89, Nimbo\_66, OBUpride\_67, Ogopogo\_72, Ogopogo\_78, Oksu\_70, OldBen\_71, PHappiness\_74, Parada\_66, Paries\_10, PhesterPhotato\_76, PhorbessPhlower\_52, Pimento\_69, Poenanya\_77, Polka14\_78, Polkaroo\_62, Rem711\_72, RitaG\_74, Sampson\_91, Sassafras\_75, Scioto\_89, Scottish\_72, Sidious\_65, StevieRay\_65, Thespiis\_62, Thing3\_10, Tweety\_66, Ubuntu\_67, Verity\_88, ViaConlectus\_88, Webster2\_67, WheatThin\_65, Wishmaker\_62, Zipp\_89,

### Summary by start number:

Start 36:

- Found in 1 of 194 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 169
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Journey\_54 (N),

Start 42:

- Found in 7 of 194 ( 3.6% ) of genes in pham
- Manual Annotations of this start: 1 of 169
- Called 14.3% of time when present
- Phage (with cluster) where this start called: Ogopogo\_78 (F1),

#### Start 63:

- Found in 39 of 194 ( 20.1% ) of genes in pham
- Manual Annotations of this start: 19 of 169
- Called 48.7% of time when present
- Phage (with cluster) where this start called: Daegal\_70 (Q), Daenerys\_73 (F1), Doomphist\_77 (F1), Empress\_72 (F1), Geralt\_67 (F1), Inventum\_72 (F1), JoeyJr\_74 (F1), KingMidas\_73 (F1), Leperchaun\_72 (F1), Nimbo\_66 (F1), OldBen\_71 (F1), PHappiness\_74 (F1), PhesterPhotato\_76 (F1), Poenanya\_77 (F1), Polka14\_78 (F1), RitaG\_74 (F1), Sassafras\_75 (F1), Scottish\_72 (F1), Webster2\_67 (Q),

#### Start 65:

- Found in 12 of 194 ( 6.2% ) of genes in pham
- Manual Annotations of this start: 6 of 169
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Atcoo\_62 (P1), Brusacoram\_62 (P1), DaddyRickover\_77 (F1), DillTech15\_74 (F1), IMpilo\_63 (F1), Juniormint\_55 (P1), StevieRay\_65 (P1), Thespis\_62 (P1),

#### Start 66:

- Found in 1 of 194 ( 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: Polkaroo\_62 (P1),

#### Start 68:

- Found in 17 of 194 ( 8.8% ) of genes in pham
- Manual Annotations of this start: 12 of 169
- Called 88.2% of time when present
- Phage (with cluster) where this start called: Asapag\_64 (DN1), BotCity\_71 (DN), Brandonk123\_11 (DE1), DobbysSock\_52 (CZ4), GAL1\_56 (singleton), Galadriel\_11 (DE1), Getalong\_67 (DN1), Gudmit\_63 (singleton), Kamashten\_10 (DE1), Love\_11 (DE1), MoontowerMania\_8 (DE1), Paries\_10 (DE1), PhorbesPhlower\_52 (DH), Sidious\_65 (CZ7), Thing3\_10 (DE1),

#### Start 69:

- Found in 2 of 194 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 169
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fastidio\_67 (F1), Oksu\_70 (F1),

#### Start 70:

- Found in 69 of 194 ( 35.6% ) of genes in pham
- Manual Annotations of this start: 60 of 169
- Called 94.2% of time when present
- Phage (with cluster) where this start called: 32HC\_73 (Z), Abblin\_89 (DE4), Amochick\_68 (Q), Amymech\_67 (Q), Ayotoya\_67 (DI), BetterKatz\_66 (DI), Bock\_68 (DI), Brujita\_55 (I1), Brylie\_66 (DI), Che9d\_76 (F2), Che9d\_77 (F2), Chop\_68 (DI), DeepSoil15\_67 (Q), DelRio\_67 (DI), Delrey21\_89 (DE4), Dewey\_62 (Q),

DoctorFroggo\_89 (DE4), Donkeykong\_75 (F1), Ein37\_67 (Q), Evanesce\_66 (Q), Forge\_62 (Q), Francois\_66 (DI), Gancho\_66 (Q), Giles\_62 (Q), GrandSlam\_68 (DI), Gravaiilla\_63 (Q), HH92\_66 (Q), Hadrien\_66 (Q), Hail\_62 (Q), Hamood\_68 (DI), Hamulus\_73 (F1), Hyzer\_73 (CZ1), Ibhubesi\_66 (F1), Island3\_55 (I1), JaiFarm20\_79 (F1), Jinkies\_19 (FL), Juice456\_67 (F1), Jung\_56 (P1), Juniper1\_67 (F1), Kinbote\_65 (Q), KristaRAM\_69 (F1), LilHazelNut\_67 (Q), LittleShirley\_66 (F1), LittleShirley\_73 (F1), Luke\_66 (Q), Luna22\_62 (Q), Marker\_68 (F1), Mulch\_66 (DI), Nadeem\_66 (DI), NancyRae\_65 (DI), Natkenzie\_89 (DE4), OBUpride\_67 (Q), Ogopogo\_72 (F1), Parada\_66 (DI), Pimento\_69 (DI), Rem711\_72 (Z), Sampson\_91 (DE4), Scioto\_89 (DE4), Tweety\_66 (F1), Ubuntu\_67 (Q), Verity\_88 (DE4), ViaConlectus\_88 (DE4), WheatThin\_65 (DI), Wishmaker\_62 (Q), Zipp\_89 (DE4),

Start 72:

- Found in 1 of 194 ( 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: DocB7\_036 (singleton),

Start 73:

- Found in 81 of 194 ( 41.8% ) of genes in pham
- Manual Annotations of this start: 69 of 169
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ASerpRocky\_43 (CS4), Adgers\_48 (CS2), Amore2\_49 (CS1), Anamika\_46 (CS3), Austin\_49 (CS1), Barbochs\_47 (CS2), Beaver\_50 (CS2), Benczkowski14\_42 (CS4), BenoitCattle\_47 (CS2), Berries\_46 (CS3), Bianmat\_46 (CS3), BigShaq\_46 (CS2), BirksAndSocks\_51 (CS2), Boneham\_50 (CS2), Breezic\_46 (CS2), Butterball\_50 (CS2), CathyBurgh\_46 (CS2), Charianelly\_46 (CS3), Chelms\_46 (CS2), CinnamonToast\_52 (CS2), Crete\_47 (CS2), Dakiti\_47 (CS2), Damp\_46 (CS3), Demosthenes\_42 (CS4), Diabla\_50 (CS2), Eggsie\_45 (CS2), Ekhein\_47 (CS2), Exiguo\_46 (CS2), FelixAlejandro\_51 (CS2), Flakey\_46 (CS2), GMA7\_38 (CS1), GTE7\_37 (CS1), GalacticEye\_46 (CS3), Gorko\_46 (CS2), GourdThymes\_46 (CS2), Guillaume\_46 (CS3), Hail2Pitt\_45 (CS3), Harambe\_46 (CS3), HayZem\_48 (CS1), Hello\_46 (CS3), Hollow\_43 (CS4), Hotorobo\_46 (CS2), Jams\_46 (CS3), Jellybones\_49 (CS2), John316\_50 (CS2), Jormungandr\_46 (CS3), Kaseim\_46 (CS3), Katyusha\_42 (CS4), Kvothe\_42 (CS4), Lahirium\_46 (CS3), Lidong\_46 (CS3), Linetti\_47 (CS2), Lizzo\_46 (CS2), Luker\_47 (CS3), Minos\_47 (CS3), Monty\_45 (CS2), MrWormie\_46 (CS3), Msay19\_51 (CS2), Neevie\_46 (CS3), Newt\_47 (CS3), Niagara\_42 (CS4), Nimi13\_46 (CS3), Philon9\_44 (CS4), PierreThree\_46 (CS2), PokyPuppy\_45 (CS2), Poland\_51 (CS2), RemRem\_47 (CS2), RoyalG\_47 (CS2), Sam12\_46 (CS2), Shelley\_46 (CS3), Sombrero\_47 (CS2), Squibbles\_46 (CS2), SteveFrench\_46 (CS2), Sticker17\_46 (CS3), Teal\_46 (CS3), Teatealatte\_43 (CS4), Teech\_43 (CS4), Tredge\_43 (CS4), Vitaenoi\_44 (CS4), Woes\_46 (CS3), Worcestershire\_47 (CS2),

### Summary by clusters:

There are 22 clusters represented in this pham: DN, singleton, DH, DI, CZ1, CZ7, CZ4, FL, I1, DN1, CS4, CS1, CS3, CS2, P1, N, Q, Z, F1, F2, DE1, DE4,

Info for manual annotations of cluster CS1:

- Start number 73 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 73 was manually annotated 33 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 73 was manually annotated 24 times for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 73 was manually annotated 9 times for cluster CS4.

Info for manual annotations of cluster CZ4:

- Start number 68 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster CZ7:

- Start number 68 was manually annotated 1 time for cluster CZ7.

Info for manual annotations of cluster DE1:

- Start number 68 was manually annotated 6 times for cluster DE1.

Info for manual annotations of cluster DE4:

- Start number 70 was manually annotated 6 times for cluster DE4.

Info for manual annotations of cluster DH:

- Start number 68 was manually annotated 1 time for cluster DH.

Info for manual annotations of cluster DI:

- Start number 70 was manually annotated 15 times for cluster DI.

Info for manual annotations of cluster DN1:

- Start number 68 was manually annotated 2 times for cluster DN1.

Info for manual annotations of cluster F1:

- Start number 42 was manually annotated 1 time for cluster F1.
- Start number 63 was manually annotated 17 times for cluster F1.
- Start number 65 was manually annotated 1 time for cluster F1.
- Start number 69 was manually annotated 1 time for cluster F1.
- Start number 70 was manually annotated 12 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 70 was manually annotated 2 times for cluster F2.

Info for manual annotations of cluster FL:

- Start number 70 was manually annotated 1 time for cluster FL.

Info for manual annotations of cluster I1:

- Start number 70 was manually annotated 2 times for cluster I1.

Info for manual annotations of cluster N:

- Start number 36 was manually annotated 1 time for cluster N.

Info for manual annotations of cluster P1:

- Start number 65 was manually annotated 5 times for cluster P1.
- Start number 70 was manually annotated 1 time for cluster P1.



Info for manual annotations of cluster Q:

- Start number 63 was manually annotated 2 times for cluster Q.
- Start number 70 was manually annotated 20 times for cluster Q.

Info for manual annotations of cluster Z:

- Start number 70 was manually annotated 1 time for cluster Z.

### **Gene Information:**

Gene: 32HC\_73 Start: 44576, Stop: 45244, Start Num: 70

Candidate Starts for 32HC\_73:

(29, 44408), (51, 44507), (57, 44528), (Start: 70 @44576 has 60 MA's), (75, 44603), (83, 44657), (157, 44987), (166, 45008), (189, 45161),

Gene: ASerpRocky\_43 Start: 45618, Stop: 44902, Start Num: 73

Candidate Starts for ASerpRocky\_43:

(Start: 73 @45618 has 69 MA's), (76, 45603), (88, 45501), (100, 45411), (103, 45405), (136, 45252), (152, 45189), (164, 45159), (185, 45048), (192, 44937),

Gene: Abblin\_89 Start: 59142, Stop: 59831, Start Num: 70

Candidate Starts for Abblin\_89:

(9, 58827), (39, 59016), (50, 59061), (56, 59085), (Start: 70 @59142 has 60 MA's), (83, 59223), (89, 59274), (111, 59400), (121, 59439), (137, 59517), (142, 59529), (146, 59550), (159, 59586), (179, 59667),

Gene: Adgers\_48 Start: 44794, Stop: 44072, Start Num: 73

Candidate Starts for Adgers\_48:

(Start: 73 @44794 has 69 MA's), (78, 44755), (82, 44728), (88, 44677), (97, 44602), (100, 44587), (122, 44503), (136, 44428), (173, 44272), (185, 44224), (186, 44194), (197, 44092),

Gene: Amochick\_68 Start: 45397, Stop: 46059, Start Num: 70

Candidate Starts for Amochick\_68:

(2, 45019), (14, 45136), (21, 45181), (22, 45205), (35, 45256), (49, 45310), (Start: 63 @45385 has 19 MA's), (64, 45388), (Start: 70 @45397 has 60 MA's), (75, 45424), (107, 45598), (123, 45676), (125, 45682), (129, 45706), (132, 45715), (142, 45757), (167, 45841), (171, 45844), (174, 45877), (176, 45883), (177, 45889), (187, 45952), (189, 45988), (191, 46015), (192, 46030), (195, 46039),

Gene: Amore2\_49 Start: 45293, Stop: 44574, Start Num: 73

Candidate Starts for Amore2\_49:

(Start: 73 @45293 has 69 MA's), (78, 45254), (82, 45227), (86, 45194), (88, 45176), (97, 45101), (100, 45086), (105, 45077), (122, 45002), (136, 44927),

Gene: Amymech\_67 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Amymech\_67:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Anamika\_46 Start: 46699, Stop: 45980, Start Num: 73

Candidate Starts for Anamika\_46:

(Start: 73 @46699 has 69 MA's), (82, 46633), (88, 46582), (89, 46576), (100, 46492), (111, 46447), (122, 46408), (136, 46333), (138, 46324), (185, 46129),

Gene: Asapag\_64 Start: 39261, Stop: 39899, Start Num: 68

Candidate Starts for Asapag\_64:

(61, 39240), (Start: 68 @39261 has 12 MA's), (75, 39291), (83, 39345), (86, 39372), (111, 39474), (129, 39552), (174, 39705), (195, 39870),

Gene: Atcoo\_62 Start: 41875, Stop: 42537, Start Num: 65

Candidate Starts for Atcoo\_62:

(Start: 42 @41794 has 1 MA's), (45, 41803), (54, 41830), (Start: 65 @41875 has 6 MA's), (75, 41908), (83, 41962), (89, 41989), (98, 42049), (119, 42139), (124, 42151), (130, 42184), (174, 42349), (182, 42382), (186, 42418), (195, 42508),

Gene: Austin\_49 Start: 45293, Stop: 44574, Start Num: 73

Candidate Starts for Austin\_49:

(Start: 73 @45293 has 69 MA's), (82, 45227), (86, 45194), (88, 45176), (97, 45101), (100, 45086), (105, 45077), (122, 45002), (136, 44927),

Gene: Ayotoya\_67 Start: 43566, Stop: 44279, Start Num: 70

Candidate Starts for Ayotoya\_67:

(16, 43332), (43, 43461), (Start: 70 @43566 has 60 MA's), (75, 43593), (84, 43659), (127, 43884), (135, 43917), (147, 43971), (169, 44028), (173, 44079), (174, 44082), (183, 44121), (186, 44157),

Gene: Barbochs\_47 Start: 44538, Stop: 43816, Start Num: 73

Candidate Starts for Barbochs\_47:

(Start: 73 @44538 has 69 MA's), (78, 44499), (82, 44472), (88, 44421), (97, 44346), (100, 44331), (122, 44247), (136, 44172), (173, 44016), (185, 43968), (186, 43938), (197, 43836),

Gene: Beaver\_50 Start: 46308, Stop: 45586, Start Num: 73

Candidate Starts for Beaver\_50:

(Start: 73 @46308 has 69 MA's), (78, 46269), (82, 46242), (88, 46191), (97, 46116), (100, 46101), (122, 46017), (136, 45942), (173, 45786), (185, 45738), (186, 45708), (197, 45606),

Gene: Benczkowski14\_42 Start: 45651, Stop: 44935, Start Num: 73

Candidate Starts for Benczkowski14\_42:

(Start: 73 @45651 has 69 MA's), (76, 45636), (88, 45534), (100, 45444), (103, 45438), (136, 45285), (152, 45222), (164, 45192), (192, 44970),

Gene: BenoitCattle\_47 Start: 44738, Stop: 44016, Start Num: 73

Candidate Starts for BenoitCattle\_47:

(Start: 73 @44738 has 69 MA's), (78, 44699), (82, 44672), (88, 44621), (97, 44546), (100, 44531), (122, 44447), (136, 44372), (173, 44216), (185, 44168), (186, 44138), (197, 44036),

Gene: Berries\_46 Start: 46670, Stop: 45951, Start Num: 73

Candidate Starts for Berries\_46:

(Start: 73 @46670 has 69 MA's), (82, 46604), (88, 46553), (89, 46547), (100, 46463), (111, 46418), (122, 46379), (136, 46304), (185, 46100),

Gene: BetterKatz\_66 Start: 42765, Stop: 43475, Start Num: 70

Candidate Starts for BetterKatz\_66:

(16, 42531), (43, 42660), (Start: 70 @42765 has 60 MA's), (75, 42792), (84, 42858), (127, 43083), (135, 43116), (147, 43170), (169, 43227), (173, 43278), (174, 43281), (186, 43356),

Gene: Bianmat\_46 Start: 46710, Stop: 45991, Start Num: 73

Candidate Starts for Bianmat\_46:

(Start: 73 @46710 has 69 MA's), (82, 46644), (87, 46602), (88, 46593), (89, 46587), (100, 46503), (111, 46458), (118, 46425), (122, 46419), (136, 46344), (185, 46140),

Gene: BigShaq\_46 Start: 44743, Stop: 44021, Start Num: 73

Candidate Starts for BigShaq\_46:

(Start: 73 @44743 has 69 MA's), (78, 44704), (82, 44677), (88, 44626), (97, 44551), (100, 44536), (122, 44452), (136, 44377), (173, 44221), (185, 44173), (186, 44143), (197, 44041),

Gene: BirksAndSocks\_51 Start: 46658, Stop: 45936, Start Num: 73

Candidate Starts for BirksAndSocks\_51:

(Start: 73 @46658 has 69 MA's), (78, 46619), (82, 46592), (88, 46541), (97, 46466), (100, 46451), (122, 46367), (136, 46292), (173, 46136), (185, 46088), (186, 46058), (197, 45956),

Gene: Bock\_68 Start: 43009, Stop: 43719, Start Num: 70

Candidate Starts for Bock\_68:

(16, 42775), (43, 42904), (Start: 70 @43009 has 60 MA's), (75, 43036), (84, 43102), (127, 43327), (135, 43360), (147, 43414), (169, 43471), (173, 43522), (174, 43525), (186, 43600),

Gene: Boneham\_50 Start: 46562, Stop: 45840, Start Num: 73

Candidate Starts for Boneham\_50:

(Start: 73 @46562 has 69 MA's), (78, 46523), (82, 46496), (88, 46445), (97, 46370), (100, 46355), (122, 46271), (136, 46196), (184, 45995), (185, 45992), (197, 45860),

Gene: BotCity\_71 Start: 40937, Stop: 41575, Start Num: 68

Candidate Starts for BotCity\_71:

(61, 40916), (Start: 68 @40937 has 12 MA's), (75, 40967), (83, 41021), (86, 41048), (111, 41150), (129, 41228), (174, 41381), (195, 41546),

Gene: Brandonk123\_11 Start: 5315, Stop: 5971, Start Num: 68

Candidate Starts for Brandonk123\_11:

(Start: 68 @5315 has 12 MA's), (81, 5387), (83, 5399), (86, 5426), (111, 5552), (129, 5627), (141, 5675), (160, 5732), (161, 5735), (172, 5780), (174, 5789),

Gene: Breezic\_46 Start: 44551, Stop: 43829, Start Num: 73

Candidate Starts for Breezic\_46:

(Start: 73 @44551 has 69 MA's), (78, 44512), (82, 44485), (88, 44434), (97, 44359), (100, 44344), (122, 44260), (136, 44185), (173, 44029), (185, 43981), (186, 43951), (197, 43849),

Gene: Brujita\_55 Start: 37346, Stop: 37996, Start Num: 70

Candidate Starts for Brujita\_55:

(Start: 70 @37346 has 60 MA's), (102, 37532), (111, 37568), (114, 37583), (116, 37586), (141, 37694), (166, 37760), (176, 37814), (184, 37844), (195, 37967),

Gene: Brusacoram\_62 Start: 40418, Stop: 41080, Start Num: 65

Candidate Starts for Brusacoram\_62:

(Start: 42 @40337 has 1 MA's), (45, 40346), (54, 40373), (Start: 65 @40418 has 6 MA's), (75, 40451), (83, 40505), (89, 40532), (98, 40592), (119, 40682), (124, 40694), (130, 40727), (174, 40892), (182, 40925), (186, 40961), (195, 41051),

Gene: Brylie\_66 Start: 42588, Stop: 43298, Start Num: 70

Candidate Starts for Brylie\_66:

(16, 42354), (43, 42483), (Start: 70 @42588 has 60 MA's), (75, 42615), (84, 42681), (127, 42906), (135, 42939), (147, 42993), (169, 43050), (173, 43101), (174, 43104), (186, 43179),

Gene: Butterball\_50 Start: 46562, Stop: 45840, Start Num: 73

Candidate Starts for Butterball\_50:

(Start: 73 @46562 has 69 MA's), (78, 46523), (82, 46496), (86, 46463), (88, 46445), (97, 46370), (100, 46355), (122, 46271), (136, 46196), (184, 45995), (185, 45992), (197, 45860),

Gene: CathyBurgh\_46 Start: 45128, Stop: 44406, Start Num: 73

Candidate Starts for CathyBurgh\_46:

(Start: 73 @45128 has 69 MA's), (78, 45089), (82, 45062), (88, 45011), (97, 44936), (100, 44921), (122, 44837), (136, 44762), (173, 44606), (185, 44558), (186, 44528), (197, 44426),

Gene: Charianelly\_46 Start: 46420, Stop: 45701, Start Num: 73

Candidate Starts for Charianelly\_46:

(Start: 73 @46420 has 69 MA's), (82, 46354), (87, 46312), (88, 46303), (89, 46297), (100, 46213), (111, 46168), (118, 46135), (122, 46129), (136, 46054), (185, 45850),

Gene: Che9d\_76 Start: 43217, Stop: 43891, Start Num: 70

Candidate Starts for Che9d\_76:

(23, 43040), (25, 43046), (28, 43055), (Start: 70 @43217 has 60 MA's), (75, 43244), (83, 43298), (91, 43346), (111, 43448), (115, 43463), (117, 43466), (151, 43619), (160, 43640), (161, 43643), (178, 43718), (186, 43772), (195, 43862),

Gene: Che9d\_77 Start: 43923, Stop: 44576, Start Num: 70

Candidate Starts for Che9d\_77:

(15, 43686), (18, 43698), (20, 43701), (24, 43734), (25, 43737), (26, 43740), (59, 43875), (Start: 70 @43923 has 60 MA's), (75, 43950), (83, 44004), (89, 44031), (109, 44124), (124, 44190), (130, 44223), (174, 44388), (182, 44421), (186, 44457), (188, 44475), (192, 44538), (195, 44547),

Gene: Chelms\_46 Start: 44743, Stop: 44021, Start Num: 73

Candidate Starts for Chelms\_46:

(Start: 73 @44743 has 69 MA's), (82, 44677), (88, 44626), (97, 44551), (100, 44536), (122, 44452), (136, 44377), (173, 44221), (185, 44173), (186, 44143), (197, 44041),

Gene: Chop\_68 Start: 43754, Stop: 44467, Start Num: 70

Candidate Starts for Chop\_68:

(16, 43520), (43, 43649), (Start: 70 @43754 has 60 MA's), (75, 43781), (84, 43847), (127, 44072), (135, 44105), (147, 44159), (169, 44216), (173, 44267), (174, 44270), (183, 44309), (186, 44345),

Gene: CinnamonToast\_52 Start: 46616, Stop: 45894, Start Num: 73

Candidate Starts for CinnamonToast\_52:

(Start: 73 @46616 has 69 MA's), (78, 46577), (82, 46550), (86, 46517), (88, 46499), (97, 46424), (100, 46409), (122, 46325), (136, 46250), (184, 46049), (185, 46046), (197, 45914),

Gene: Crete\_47 Start: 45009, Stop: 44287, Start Num: 73

Candidate Starts for Crete\_47:

(Start: 73 @45009 has 69 MA's), (78, 44970), (82, 44943), (88, 44892), (97, 44817), (100, 44802), (122, 44718), (136, 44643), (173, 44487), (185, 44439), (186, 44409), (197, 44307),

Gene: DaddyRickover\_77 Start: 47697, Stop: 48362, Start Num: 65

Candidate Starts for DaddyRickover\_77:

(52, 47643), (Start: 65 @47697 has 6 MA's), (Start: 70 @47706 has 60 MA's), (71, 47712), (83, 47787), (89, 47814), (98, 47874), (119, 47964), (124, 47976), (130, 48009), (133, 48024), (174, 48174), (182, 48207), (186, 48243), (195, 48333),

Gene: Daegal\_70 Start: 45947, Stop: 46621, Start Num: 63

Candidate Starts for Daegal\_70:

(2, 45581), (7, 45638), (8, 45641), (14, 45698), (21, 45743), (22, 45767), (35, 45818), (49, 45872), (Start: 63 @45947 has 19 MA's), (64, 45950), (Start: 70 @45959 has 60 MA's), (75, 45986), (93, 46106), (107, 46160), (123, 46238), (125, 46244), (129, 46268), (132, 46277), (142, 46319), (167, 46403), (171, 46406), (174, 46439), (176, 46445), (177, 46451), (187, 46514), (189, 46550), (191, 46577), (192, 46592), (195, 46601),

Gene: Daenerys\_73 Start: 47291, Stop: 47959, Start Num: 63

Candidate Starts for Daenerys\_73:

(Start: 63 @47291 has 19 MA's), (75, 47330), (83, 47384), (89, 47411), (98, 47471), (119, 47561), (124, 47573), (130, 47606), (174, 47771), (182, 47804), (186, 47840), (195, 47930),

Gene: Dakiti\_47 Start: 45611, Stop: 44889, Start Num: 73

Candidate Starts for Dakiti\_47:

(Start: 73 @45611 has 69 MA's), (82, 45545), (88, 45494), (97, 45419), (100, 45404), (122, 45320), (136, 45245), (173, 45089), (185, 45041), (186, 45011), (197, 44909),

Gene: Damp\_46 Start: 45584, Stop: 44865, Start Num: 73

Candidate Starts for Damp\_46:

(Start: 73 @45584 has 69 MA's), (82, 45518), (88, 45467), (89, 45461), (100, 45377), (111, 45332), (122, 45293), (136, 45218), (185, 45014),

Gene: DeepSoil15\_67 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for DeepSoil15\_67:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: DelRio\_67 Start: 43775, Stop: 44485, Start Num: 70

Candidate Starts for DelRio\_67:

(16, 43541), (43, 43670), (Start: 70 @43775 has 60 MA's), (75, 43802), (84, 43868), (127, 44093), (135, 44126), (147, 44180), (169, 44237), (173, 44288), (174, 44291), (183, 44330), (186, 44366),

Gene: Delrey21\_89 Start: 60618, Stop: 61307, Start Num: 70

Candidate Starts for Delrey21\_89:

(56, 60561), (Start: 70 @60618 has 60 MA's), (83, 60699), (137, 60993), (142, 61005), (179, 61143), (182, 61161), (189, 61236), (190, 61242),

Gene: Demosthenes\_42 Start: 45591, Stop: 44875, Start Num: 73

Candidate Starts for Demosthenes\_42:

(Start: 73 @45591 has 69 MA's), (76, 45576), (88, 45474), (100, 45384), (103, 45378), (136, 45225), (152, 45162), (164, 45132), (192, 44910),

Gene: Dewey\_62 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Dewey\_62:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Diabla\_50 Start: 46492, Stop: 45770, Start Num: 73

Candidate Starts for Diabla\_50:

(Start: 73 @46492 has 69 MA's), (78, 46453), (88, 46375), (97, 46300), (100, 46285), (122, 46201), (136, 46126), (185, 45922), (186, 45892), (197, 45790),

Gene: DillTech15\_74 Start: 44613, Stop: 45275, Start Num: 65

Candidate Starts for DillTech15\_74:

(Start: 42 @44532 has 1 MA's), (45, 44541), (54, 44568), (Start: 65 @44613 has 6 MA's), (75, 44646), (83, 44700), (89, 44727), (98, 44787), (119, 44877), (124, 44889), (130, 44922), (163, 45039), (174, 45087), (182, 45120), (186, 45156), (195, 45246),

Gene: DobbysSock\_52 Start: 38487, Stop: 39110, Start Num: 68

Candidate Starts for DobbysSock\_52:

(62, 38466), (Start: 68 @38487 has 12 MA's), (75, 38517), (83, 38571), (101, 38640), (116, 38688), (125, 38721), (140, 38790), (144, 38799), (172, 38904), (174, 38913), (195, 39078),

Gene: DocB7\_036 Start: 37520, Stop: 36810, Start Num: 72

Candidate Starts for DocB7\_036:

(72, 37520), (74, 37511), (78, 37478), (82, 37451), (84, 37442), (95, 37337), (100, 37310), (131, 37184), (136, 37154), (168, 37052), (189, 36881), (192, 36839), (193, 36827), (196, 36821),

Gene: DoctorFroggo\_89 Start: 60618, Stop: 61307, Start Num: 70

Candidate Starts for DoctorFroggo\_89:

(56, 60561), (Start: 70 @60618 has 60 MA's), (83, 60699), (137, 60993), (142, 61005), (179, 61143), (182, 61161), (189, 61236), (190, 61242),

Gene: Donkeykong\_75 Start: 46725, Stop: 47396, Start Num: 70

Candidate Starts for Donkeykong\_75:

(48, 46662), (64, 46716), (Start: 70 @46725 has 60 MA's), (71, 46731), (83, 46806), (112, 46956), (113, 46959), (126, 47007), (148, 47109), (160, 47145), (163, 47154), (174, 47208), (188, 47295), (195, 47367),

Gene: Doomphist\_77 Start: 47104, Stop: 47772, Start Num: 63

Candidate Starts for Doomphist\_77:

(Start: 63 @47104 has 19 MA's), (75, 47143), (83, 47197), (89, 47224), (98, 47284), (119, 47374), (124, 47386), (130, 47419), (174, 47584), (182, 47617), (186, 47653), (195, 47743),

Gene: Eggsie\_45 Start: 44453, Stop: 43731, Start Num: 73

Candidate Starts for Eggsie\_45:

(Start: 73 @44453 has 69 MA's), (78, 44414), (82, 44387), (86, 44354), (88, 44336), (97, 44261), (100, 44246), (122, 44162), (136, 44087), (173, 43931), (185, 43883), (186, 43853), (197, 43751),

Gene: Ein37\_67 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Ein37\_67:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Ekhein\_47 Start: 44256, Stop: 43534, Start Num: 73

Candidate Starts for Ekhein\_47:

(Start: 73 @44256 has 69 MA's), (78, 44217), (82, 44190), (88, 44139), (97, 44064), (100, 44049), (122, 43965), (136, 43890), (173, 43734), (185, 43686), (186, 43656), (197, 43554),

Gene: Empress\_72 Start: 45915, Stop: 46583, Start Num: 63

Candidate Starts for Empress\_72:

(Start: 63 @45915 has 19 MA's), (75, 45954), (83, 46008), (89, 46035), (98, 46095), (119, 46185), (124, 46197), (130, 46230), (174, 46395), (182, 46428), (186, 46464), (195, 46554),

Gene: Evanesce\_66 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Evanesce\_66:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Exiguo\_46 Start: 44268, Stop: 43546, Start Num: 73

Candidate Starts for Exiguo\_46:

(Start: 73 @44268 has 69 MA's), (78, 44229), (82, 44202), (88, 44151), (97, 44076), (100, 44061), (122, 43977), (136, 43902), (173, 43746), (185, 43698), (186, 43668), (197, 43566),

Gene: Fastidio\_67 Start: 41425, Stop: 42081, Start Num: 69

Candidate Starts for Fastidio\_67:

(38, 41311), (Start: 69 @41425 has 1 MA's), (75, 41452), (83, 41506), (89, 41533), (98, 41593), (119, 41683), (124, 41695), (130, 41728), (163, 41845), (174, 41893), (182, 41926), (186, 41962), (195, 42052),

Gene: FelixAlejandro\_51 Start: 46760, Stop: 46038, Start Num: 73

Candidate Starts for FelixAlejandro\_51:

(Start: 73 @46760 has 69 MA's), (78, 46721), (82, 46694), (86, 46661), (88, 46643), (97, 46568), (100, 46553), (122, 46469), (136, 46394), (184, 46193), (185, 46190), (197, 46058),

Gene: Flakey\_46 Start: 45132, Stop: 44410, Start Num: 73

Candidate Starts for Flakey\_46:

(Start: 73 @45132 has 69 MA's), (78, 45093), (82, 45066), (88, 45015), (97, 44940), (100, 44925), (122, 44841), (136, 44766), (173, 44610), (185, 44562), (186, 44532), (197, 44430),

Gene: Forge\_62 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Forge\_62:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Francois\_66 Start: 42774, Stop: 43487, Start Num: 70

Candidate Starts for Francois\_66:

(16, 42540), (43, 42669), (Start: 70 @42774 has 60 MA's), (75, 42801), (84, 42867), (96, 42975), (135, 43125), (147, 43179), (169, 43236), (173, 43287), (174, 43290), (177, 43302), (183, 43329), (184, 43332), (186, 43365), (193, 43458),

Gene: GAL1\_56 Start: 38270, Stop: 38929, Start Num: 68

Candidate Starts for GAL1\_56:

(6, 37952), (10, 37976), (14, 38027), (17, 38060), (27, 38108), (37, 38156), (41, 38177), (60, 38240), (Start: 68 @38270 has 12 MA's), (83, 38354), (111, 38495), (129, 38573), (133, 38588), (141, 38621), (153, 38660), (154, 38663), (160, 38678), (163, 38687), (182, 38768), (189, 38843), (192, 38885), (195, 38900),

Gene: GMA7\_38 Start: 39507, Stop: 38788, Start Num: 73

Candidate Starts for GMA7\_38:

(Start: 73 @39507 has 69 MA's), (82, 39441), (86, 39408), (88, 39390), (97, 39315), (100, 39300), (105, 39291), (122, 39216), (136, 39141),

Gene: GTE7\_37 Start: 39538, Stop: 38819, Start Num: 73

Candidate Starts for GTE7\_37:

(Start: 73 @39538 has 69 MA's), (78, 39499), (82, 39472), (86, 39439), (88, 39421), (97, 39346), (100, 39331), (105, 39322), (122, 39247), (136, 39172),

Gene: GalacticEye\_46 Start: 46382, Stop: 45663, Start Num: 73

Candidate Starts for GalacticEye\_46:

(Start: 73 @46382 has 69 MA's), (82, 46316), (88, 46265), (89, 46259), (100, 46175), (111, 46130), (122, 46091), (136, 46016), (185, 45812),

Gene: Galadriel\_11 Start: 4990, Stop: 5733, Start Num: 68

Candidate Starts for Galadriel\_11:

(Start: 68 @4990 has 12 MA's), (77, 5050), (78, 5053), (84, 5089), (92, 5155), (97, 5200), (101, 5218), (105, 5224), (120, 5302), (135, 5362), (139, 5386), (143, 5395), (150, 5428), (162, 5467), (165, 5476), (174, 5536), (181, 5557), (183, 5575), (184, 5578), (188, 5629), (191, 5677),

Gene: Gancho\_66 Start: 44643, Stop: 45305, Start Num: 70

Candidate Starts for Gancho\_66:

(5, 44301), (14, 44382), (21, 44427), (22, 44451), (35, 44502), (49, 44556), (Start: 63 @44631 has 19 MA's), (64, 44634), (Start: 70 @44643 has 60 MA's), (75, 44670), (107, 44844), (123, 44922), (124, 44925), (125, 44928), (129, 44952), (132, 44961), (142, 45003), (167, 45087), (171, 45090), (174, 45123), (176, 45129), (177, 45135), (187, 45198), (189, 45234), (191, 45261), (192, 45276), (195, 45285),

Gene: Geralt\_67 Start: 45011, Stop: 45679, Start Num: 63

Candidate Starts for Geralt\_67:

(Start: 63 @45011 has 19 MA's), (75, 45050), (83, 45104), (89, 45131), (98, 45191), (119, 45281), (124, 45293), (130, 45326), (174, 45491), (182, 45524), (186, 45560), (195, 45650),

Gene: Getalong\_67 Start: 41639, Stop: 42277, Start Num: 68

Candidate Starts for Getalong\_67:

(61, 41618), (Start: 68 @41639 has 12 MA's), (75, 41669), (83, 41723), (86, 41750), (111, 41852), (129, 41930), (174, 42083), (195, 42248),

Gene: Giles\_62 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Giles\_62:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Gorko\_46 Start: 44260, Stop: 43538, Start Num: 73



Candidate Starts for Gorko\_46:

(Start: 73 @44260 has 69 MA's), (78, 44221), (82, 44194), (88, 44143), (97, 44068), (100, 44053), (122, 43969), (136, 43894), (173, 43738), (185, 43690), (186, 43660), (197, 43558),

Gene: GourdThymes\_46 Start: 45134, Stop: 44412, Start Num: 73

Candidate Starts for GourdThymes\_46:

(Start: 73 @45134 has 69 MA's), (78, 45095), (82, 45068), (88, 45017), (97, 44942), (100, 44927), (122, 44843), (136, 44768), (173, 44612), (185, 44564), (186, 44534), (197, 44432),

Gene: GrandSlam\_68 Start: 43754, Stop: 44467, Start Num: 70

Candidate Starts for GrandSlam\_68:

(16, 43520), (43, 43649), (Start: 70 @43754 has 60 MA's), (75, 43781), (84, 43847), (127, 44072), (135, 44105), (147, 44159), (169, 44216), (173, 44267), (174, 44270), (183, 44309), (186, 44345),

Gene: Gravaillia\_63 Start: 44924, Stop: 45586, Start Num: 70

Candidate Starts for Gravaillia\_63:

(5, 44582), (14, 44663), (21, 44708), (22, 44732), (35, 44783), (49, 44837), (Start: 63 @44912 has 19 MA's), (64, 44915), (Start: 70 @44924 has 60 MA's), (75, 44951), (107, 45125), (123, 45203), (125, 45209), (129, 45233), (132, 45242), (142, 45284), (167, 45368), (171, 45371), (174, 45404), (176, 45410), (177, 45416), (187, 45479), (189, 45515), (191, 45542), (192, 45557), (195, 45566),

Gene: Gudmit\_63 Start: 37864, Stop: 38583, Start Num: 68

Candidate Starts for Gudmit\_63:

(Start: 68 @37864 has 12 MA's), (75, 37894), (78, 37924), (80, 37936), (110, 38116), (128, 38197), (135, 38218), (173, 38380), (177, 38395), (184, 38425), (195, 38554),

Gene: Guillaume\_46 Start: 46432, Stop: 45713, Start Num: 73

Candidate Starts for Guillaume\_46:

(Start: 73 @46432 has 69 MA's), (82, 46366), (88, 46315), (89, 46309), (100, 46225), (111, 46180), (122, 46141), (136, 46066), (138, 46057), (185, 45862),

Gene: HH92\_66 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for HH92\_66:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Hadrien\_66 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Hadrien\_66:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Hail\_62 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Hail\_62:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Hail2Pitt\_45 Start: 46908, Stop: 46189, Start Num: 73

Candidate Starts for Hail2Pitt\_45:

(Start: 73 @46908 has 69 MA's), (82, 46842), (88, 46791), (89, 46785), (100, 46701), (111, 46656), (122, 46617), (136, 46542), (138, 46533), (185, 46338),

Gene: Hamood\_68 Start: 43754, Stop: 44467, Start Num: 70

Candidate Starts for Hamood\_68:

(16, 43520), (43, 43649), (Start: 70 @43754 has 60 MA's), (75, 43781), (84, 43847), (127, 44072), (135, 44105), (147, 44159), (169, 44216), (173, 44267), (174, 44270), (183, 44309), (186, 44345),

Gene: Hamulus\_73 Start: 46052, Stop: 46708, Start Num: 70

Candidate Starts for Hamulus\_73:

(34, 45920), (Start: 65 @46043 has 6 MA's), (Start: 70 @46052 has 60 MA's), (71, 46058), (83, 46133), (89, 46160), (98, 46220), (119, 46310), (124, 46322), (130, 46355), (133, 46370), (174, 46520), (182, 46553), (186, 46589), (195, 46679),

Gene: Harambe\_46 Start: 46699, Stop: 45980, Start Num: 73

Candidate Starts for Harambe\_46:

(Start: 73 @46699 has 69 MA's), (82, 46633), (88, 46582), (89, 46576), (100, 46492), (111, 46447), (118, 46414), (122, 46408), (136, 46333), (185, 46129),

Gene: HayZem\_48 Start: 45290, Stop: 44571, Start Num: 73

Candidate Starts for HayZem\_48:

(Start: 73 @45290 has 69 MA's), (78, 45251), (82, 45224), (86, 45191), (88, 45173), (97, 45098), (100, 45083), (105, 45074), (122, 44999), (136, 44924),

Gene: Hello\_46 Start: 46661, Stop: 45942, Start Num: 73

Candidate Starts for Hello\_46:

(Start: 73 @46661 has 69 MA's), (82, 46595), (88, 46544), (89, 46538), (100, 46454), (111, 46409), (122, 46370), (136, 46295), (185, 46091),

Gene: Hollow\_43 Start: 45997, Stop: 45281, Start Num: 73

Candidate Starts for Hollow\_43:

(Start: 73 @45997 has 69 MA's), (76, 45982), (88, 45880), (100, 45790), (103, 45784), (136, 45631), (152, 45568), (164, 45538), (173, 45475), (192, 45316),

Gene: Hotorobo\_46 Start: 45139, Stop: 44417, Start Num: 73

Candidate Starts for Hotorobo\_46:

(Start: 73 @45139 has 69 MA's), (78, 45100), (82, 45073), (88, 45022), (97, 44947), (100, 44932), (122, 44848), (136, 44773), (173, 44617), (185, 44569), (186, 44539), (197, 44437),

Gene: Hyzer\_73 Start: 48832, Stop: 49506, Start Num: 70

Candidate Starts for Hyzer\_73:

(Start: 68 @48829 has 12 MA's), (Start: 70 @48832 has 60 MA's), (75, 48859), (83, 48913), (86, 48940), (102, 49021), (107, 49030), (129, 49132), (149, 49216), (174, 49318), (184, 49354), (190, 49432), (195, 49477),

Gene: IMpilo\_63 Start: 41773, Stop: 42438, Start Num: 65

Candidate Starts for IMpilo\_63:

(52, 41719), (Start: 65 @41773 has 6 MA's), (Start: 70 @41782 has 60 MA's), (71, 41788), (83, 41863), (89, 41890), (98, 41950), (119, 42040), (124, 42052), (130, 42085), (133, 42100), (174, 42250), (182, 42283), (186, 42319), (195, 42409),

Gene: lbhubesi\_66 Start: 42310, Stop: 42972, Start Num: 70

Candidate Starts for Ibhubesj\_66:

(23, 42133), (25, 42139), (28, 42148), (55, 42253), (Start: 70 @42310 has 60 MA's), (83, 42391), (126, 42583), (136, 42643), (173, 42781), (174, 42784), (189, 42892), (192, 42934), (195, 42943),

Gene: Inventum\_72 Start: 45927, Stop: 46595, Start Num: 63

Candidate Starts for Inventum\_72:

(Start: 63 @45927 has 19 MA's), (75, 45966), (83, 46020), (89, 46047), (98, 46107), (119, 46197), (124, 46209), (130, 46242), (174, 46407), (182, 46440), (186, 46476), (195, 46566),

Gene: Island3\_55 Start: 37346, Stop: 37996, Start Num: 70

Candidate Starts for Island3\_55:

(Start: 70 @37346 has 60 MA's), (102, 37532), (111, 37568), (114, 37583), (116, 37586), (141, 37694), (166, 37760), (176, 37814), (184, 37844), (195, 37967),

Gene: JalFarm20\_79 Start: 46369, Stop: 47022, Start Num: 70

Candidate Starts for JalFarm20\_79:

(38, 46255), (Start: 70 @46369 has 60 MA's), (83, 46450), (89, 46477), (94, 46516), (111, 46588), (119, 46624), (130, 46669), (145, 46732), (173, 46831), (174, 46834), (182, 46867), (195, 46993),

Gene: Jams\_46 Start: 45870, Stop: 45151, Start Num: 73

Candidate Starts for Jams\_46:

(Start: 73 @45870 has 69 MA's), (82, 45804), (87, 45762), (88, 45753), (89, 45747), (100, 45663), (111, 45618), (118, 45585), (122, 45579), (136, 45504), (185, 45300),

Gene: Jellybones\_49 Start: 46241, Stop: 45519, Start Num: 73

Candidate Starts for Jellybones\_49:

(Start: 73 @46241 has 69 MA's), (78, 46202), (82, 46175), (86, 46142), (88, 46124), (97, 46049), (100, 46034), (122, 45950), (136, 45875), (173, 45719), (185, 45671), (186, 45641), (197, 45539),

Gene: Jinkies\_19 Start: 14524, Stop: 15195, Start Num: 70

Candidate Starts for Jinkies\_19:

(44, 14434), (67, 14518), (Start: 70 @14524 has 60 MA's), (83, 14608), (86, 14635), (102, 14701), (116, 14752), (141, 14863), (174, 15013), (175, 15016), (182, 15046), (191, 15148), (192, 15163),

Gene: JoeyJr\_74 Start: 46916, Stop: 47584, Start Num: 63

Candidate Starts for JoeyJr\_74:

(Start: 63 @46916 has 19 MA's), (75, 46955), (83, 47009), (89, 47036), (98, 47096), (119, 47186), (124, 47198), (130, 47231), (174, 47396), (182, 47429), (186, 47465), (195, 47555),

Gene: John316\_50 Start: 46297, Stop: 45575, Start Num: 73

Candidate Starts for John316\_50:

(Start: 73 @46297 has 69 MA's), (78, 46258), (82, 46231), (88, 46180), (97, 46105), (100, 46090), (122, 46006), (136, 45931), (173, 45775), (185, 45727), (186, 45697), (197, 45595),

Gene: Jormungandr\_46 Start: 46414, Stop: 45695, Start Num: 73

Candidate Starts for Jormungandr\_46:

(Start: 73 @46414 has 69 MA's), (82, 46348), (88, 46297), (89, 46291), (100, 46207), (111, 46162), (122, 46123), (136, 46048), (138, 46039), (185, 45844),

Gene: Journey\_54 Start: 35843, Stop: 36610, Start Num: 36

Candidate Starts for Journey\_54:

(Start: 36 @35843 has 1 MA's), (40, 35852), (47, 35879), (Start: 68 @35945 has 12 MA's), (75, 35975), (83, 36029), (136, 36281), (174, 36422), (177, 36434), (182, 36455), (195, 36581),

Gene: Juice456\_67 Start: 44325, Stop: 44978, Start Num: 70

Candidate Starts for Juice456\_67:

(38, 44211), (Start: 70 @44325 has 60 MA's), (83, 44406), (89, 44433), (94, 44472), (111, 44544), (119, 44580), (130, 44625), (145, 44688), (173, 44787), (174, 44790), (182, 44823), (195, 44949),

Gene: Jung\_56 Start: 37454, Stop: 38110, Start Num: 70

Candidate Starts for Jung\_56:

(Start: 65 @37445 has 6 MA's), (Start: 70 @37454 has 60 MA's), (71, 37460), (83, 37535), (89, 37562), (98, 37622), (119, 37712), (124, 37724), (130, 37757), (174, 37922), (182, 37955), (186, 37991), (195, 38081), (198, 38102),

Gene: Juniormint\_55 Start: 36637, Stop: 37290, Start Num: 65

Candidate Starts for Juniormint\_55:

(Start: 42 @36556 has 1 MA's), (45, 36565), (54, 36592), (Start: 65 @36637 has 6 MA's), (75, 36670), (89, 36751), (98, 36811), (119, 36901), (124, 36913), (130, 36946), (174, 37111), (182, 37144), (186, 37180), (191, 37246), (195, 37270),

Gene: Juniper1\_67 Start: 44073, Stop: 44747, Start Num: 70

Candidate Starts for Juniper1\_67:

(57, 44025), (Start: 70 @44073 has 60 MA's), (75, 44100), (83, 44154), (91, 44202), (107, 44280), (111, 44304), (115, 44319), (117, 44322), (151, 44475), (160, 44496), (161, 44499), (178, 44574), (186, 44628), (195, 44718),

Gene: Kamashten\_10 Start: 5311, Stop: 6054, Start Num: 68

Candidate Starts for Kamashten\_10:

(Start: 68 @5311 has 12 MA's), (77, 5371), (78, 5374), (84, 5410), (92, 5476), (97, 5521), (101, 5539), (105, 5545), (120, 5623), (135, 5683), (139, 5707), (143, 5716), (150, 5749), (162, 5788), (165, 5797), (174, 5857), (181, 5878), (183, 5896), (184, 5899), (188, 5950), (191, 5998),

Gene: Kaseim\_46 Start: 45855, Stop: 45136, Start Num: 73

Candidate Starts for Kaseim\_46:

(Start: 73 @45855 has 69 MA's), (82, 45789), (87, 45747), (88, 45738), (89, 45732), (100, 45648), (111, 45603), (118, 45570), (122, 45564), (136, 45489), (185, 45285),

Gene: Katyusha\_42 Start: 45651, Stop: 44935, Start Num: 73

Candidate Starts for Katyusha\_42:

(Start: 73 @45651 has 69 MA's), (76, 45636), (88, 45534), (100, 45444), (103, 45438), (136, 45285), (152, 45222), (164, 45192), (192, 44970),

Gene: Kinbote\_65 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Kinbote\_65:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: KingMidas\_73 Start: 46330, Stop: 46998, Start Num: 63

Candidate Starts for KingMidas\_73:

(Start: 63 @46330 has 19 MA's), (75, 46369), (83, 46423), (89, 46450), (98, 46510), (119, 46600), (124, 46612), (130, 46645), (174, 46810), (182, 46843), (186, 46879), (195, 46969),

Gene: KristaRAM\_69 Start: 44694, Stop: 45347, Start Num: 70

Candidate Starts for KristaRAM\_69:

(38, 44580), (Start: 70 @44694 has 60 MA's), (83, 44775), (89, 44802), (94, 44841), (111, 44913), (119, 44949), (130, 44994), (145, 45057), (173, 45156), (174, 45159), (182, 45192), (195, 45318),

Gene: Kvothe\_42 Start: 45550, Stop: 44834, Start Num: 73

Candidate Starts for Kvothe\_42:

(Start: 73 @45550 has 69 MA's), (76, 45535), (88, 45433), (100, 45343), (103, 45337), (136, 45184), (152, 45121), (164, 45091), (192, 44869),

Gene: Lahirium\_46 Start: 46936, Stop: 46217, Start Num: 73

Candidate Starts for Lahirium\_46:

(Start: 73 @46936 has 69 MA's), (82, 46870), (88, 46819), (89, 46813), (100, 46729), (111, 46684), (122, 46645), (136, 46570), (138, 46561), (185, 46366),

Gene: Leperchaun\_72 Start: 46150, Stop: 46818, Start Num: 63

Candidate Starts for Leperchaun\_72:

(Start: 63 @46150 has 19 MA's), (75, 46189), (83, 46243), (89, 46270), (98, 46330), (119, 46420), (124, 46432), (130, 46465), (174, 46630), (182, 46663), (186, 46699), (195, 46789),

Gene: Lidong\_46 Start: 46670, Stop: 45951, Start Num: 73

Candidate Starts for Lidong\_46:

(Start: 73 @46670 has 69 MA's), (82, 46604), (87, 46562), (88, 46553), (89, 46547), (100, 46463), (111, 46418), (118, 46385), (122, 46379), (136, 46304), (185, 46100),

Gene: LilHazelnut\_67 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for LilHazelnut\_67:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Linetti\_47 Start: 45752, Stop: 45030, Start Num: 73

Candidate Starts for Linetti\_47:

(62, 45794), (Start: 73 @45752 has 69 MA's), (78, 45713), (82, 45686), (88, 45635), (97, 45560), (100, 45545), (122, 45461), (136, 45386), (173, 45230), (185, 45182), (186, 45152), (197, 45050),

Gene: LittleShirley\_66 Start: 43146, Stop: 43808, Start Num: 70

Candidate Starts for LittleShirley\_66:

(23, 42969), (Start: 70 @43146 has 60 MA's), (75, 43173), (83, 43227), (136, 43479), (174, 43620), (177, 43632), (182, 43653), (195, 43779),

Gene: LittleShirley\_73 Start: 45098, Stop: 45754, Start Num: 70

Candidate Starts for LittleShirley\_73:

(34, 44966), (Start: 65 @45089 has 6 MA's), (Start: 70 @45098 has 60 MA's), (71, 45104), (83, 45179), (89, 45206), (98, 45266), (119, 45356), (124, 45368), (130, 45401), (133, 45416), (174, 45566), (182, 45599), (186, 45635), (195, 45725),

Gene: Lizzo\_46 Start: 45128, Stop: 44406, Start Num: 73

Candidate Starts for Lizzo\_46:

(Start: 73 @45128 has 69 MA's), (78, 45089), (82, 45062), (88, 45011), (97, 44936), (100, 44921), (122, 44837), (136, 44762), (173, 44606), (185, 44558), (186, 44528), (197, 44426),

Gene: Love\_11 Start: 5310, Stop: 6053, Start Num: 68

Candidate Starts for Love\_11:

(Start: 68 @5310 has 12 MA's), (77, 5370), (78, 5373), (84, 5409), (92, 5475), (97, 5520), (101, 5538), (105, 5544), (120, 5622), (135, 5682), (139, 5706), (143, 5715), (150, 5748), (162, 5787), (165, 5796), (174, 5856), (181, 5877), (183, 5895), (184, 5898), (188, 5949), (191, 5997),

Gene: Luke\_66 Start: 44871, Stop: 45533, Start Num: 70

Candidate Starts for Luke\_66:

(5, 44529), (14, 44610), (21, 44655), (22, 44679), (35, 44730), (49, 44784), (Start: 63 @44859 has 19 MA's), (64, 44862), (Start: 70 @44871 has 60 MA's), (75, 44898), (107, 45072), (123, 45150), (125, 45156), (129, 45180), (132, 45189), (142, 45231), (167, 45315), (171, 45318), (174, 45351), (176, 45357), (177, 45363), (187, 45426), (189, 45462), (191, 45489), (192, 45504), (195, 45513),

Gene: Luker\_47 Start: 46889, Stop: 46170, Start Num: 73

Candidate Starts for Luker\_47:

(Start: 73 @46889 has 69 MA's), (82, 46823), (88, 46772), (89, 46766), (100, 46682), (111, 46637), (122, 46598), (136, 46523), (185, 46319),

Gene: Luna22\_62 Start: 44900, Stop: 45562, Start Num: 70

Candidate Starts for Luna22\_62:

(5, 44558), (14, 44639), (21, 44684), (22, 44708), (35, 44759), (49, 44813), (Start: 63 @44888 has 19 MA's), (64, 44891), (Start: 70 @44900 has 60 MA's), (75, 44927), (107, 45101), (123, 45179), (125, 45185), (129, 45209), (132, 45218), (142, 45260), (167, 45344), (171, 45347), (174, 45380), (176, 45386), (177, 45392), (187, 45455), (189, 45491), (191, 45518), (192, 45533), (195, 45542),

Gene: Marker\_68 Start: 42811, Stop: 43545, Start Num: 70

Candidate Starts for Marker\_68:

(30, 42634), (31, 42640), (32, 42649), (58, 42754), (Start: 70 @42811 has 60 MA's), (78, 42868), (79, 42871), (80, 42880), (84, 42904), (92, 42970), (97, 43015), (106, 43042), (108, 43048), (116, 43096), (120, 43117), (134, 43174), (135, 43177), (139, 43201), (147, 43237), (150, 43243), (156, 43270), (180, 43369), (184, 43393), (186, 43426), (194, 43516),

Gene: Minos\_47 Start: 46412, Stop: 45693, Start Num: 73

Candidate Starts for Minos\_47:

(Start: 73 @46412 has 69 MA's), (82, 46346), (87, 46304), (88, 46295), (89, 46289), (100, 46205), (111, 46160), (118, 46127), (122, 46121), (136, 46046), (185, 45842),

Gene: Monty\_45 Start: 44278, Stop: 43556, Start Num: 73

Candidate Starts for Monty\_45:

(Start: 73 @44278 has 69 MA's), (78, 44239), (82, 44212), (88, 44161), (97, 44086), (100, 44071), (122, 43987), (136, 43912), (173, 43756), (185, 43708), (186, 43678), (197, 43576),

Gene: MoontowerMania\_8 Start: 4709, Stop: 5452, Start Num: 68

Candidate Starts for MoontowerMania\_8:

(Start: 68 @4709 has 12 MA's), (77, 4769), (78, 4772), (84, 4808), (92, 4874), (97, 4919), (101, 4937), (105, 4943), (120, 5021), (135, 5081), (139, 5105), (143, 5114), (150, 5147), (162, 5186), (165, 5195), (174, 5255), (181, 5276), (183, 5294), (184, 5297), (188, 5348), (191, 5396),

Gene: MrWormie\_46 Start: 45573, Stop: 44854, Start Num: 73

Candidate Starts for MrWormie\_46:

(Start: 73 @45573 has 69 MA's), (82, 45507), (87, 45465), (88, 45456), (89, 45450), (100, 45366), (111, 45321), (118, 45288), (122, 45282), (136, 45207), (185, 45003),

Gene: Msay19\_51 Start: 46751, Stop: 46029, Start Num: 73

Candidate Starts for Msay19\_51:

(Start: 73 @46751 has 69 MA's), (78, 46712), (82, 46685), (88, 46634), (97, 46559), (100, 46544), (122, 46460), (136, 46385), (173, 46229), (185, 46181), (186, 46151), (197, 46049),

Gene: Mulch\_66 Start: 42588, Stop: 43298, Start Num: 70

Candidate Starts for Mulch\_66:

(16, 42354), (43, 42483), (Start: 70 @42588 has 60 MA's), (75, 42615), (84, 42681), (127, 42906), (135, 42939), (147, 42993), (169, 43050), (173, 43101), (174, 43104), (186, 43179),

Gene: Nadeem\_66 Start: 42576, Stop: 43286, Start Num: 70

Candidate Starts for Nadeem\_66:

(16, 42342), (43, 42471), (Start: 70 @42576 has 60 MA's), (75, 42603), (84, 42669), (127, 42894), (135, 42927), (147, 42981), (169, 43038), (173, 43089), (174, 43092), (186, 43167),

Gene: NancyRae\_65 Start: 42526, Stop: 43239, Start Num: 70

Candidate Starts for NancyRae\_65:

(16, 42292), (43, 42421), (Start: 70 @42526 has 60 MA's), (75, 42553), (84, 42619), (127, 42844), (135, 42877), (147, 42931), (169, 42988), (173, 43039), (174, 43042), (186, 43117),

Gene: Natkenzie\_89 Start: 59142, Stop: 59831, Start Num: 70

Candidate Starts for Natkenzie\_89:

(9, 58827), (39, 59016), (50, 59061), (56, 59085), (Start: 70 @59142 has 60 MA's), (83, 59223), (89, 59274), (111, 59400), (121, 59439), (137, 59517), (142, 59529), (146, 59550), (159, 59586), (179, 59667),

Gene: Neoevie\_46 Start: 46675, Stop: 45956, Start Num: 73

Candidate Starts for Neoevie\_46:

(Start: 73 @46675 has 69 MA's), (82, 46609), (88, 46558), (89, 46552), (100, 46468), (111, 46423), (122, 46384), (136, 46309), (185, 46105),

Gene: Newt\_47 Start: 46903, Stop: 46184, Start Num: 73

Candidate Starts for Newt\_47:

(Start: 73 @46903 has 69 MA's), (82, 46837), (87, 46795), (88, 46786), (89, 46780), (100, 46696), (111, 46651), (118, 46618), (122, 46612), (136, 46537), (185, 46333),

Gene: Niagara\_42 Start: 45629, Stop: 44913, Start Num: 73

Candidate Starts for Niagara\_42:

(Start: 73 @45629 has 69 MA's), (76, 45614), (88, 45512), (100, 45422), (103, 45416), (136, 45263), (152, 45200), (164, 45170), (192, 44948),

Gene: Nimbo\_66 Start: 45014, Stop: 45682, Start Num: 63

Candidate Starts for Nimbo\_66:

(Start: 63 @45014 has 19 MA's), (75, 45053), (83, 45107), (89, 45134), (98, 45194), (119, 45284), (124, 45296), (130, 45329), (174, 45494), (182, 45527), (186, 45563), (195, 45653),

Gene: Nimi13\_46 Start: 46421, Stop: 45702, Start Num: 73

Candidate Starts for Nimi13\_46:

(Start: 73 @46421 has 69 MA's), (82, 46355), (87, 46313), (88, 46304), (89, 46298), (100, 46214), (111, 46169), (118, 46136), (122, 46130), (136, 46055), (185, 45851),

Gene: OBUpride\_67 Start: 44912, Stop: 45574, Start Num: 70

Candidate Starts for OBUpride\_67:

(5, 44570), (14, 44651), (21, 44696), (22, 44720), (35, 44771), (49, 44825), (Start: 63 @44900 has 19 MA's), (64, 44903), (Start: 70 @44912 has 60 MA's), (75, 44939), (107, 45113), (123, 45191), (125, 45197), (129, 45221), (132, 45230), (142, 45272), (167, 45356), (171, 45359), (174, 45392), (176, 45398), (177, 45404), (187, 45467), (189, 45503), (191, 45530), (192, 45545), (195, 45554),

Gene: Ogotogo\_78 Start: 45456, Stop: 46199, Start Num: 42

Candidate Starts for Ogotogo\_78:

(Start: 42 @45456 has 1 MA's), (45, 45465), (54, 45492), (Start: 65 @45537 has 6 MA's), (75, 45570), (83, 45624), (89, 45651), (98, 45711), (119, 45801), (124, 45813), (130, 45846), (174, 46011), (182, 46044), (186, 46080), (195, 46170),

Gene: Ogotogo\_72 Start: 43150, Stop: 43812, Start Num: 70

Candidate Starts for Ogotogo\_72:

(38, 43036), (Start: 70 @43150 has 60 MA's), (75, 43177), (83, 43231), (136, 43483), (174, 43624), (182, 43657), (195, 43783),

Gene: Oksu\_70 Start: 45599, Stop: 46261, Start Num: 69

Candidate Starts for Oksu\_70:

(3, 45245), (55, 45542), (Start: 69 @45599 has 1 MA's), (75, 45626), (83, 45680), (85, 45686), (86, 45707), (87, 45716), (90, 45725), (129, 45911), (133, 45926), (153, 45998), (155, 46007), (158, 46013), (161, 46019), (173, 46070), (174, 46073), (189, 46181), (195, 46232),

Gene: OldBen\_71 Start: 46406, Stop: 47074, Start Num: 63

Candidate Starts for OldBen\_71:

(Start: 63 @46406 has 19 MA's), (75, 46445), (83, 46499), (89, 46526), (98, 46586), (119, 46676), (124, 46688), (130, 46721), (174, 46886), (182, 46919), (186, 46955), (195, 47045),

Gene: PHappiness\_74 Start: 47235, Stop: 47903, Start Num: 63

Candidate Starts for PHappiness\_74:

(Start: 63 @47235 has 19 MA's), (75, 47274), (83, 47328), (89, 47355), (98, 47415), (119, 47505), (124, 47517), (130, 47550), (174, 47715), (182, 47748), (186, 47784), (195, 47874),

Gene: Parada\_66 Start: 42588, Stop: 43298, Start Num: 70

Candidate Starts for Parada\_66:

(16, 42354), (43, 42483), (Start: 70 @42588 has 60 MA's), (75, 42615), (84, 42681), (127, 42906), (135, 42939), (147, 42993), (169, 43050), (173, 43101), (174, 43104), (186, 43179),

Gene: Paries\_10 Start: 4991, Stop: 5734, Start Num: 68

Candidate Starts for Paries\_10:

(Start: 68 @4991 has 12 MA's), (77, 5051), (78, 5054), (84, 5090), (92, 5156), (97, 5201), (101, 5219), (105, 5225), (120, 5303), (135, 5363), (139, 5387), (143, 5396), (150, 5429), (162, 5468), (165, 5477), (174, 5537), (181, 5558), (183, 5576), (184, 5579), (188, 5630), (191, 5678),

Gene: PhesterPhotato\_76 Start: 45973, Stop: 46719, Start Num: 63

Candidate Starts for PhesterPhotato\_76:

(Start: 63 @45973 has 19 MA's), (75, 46012), (79, 46045), (80, 46054), (92, 46144), (97, 46189), (106, 46216), (108, 46222), (116, 46270), (120, 46291), (135, 46351), (139, 46375), (147, 46411), (150, 46417), (156, 46444), (170, 46483), (184, 46567), (194, 46690),

Gene: Philon9\_44 Start: 46927, Stop: 46214, Start Num: 73

Candidate Starts for Philon9\_44:

(19, 47170), (Start: 73 @46927 has 69 MA's), (76, 46912), (88, 46810), (100, 46720), (136, 46561), (152, 46498), (164, 46468), (185, 46357), (186, 46327), (192, 46246),



Gene: PhorbesPhlower\_52 Start: 33687, Stop: 34304, Start Num: 68  
Candidate Starts for PhorbesPhlower\_52:  
(Start: 68 @33687 has 12 MA's), (78, 33747), (83, 33771), (101, 33840), (116, 33888), (125, 33921),  
(140, 33990), (144, 33999), (172, 34104), (174, 34113), (195, 34278),

Gene: PierreThree\_46 Start: 45620, Stop: 44898, Start Num: 73  
Candidate Starts for PierreThree\_46:  
(Start: 73 @45620 has 69 MA's), (78, 45581), (82, 45554), (88, 45503), (97, 45428), (100, 45413),  
(122, 45329), (136, 45254), (173, 45098), (185, 45050), (186, 45020), (197, 44918),

Gene: Pimento\_69 Start: 42707, Stop: 43417, Start Num: 70  
Candidate Starts for Pimento\_69:  
(16, 42473), (43, 42602), (Start: 70 @42707 has 60 MA's), (75, 42734), (84, 42800), (127, 43025),  
(135, 43058), (147, 43112), (169, 43169), (173, 43220), (174, 43223), (183, 43262), (186, 43298),

Gene: Poenanya\_77 Start: 47104, Stop: 47772, Start Num: 63  
Candidate Starts for Poenanya\_77:  
(Start: 63 @47104 has 19 MA's), (75, 47143), (83, 47197), (89, 47224), (98, 47284), (119, 47374),  
(124, 47386), (130, 47419), (174, 47584), (182, 47617), (186, 47653), (195, 47743),

Gene: PokyPuppy\_45 Start: 45563, Stop: 44841, Start Num: 73  
Candidate Starts for PokyPuppy\_45:  
(Start: 73 @45563 has 69 MA's), (78, 45524), (86, 45464), (88, 45446), (97, 45371), (100, 45356),  
(122, 45272), (136, 45197), (173, 45041), (185, 44993), (186, 44963), (197, 44861),

Gene: Poland\_51 Start: 46730, Stop: 46008, Start Num: 73  
Candidate Starts for Poland\_51:  
(Start: 73 @46730 has 69 MA's), (78, 46691), (82, 46664), (88, 46613), (97, 46538), (100, 46523),  
(122, 46439), (136, 46364), (173, 46208), (185, 46160), (186, 46130), (197, 46028),

Gene: Polka14\_78 Start: 47894, Stop: 48562, Start Num: 63  
Candidate Starts for Polka14\_78:  
(Start: 63 @47894 has 19 MA's), (75, 47933), (83, 47987), (89, 48014), (98, 48074), (119, 48164),  
(124, 48176), (130, 48209), (174, 48374), (182, 48407), (186, 48443), (195, 48533),

Gene: Polkaroo\_62 Start: 41192, Stop: 41851, Start Num: 66  
Candidate Starts for Polkaroo\_62:  
(Start: 42 @41102 has 1 MA's), (45, 41111), (66, 41192), (75, 41222), (83, 41276), (89, 41303), (98,  
41363), (119, 41453), (124, 41465), (130, 41498), (133, 41513), (174, 41663), (182, 41696), (186,  
41732), (195, 41822),

Gene: Rem711\_72 Start: 44535, Stop: 45203, Start Num: 70  
Candidate Starts for Rem711\_72:  
(1, 44103), (4, 44193), (11, 44235), (12, 44241), (13, 44256), (29, 44367), (57, 44487), (Start: 70  
@44535 has 60 MA's), (75, 44562), (83, 44616), (141, 44898), (166, 44967), (189, 45120),

Gene: RemRem\_47 Start: 44268, Stop: 43546, Start Num: 73  
Candidate Starts for RemRem\_47:  
(Start: 73 @44268 has 69 MA's), (78, 44229), (82, 44202), (88, 44151), (97, 44076), (100, 44061),  
(122, 43977), (136, 43902), (173, 43746), (185, 43698), (186, 43668), (197, 43566),

Gene: RitaG\_74 Start: 47037, Stop: 47705, Start Num: 63

Candidate Starts for RitaG\_74:

(Start: 63 @47037 has 19 MA's), (75, 47076), (83, 47130), (89, 47157), (98, 47217), (119, 47307), (124, 47319), (130, 47352), (174, 47517), (182, 47550), (186, 47586), (195, 47676),

Gene: RoyalG\_47 Start: 45104, Stop: 44382, Start Num: 73

Candidate Starts for RoyalG\_47:

(Start: 73 @45104 has 69 MA's), (78, 45065), (88, 44987), (97, 44912), (100, 44897), (122, 44813), (136, 44738), (185, 44534), (186, 44504), (197, 44402),

Gene: Sam12\_46 Start: 44268, Stop: 43546, Start Num: 73

Candidate Starts for Sam12\_46:

(Start: 73 @44268 has 69 MA's), (78, 44229), (82, 44202), (88, 44151), (97, 44076), (100, 44061), (122, 43977), (136, 43902), (173, 43746), (185, 43698), (186, 43668), (197, 43566),

Gene: Sampson\_91 Start: 59293, Stop: 59982, Start Num: 70

Candidate Starts for Sampson\_91:

(9, 58978), (39, 59167), (50, 59212), (56, 59236), (Start: 70 @59293 has 60 MA's), (83, 59374), (89, 59425), (111, 59551), (121, 59590), (137, 59668), (142, 59680), (146, 59701), (159, 59737), (179, 59818),

Gene: Sassafras\_75 Start: 45926, Stop: 46594, Start Num: 63

Candidate Starts for Sassafras\_75:

(Start: 63 @45926 has 19 MA's), (75, 45965), (83, 46019), (89, 46046), (98, 46106), (119, 46196), (124, 46208), (130, 46241), (174, 46406), (182, 46439), (186, 46475), (195, 46565),

Gene: Scioto\_89 Start: 59143, Stop: 59832, Start Num: 70

Candidate Starts for Scioto\_89:

(9, 58828), (39, 59017), (50, 59062), (56, 59086), (Start: 70 @59143 has 60 MA's), (83, 59224), (89, 59275), (111, 59401), (121, 59440), (137, 59518), (142, 59530), (146, 59551), (159, 59587), (179, 59668),

Gene: Scottish\_72 Start: 45585, Stop: 46253, Start Num: 63

Candidate Starts for Scottish\_72:

(Start: 63 @45585 has 19 MA's), (75, 45624), (83, 45678), (89, 45705), (98, 45765), (119, 45855), (124, 45867), (130, 45900), (174, 46065), (182, 46098), (186, 46134), (195, 46224),

Gene: Shelley\_46 Start: 45897, Stop: 45178, Start Num: 73

Candidate Starts for Shelley\_46:

(Start: 73 @45897 has 69 MA's), (82, 45831), (87, 45789), (88, 45780), (89, 45774), (100, 45690), (111, 45645), (118, 45612), (122, 45606), (136, 45531), (185, 45327),

Gene: Sidious\_65 Start: 45678, Stop: 46337, Start Num: 68

Candidate Starts for Sidious\_65:

(Start: 68 @45678 has 12 MA's), (83, 45762), (104, 45873), (111, 45903), (129, 45981), (133, 45996), (160, 46086), (163, 46095), (195, 46308),

Gene: Sombrero\_47 Start: 44639, Stop: 43917, Start Num: 73

Candidate Starts for Sombrero\_47:

(Start: 73 @44639 has 69 MA's), (78, 44600), (82, 44573), (86, 44540), (88, 44522), (97, 44447), (100, 44432), (122, 44348), (136, 44273), (184, 44072), (185, 44069), (197, 43937),

Gene: Squibbles\_46 Start: 45131, Stop: 44409, Start Num: 73

Candidate Starts for Squibbles\_46:

(Start: 73 @45131 has 69 MA's), (78, 45092), (82, 45065), (88, 45014), (97, 44939), (100, 44924), (122, 44840), (136, 44765), (173, 44609), (185, 44561), (186, 44531), (197, 44429),

Gene: SteveFrench\_46 Start: 45344, Stop: 44622, Start Num: 73

Candidate Starts for SteveFrench\_46:

(Start: 73 @45344 has 69 MA's), (78, 45305), (88, 45227), (97, 45152), (100, 45137), (122, 45053), (136, 44978), (185, 44774), (186, 44744), (197, 44642),

Gene: StevieRay\_65 Start: 41652, Stop: 42314, Start Num: 65

Candidate Starts for StevieRay\_65:

(Start: 65 @41652 has 6 MA's), (75, 41685), (83, 41739), (89, 41766), (98, 41826), (119, 41916), (124, 41928), (130, 41961), (174, 42126), (182, 42159), (186, 42195), (195, 42285),

Gene: Sticker17\_46 Start: 46412, Stop: 45693, Start Num: 73

Candidate Starts for Sticker17\_46:

(Start: 73 @46412 has 69 MA's), (82, 46346), (88, 46295), (89, 46289), (100, 46205), (111, 46160), (122, 46121), (136, 46046), (138, 46037), (185, 45842),

Gene: Teal\_46 Start: 46880, Stop: 46161, Start Num: 73

Candidate Starts for Teal\_46:

(Start: 73 @46880 has 69 MA's), (82, 46814), (87, 46772), (88, 46763), (89, 46757), (100, 46673), (111, 46628), (118, 46595), (122, 46589), (136, 46514), (185, 46310),

Gene: Teatealatte\_43 Start: 45553, Stop: 44837, Start Num: 73

Candidate Starts for Teatealatte\_43:

(Start: 73 @45553 has 69 MA's), (76, 45538), (88, 45436), (100, 45346), (103, 45340), (136, 45187), (152, 45124), (164, 45094), (192, 44872),

Gene: Teech\_43 Start: 45354, Stop: 44638, Start Num: 73

Candidate Starts for Teech\_43:

(Start: 73 @45354 has 69 MA's), (76, 45339), (88, 45237), (100, 45147), (103, 45141), (136, 44988), (152, 44925), (164, 44895), (192, 44673),

Gene: Thespis\_62 Start: 40418, Stop: 41080, Start Num: 65

Candidate Starts for Thespis\_62:

(Start: 42 @40337 has 1 MA's), (45, 40346), (54, 40373), (Start: 65 @40418 has 6 MA's), (75, 40451), (83, 40505), (89, 40532), (98, 40592), (119, 40682), (124, 40694), (130, 40727), (174, 40892), (182, 40925), (186, 40961), (195, 41051),

Gene: Thing3\_10 Start: 5311, Stop: 6054, Start Num: 68

Candidate Starts for Thing3\_10:

(Start: 68 @5311 has 12 MA's), (77, 5371), (78, 5374), (84, 5410), (92, 5476), (97, 5521), (101, 5539), (105, 5545), (120, 5623), (135, 5683), (139, 5707), (143, 5716), (150, 5749), (162, 5788), (165, 5797), (174, 5857), (181, 5878), (183, 5896), (184, 5899), (188, 5950), (191, 5998),

Gene: Tredge\_43 Start: 45553, Stop: 44837, Start Num: 73

Candidate Starts for Tredge\_43:

(Start: 73 @45553 has 69 MA's), (76, 45538), (88, 45436), (100, 45346), (103, 45340), (136, 45187), (152, 45124), (164, 45094), (192, 44872),

Gene: Tweety\_66 Start: 43468, Stop: 44124, Start Num: 70

Candidate Starts for Tweety\_66:

(23, 43291), (28, 43306), (31, 43315), (55, 43411), (Start: 70 @43468 has 60 MA's), (83, 43549), (89, 43576), (98, 43636), (119, 43726), (124, 43738), (130, 43771), (174, 43936), (182, 43969), (186, 44005), (192, 44086), (195, 44095),

Gene: Ubuntu\_67 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Ubuntu\_67:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Verity\_88 Start: 60390, Stop: 61079, Start Num: 70

Candidate Starts for Verity\_88:

(56, 60333), (Start: 70 @60390 has 60 MA's), (83, 60471), (137, 60765), (142, 60777), (179, 60915), (182, 60933), (189, 61008), (190, 61014),

Gene: ViaConlectus\_88 Start: 58070, Stop: 58717, Start Num: 70

Candidate Starts for ViaConlectus\_88:

(33, 57944), (46, 57989), (53, 58013), (Start: 70 @58070 has 60 MA's), (83, 58151), (99, 58247), (111, 58292), (129, 58370), (133, 58385), (154, 58460), (163, 58484), (195, 58697),

Gene: Vitaenoi\_44 Start: 46926, Stop: 46213, Start Num: 73

Candidate Starts for Vitaenoi\_44:

(19, 47169), (Start: 73 @46926 has 69 MA's), (76, 46911), (88, 46809), (100, 46719), (136, 46560), (152, 46497), (164, 46467), (185, 46356), (186, 46326), (192, 46245),

Gene: Webster2\_67 Start: 44904, Stop: 45578, Start Num: 63

Candidate Starts for Webster2\_67:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: WheatThin\_65 Start: 42576, Stop: 43286, Start Num: 70

Candidate Starts for WheatThin\_65:

(16, 42342), (43, 42471), (Start: 70 @42576 has 60 MA's), (75, 42603), (84, 42669), (127, 42894), (135, 42927), (147, 42981), (169, 43038), (173, 43089), (174, 43092), (186, 43167),

Gene: Wishmaker\_62 Start: 44916, Stop: 45578, Start Num: 70

Candidate Starts for Wishmaker\_62:

(5, 44574), (14, 44655), (21, 44700), (22, 44724), (35, 44775), (49, 44829), (Start: 63 @44904 has 19 MA's), (64, 44907), (Start: 70 @44916 has 60 MA's), (75, 44943), (107, 45117), (123, 45195), (125, 45201), (129, 45225), (132, 45234), (142, 45276), (167, 45360), (171, 45363), (174, 45396), (176, 45402), (177, 45408), (187, 45471), (189, 45507), (191, 45534), (192, 45549), (195, 45558),

Gene: Woes\_46 Start: 46931, Stop: 46212, Start Num: 73

Candidate Starts for Woes\_46:

(Start: 73 @46931 has 69 MA's), (82, 46865), (88, 46814), (89, 46808), (100, 46724), (111, 46679), (122, 46640), (136, 46565), (185, 46361),

Gene: Worcestershire\_47 Start: 44270, Stop: 43548, Start Num: 73

Candidate Starts for Worcestershire\_47:

(Start: 73 @44270 has 69 MA's), (78, 44231), (82, 44204), (88, 44153), (97, 44078), (100, 44063),  
(122, 43979), (136, 43904), (173, 43748), (185, 43700), (186, 43670), (197, 43568),

Gene: Zipp\_89 Start: 60361, Stop: 61050, Start Num: 70

Candidate Starts for Zipp\_89:

(56, 60304), (Start: 70 @60361 has 60 MA's), (83, 60442), (137, 60736), (142, 60748), (179, 60886),  
(182, 60904), (189, 60979), (190, 60985),