

Pham 195431

1. ChargePower_32	33	31	88	50	88	88	95	111	117	120	134	148	167	176	201	231	278	283	295
2. Sunhe_30	31	36	82	74	82	100	110	115	120	129	131	140	160	167	176	189	204	222	238
3. Jeeve_35	20	26	33	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
4. Myra_29	31	36	82	74	82	100	110	115	120	129	131	140	160	167	176	189	204	222	238
5. Kimon_28	21	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
6. StarSt_34 + 4	36	36	82	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
7. AN18_34	19	21	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
8. SwinS_30	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
9. Major_30 + 2	36	36	82	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
10. D32_34 + 3	19	21	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
11. Che_33	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
12. Xian_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
13. Odin_30	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
14. Jsquid_30	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
15. Super_30 + 1	36	36	82	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
16. DBQ_34	21	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
17. AN3_34 + 4	22	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
18. Acol_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
19. Kodu_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
20. Jour_31	39	38	36	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
21. Male_32	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
22. Ad2_32	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
23. Ser_30	21	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
24. Pom_34	36	36	82	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
25. Topsy_30	36	36	82	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
26. Puko_33	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
27. Miss_30	21	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
28. Pn_32	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
29. L5_30	21	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
30. Kinn_32	19	21	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
31. Ham_30	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
32. Leo_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
33. Lore_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
34. She_30	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
35. Mor_26	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
36. Flor_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
37. Pun_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
38. Avie_31 + 4	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
39. Tiny_30 + 4	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
40. Kye_31 + 4	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
41. Art_30	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
42. Jay_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
43. Fun_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
44. Max_31 + 2	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
45. Tina_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
46. Pn_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
47. Wn_31	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
48. Avag_31 + 2	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
49. Camp_30	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222
50. Champagne_32	31	36	35	89	82	84	89	100	109	110	115	120	134	148	167	176	189	204	222

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51: Cindradix_30	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
52: Mundrea_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
53: LittleGuy_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
54: NovaPhaseMk_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
55: BellisTerra_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
56: KrenTemulon_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
57: Kratik_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
58: Phobibonne_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
59: Icengan_32	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
60: Morrow_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
61: Scarp_35	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
62: Bnygu2_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
63: OKaVui_32	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
64: AbodeI_30	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
65: Nyxig_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
66: Happiness_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
67: Noote_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
68: Clinton_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
69: Huxley_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
70: Palestino_30	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
71: Brosadon_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
72: Yecel_3_32	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
73: DreamTeamI_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
74: Chara_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
75: Shearreira_31	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
76: Rahajelujan_30	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275
77: Toaka_30	280	36	39	71	88	100	108	131	140	154	173	197	208	280	275

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 195431 Report

This analysis was run 12/09/24 on database version 580.

Pham number 195431 has 187 members, 11 are drafts.

Phages represented in each track:

- Track 1 : Chargerpower\_32
- Track 2 : Sunhee\_30
- Track 3 : Jeeves\_31
- Track 4 : MyraDee\_29
- Track 5 : Kimona\_28
- Track 6 : StarStuff\_34, Tomathan\_34, Duplo\_34, Kerberos\_34
- Track 7 : ANI8\_34
- Track 8 : SwirlSquare\_33
- Track 9 : MajorMajor\_30, Bradman\_30, Quokka\_29
- Track 10 : D32\_34, Naji\_34, D29\_31, Travvers\_34
- Track 11 : Che12\_33
- Track 12 : XianYue\_31
- Track 13 : Odin\_30
- Track 14 : Jsquared\_30
- Track 15 : Superchunk\_30, Caraxes\_30
- Track 16 : DBQu4n\_34
- Track 17 : AN3\_31, AN9\_34, VA6\_31, C3\_29, VC3\_34
- Track 18 : Acolyte\_31
- Track 19 : Koduck\_31
- Track 20 : Journey13\_29
- Track 21 : Malec\_32
- Track 22 : Adzzy\_32
- Track 23 : Serenity\_30
- Track 24 : Pomar16\_34
- Track 25 : TipsytheTRex\_30
- Track 26 : Pukovnik\_33
- Track 27 : MissWhite\_31
- Track 28 : Ph8s\_32
- Track 29 : L5\_31
- Track 30 : Kinmap\_32
- Track 31 : HamSlice\_30, Pipcraft\_31, Eapen\_31, Citius\_31, LappelDuVide\_31, Lunsford\_32, TroyPia\_31, Relief\_31
- Track 32 : LeoAvram\_31
- Track 33 : Lorenzo\_31, ICleared\_31, Mazhar510\_31, PeterPeter\_31, Shaka\_31
- Track 34 : SheldonCooper\_32, BangNhom\_31, Cerulean\_32, LHTSCC\_32, Obama12\_32, Eagle\_30

- Track 35 : Morpher26\_31, Perplexer\_31, Datway\_31, PetiteSangsue\_31, Badger\_31, Backyardigan\_31, Xena\_31, Bumblebee11\_31, AbbysRanger\_31, Katalie136\_31, Cici\_31, Achebe\_30
- Track 36 : Florean\_31, Bartimeaus\_31, Dhanush\_31, Taquarus\_31, CentreCat\_31, Thanksgivukkah\_31, Ruin\_31, TygerBlood\_31, Albee\_31, Flux\_31, Lemur\_31, Commander\_31, LittleB\_31, Chaph\_31, Baby16\_31, Druantia\_31, Bombshell\_31, TiroTheta9\_31, Sabertooth\_31, Blackmoor\_31, Skipitt\_31, Kingmustik0402\_31, Medusa\_31, JoongJeon\_31, Holli\_31, Melvin\_31, Eros\_31, Peaches\_31, Wilbur\_31, Romney\_31, Clarenza\_31, Millski\_30, Burger\_30, Deano\_31, YoSam321\_31, Roosevelt\_31, Wizard007\_31, Phelipe\_31, JetBlade\_31, Connomayer\_31
- Track 37 : Pumbaa\_31
- Track 38 : Avle17\_31, Maverick\_31, Gadost\_31, Alberto7\_32, Bruiser\_30, Koreni\_30, Nemo27\_31, Cocoaberry\_31, Caelakin\_31, Wander\_31, Houdini22\_31, Phacado\_31, Spino\_31
- Track 39 : Tinybot\_30, Rosa24\_30
- Track 40 : Kyee\_31, Annyong\_31, BubbleTrouble\_31, MeeZee\_31, KFPoly\_31
- Track 41 : Arturo\_30
- Track 42 : Jaykayelowell\_31
- Track 43 : Funston\_31, Eris\_30
- Track 44 : Maxo\_31, Sparxx\_31, Kampy\_31
- Track 45 : TinaFeyge\_31, NorthStar\_31
- Track 46 : Phighter1804\_31, DirtyDunning\_31, Ulysses\_30, LochMonster\_31, Iracema64\_32
- Track 47 : Wile\_31
- Track 48 : AvatarAhPeg\_32, Stink\_32, Miramae\_31
- Track 49 : Camperdownii\_30
- Track 50 : ChampagnePapi\_32
- Track 51 : Cindaradix\_30
- Track 52 : Mundrea\_31
- Track 53 : LittleGuy\_31
- Track 54 : NotAPhaseMom\_31
- Track 55 : BellusTerra\_31, Nebs\_31, Polymorphads\_31, Eurydice\_31, Ohfah\_31
- Track 56 : Kremtemulon\_31
- Track 57 : Kratak\_31
- Track 58 : Phontbonne\_31
- Track 59 : Iceman\_32
- Track 60 : Morrow\_31
- Track 61 : Scamp\_31
- Track 62 : Shygu2\_31
- Track 63 : OKaNui\_32
- Track 64 : Abdiel\_30
- Track 65 : Nyxis\_31
- Track 66 : Happiness\_31
- Track 67 : Noelle\_31
- Track 68 : Cintron\_31
- Track 69 : Huxley\_31
- Track 70 : Palestino\_30
- Track 71 : Broseidon\_31
- Track 72 : Yecey3\_32
- Track 73 : DreamTeam1\_31
- Track 74 : Charm\_31
- Track 75 : SheaKeira\_31
- Track 76 : Rahalelujah\_30

- Track 77 : Toaka\_30

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

The start number called the most often in the published annotations is 4, it was called in 138 of the 176 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AbbysRanger\_31, Abdiel\_30, Achebe\_30, Albee\_31, Alberto7\_32, Annyong\_31, Arturo\_30, AvatarAhPeg\_32, Avle17\_31, Baby16\_31, Backyardigan\_31, Badger\_31, BangNhom\_31, Bartimeaus\_31, BellusTerra\_31, Blackmoor\_31, Bombshell\_31, Broseidon\_31, Bruiser\_30, BubbleTrouble\_31, Bumblebee11\_31, Burger\_30, Caelakin\_31, Camperdownii\_30, CentreCat\_31, Cerulean\_32, ChampagnePapi\_32, Chaph\_31, Cici\_31, Cindaradix\_30, Cintron\_31, Citius\_31, Clarenza\_31, Cocoaberry\_31, Commander\_31, Connomayer\_31, Datway\_31, Deano\_31, Dhanush\_31, DirtyDunning\_31, Druantia\_31, Eagle\_30, Eapen\_31, Eris\_30, Eros\_31, Eurydice\_31, Floean\_31, Flux\_31, Funston\_31, Gadost\_31, HamSlice\_30, Happiness\_31, Holli\_31, Houdini22\_31, Huxley\_31, ICleared\_31, Iceman\_32, Iracema64\_32, Jaykayelowell\_31, JetBlade\_31, JoongJeon\_31, KFPoly\_31, Kampy\_31, Katalie136\_31, Kimona\_28, Kingmustik0402\_31, Koreni\_30, Kratark\_31, Kremtemulon\_31, Kyee\_31, LHTSCC\_32, LappelDuVide\_31, Lemur\_31, LeoAvram\_31, LittleB\_31, LittleGuy\_31, LochMonster\_31, Lorenzo\_31, Lunsford\_32, Maverick\_31, Maxo\_31, Mazhar510\_31, Medusa\_31, MeeZee\_31, Melvin\_31, Millski\_30, Miramae\_31, Morpher26\_31, Morrow\_31, Mundrea\_31, MyraDee\_29, Nebs\_31, Nemo27\_31, Noelle\_31, NorthStar\_31, NotAPhaseMom\_31, Nyxis\_31, OKaNui\_32, Obama12\_32, Ohfah\_31, Palestino\_30, Peaches\_31, Perplexer\_31, PeterPeter\_31, PetiteSangsue\_31, Phacado\_31, Phelipe\_31, Phighter1804\_31, Phontbonne\_31, Pipcraft\_31, Polymorphads\_31, Pumbaa\_31, Relief\_31, Romney\_31, Roosevelt\_31, Rosa24\_30, Ruin\_31, Sabertooth\_31, Scamp\_31, Shaka\_31, SheldonCooper\_32, Shygu2\_31, Skipitt\_31, Sparxx\_31, Spino\_31, Stink\_32, Taquarus\_31, Thanksgivukkah\_31, TinaFeyge\_31, Tinybot\_30, TiroTheta9\_31, TroyPia\_31, TygerBlood\_31, Ulysses\_30, Wander\_31, Wilbur\_31, Wile\_31, Wizard007\_31, Xena\_31, YoSam321\_31,

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

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

- AN3\_31, AN9\_34, ANI8\_34, Acolyte\_31, Adzzy\_32, Bradman\_30, C3\_29, Caraxes\_30, Chargerpower\_32, Charm\_31, Che12\_33, D29\_31, D32\_34, DBQu4n\_34, DreamTeam1\_31, Duplo\_34, Jeeves\_31, Journey13\_29, Jsquared\_30, Kerberos\_34, Kinmap\_32, Koduck\_31, L5\_31, MajorMajor\_30, Malec\_32, MissWhite\_31, Naji\_34, Odin\_30, Ph8s\_32, Pomar16\_34, Pukovnik\_33, Quokka\_29, Rahalelujah\_30, Serenity\_30, SheaKeira\_31, StarStuff\_34, Sunhee\_30, Superchunk\_30, SwirlSquare\_33, TipsytheTRex\_30, Toaka\_30, Tomathan\_34, Travvers\_34, VA6\_31, VC3\_34, XianYue\_31, Yecy3\_32,

### **Summary by start number:**

Start 4:

- Found in 140 of 187 ( 74.9% ) of genes in pham
- Manual Annotations of this start: 138 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AbbysRanger\_31 (A4), Abdiel\_30 (A4), Achebe\_30 (A4), Albee\_31 (A4), Alberto7\_32 (A4), Annyong\_31 (A4), Arturo\_30 (A4), AvatarAhPeg\_32 (A4), Avle17\_31 (A4), Baby16\_31 (A4), Backyardigan\_31 (A4), Badger\_31 (A4), BangNhom\_31 (A4), Bartimeaus\_31 (A4), BellusTerra\_31 (A4), Blackmoor\_31 (A4), Bombshell\_31 (A4), Broseidon\_31 (A4), Bruiser\_30 (A4), BubbleTrouble\_31 (A4), Bumblebee11\_31 (A4), Burger\_30 (A4), Caelakin\_31 (A4), Camperdownii\_30 (A4), CentreCat\_31 (A4), Cerulean\_32 (A4), ChampagnePapi\_32 (A4), Chaph\_31 (A4), Cici\_31 (A4), Cindaradix\_30 (A4), Cintron\_31 (A4), Citius\_31 (A4), Clarenza\_31 (A4), Cocoaberry\_31 (A4), Commander\_31 (A4), Connomayer\_31 (A4), Datway\_31 (A4), Deano\_31 (A4), Dhanush\_31 (A4), DirtyDunning\_31 (A4), Druantia\_31 (A4), Eagle\_30 (A4), Eapen\_31 (A4), Eris\_30 (A4), Eros\_31 (A4), Eurydice\_31 (A4), Florean\_31 (A4), Flux\_31 (A4), Funston\_31 (A4), Gadost\_31 (A4), HamSlice\_30 (A4), Happiness\_31 (A4), Holli\_31 (A4), Houdini22\_31 (A4), Huxley\_31 (A4), ICleared\_31 (A4), Iceman\_32 (A4), Iracema64\_32 (A4), Jaykayelowell\_31 (A4), JetBlade\_31 (A4), JoongJeon\_31 (A4), KFPoly\_31 (A4), Kampy\_31 (A4), Katalie136\_31 (A4), Kimona\_28 (A19), Kingmustik0402\_31 (A4), Koreni\_30 (A4), Kratark\_31 (A4), Kremtemulon\_31 (A4), Kyee\_31 (A4), LHTSCC\_32 (A4), LappelDuVide\_31 (A4), Lemur\_31 (A4), LeoAvram\_31 (A4), LittleB\_31 (A4), LittleGuy\_31 (A4), LochMonster\_31 (A4), Lorenzo\_31 (A4), Lunsford\_32 (A4), Maverick\_31 (A4), Maxo\_31 (A4), Mazhar510\_31 (A4), Medusa\_31 (A4), MeeZee\_31 (A4), Melvin\_31 (A4), Millski\_30 (A4), Miramae\_31 (A4), Morpher26\_31 (A4), Morrow\_31 (A4), Mundrea\_31 (A4), MyraDee\_29 (A18), Nebs\_31 (A4), Nemo27\_31 (A4), Noelle\_31 (A4), NorthStar\_31 (A4), NotAPhaseMom\_31 (A4), Nyxis\_31 (A4), OKaNui\_32 (A4), Obama12\_32 (A4), Ohfah\_31 (A4), Palestino\_30 (A4), Peaches\_31 (A4), Perplexer\_31 (A4), PeterPeter\_31 (A4), PetiteSangsue\_31 (A4), Phacado\_31 (A4), Phelipe\_31 (A4), Phighter1804\_31 (A4), Phontbonne\_31 (A4), Pipcraft\_31 (A4), Polymorphads\_31 (A4), Pumbaa\_31 (A4), Relief\_31 (A4), Romney\_31 (A4), Roosevelt\_31 (A4), Rosa24\_30 (A4), Ruin\_31 (A4), Sabertooth\_31 (A4), Scamp\_31 (A4), Shaka\_31 (A4), SheldonCooper\_32 (A4), Shygu2\_31 (A4), Skipitt\_31 (A4), Sparxx\_31 (A4), Spino\_31 (A4), Stink\_32 (A4), Taquarus\_31 (A4), Thanksgivukkah\_31 (A4), TinaFeyge\_31 (A4), Tinybot\_30 (A4), TiroTheta9\_31 (A4), TroyPia\_31 (A4), TygerBlood\_31 (A4), Ulysses\_30 (A4), Wander\_31 (A4), Wilbur\_31 (A4), Wile\_31 (A4), Wizard007\_31 (A4), Xena\_31 (A4), YoSam321\_31 (A4),

#### Start 5:

- Found in 21 of 187 ( 11.2% ) of genes in pham
- Manual Annotations of this start: 3 of 176
- Called 14.3% of time when present
- Phage (with cluster) where this start called: ANI8\_34 (A2), XianYue\_31 (A2), Yecey3\_32 (A9),

#### Start 6:

- Found in 1 of 187 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acolyte\_31 (A2),

#### Start 7:

- Found in 9 of 187 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 8 of 176

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Charm\_31 (A9), DreamTeam1\_31 (A9), Jeeves\_31 (A14), Kinmap\_32 (A21), Malec\_32 (A2), Rahalelujah\_30 (A9), SheaKeira\_31 (A9), TipsytheTRex\_30 (A2), Toaka\_30 (A9),

Start 8:

- Found in 34 of 187 ( 18.2% ) of genes in pham
- Manual Annotations of this start: 25 of 176
- Called 97.1% of time when present
- Phage (with cluster) where this start called: AN3\_31 (A2), AN9\_34 (A2), Adzzy\_32 (A2), Bradman\_30 (A2), C3\_29 (A2), Caraxes\_30 (A2), Che12\_33 (A2), D29\_31 (A2), D32\_34 (A2), DBQu4n\_34 (A2), Duplo\_34 (A2), Journey13\_29 (A2), Jsquared\_30 (A2), Kerberos\_34 (A2), Koduck\_31 (A2), L5\_31 (A2), MajorMajor\_30 (A2), MissWhite\_31 (A2), Naji\_34 (A2), Odin\_30 (A2), Ph8s\_32 (A2), Pomar16\_34 (A2), Pukovnik\_33 (A2), Quokka\_29 (A2), Serenity\_30 (A2), StarStuff\_34 (A2), Sunhee\_30 (A14), Superchunk\_30 (A2), SwirlSquare\_33 (A2), Tomathan\_34 (A2), Travvers\_34 (A2), VA6\_31 (A2), VC3\_34 (A2),

Start 50:

- Found in 1 of 187 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 176
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chargerpower\_32 (A),

### Summary by clusters:

There are 8 clusters represented in this pham: A, A14, A21, A19, A18, A2, A4, A9,

Info for manual annotations of cluster A:

- Start number 50 was manually annotated 1 time for cluster A.

Info for manual annotations of cluster A14:

- Start number 7 was manually annotated 1 time for cluster A14.

Info for manual annotations of cluster A18:

- Start number 4 was manually annotated 1 time for cluster A18.

Info for manual annotations of cluster A19:

- Start number 4 was manually annotated 1 time for cluster A19.

Info for manual annotations of cluster A2:

- Start number 5 was manually annotated 2 times for cluster A2.
- Start number 6 was manually annotated 1 time for cluster A2.
- Start number 7 was manually annotated 2 times for cluster A2.
- Start number 8 was manually annotated 25 times for cluster A2.

Info for manual annotations of cluster A4:

- Start number 4 was manually annotated 136 times for cluster A4.

Info for manual annotations of cluster A9:

- Start number 5 was manually annotated 1 time for cluster A9.
- Start number 7 was manually annotated 5 times for cluster A9.

**Gene Information:**

Gene: AN3\_31 Start: 22715, Stop: 24571, Start Num: 8

Candidate Starts for AN3\_31:

(Start: 5 @22709 has 3 MA's), (Start: 8 @22715 has 25 MA's), (21, 22835), (36, 22925), (45, 22985), (46, 23009), (52, 23036), (69, 23129), (72, 23153), (73, 23159), (90, 23261), (136, 23666), (147, 23735), (171, 23903), (180, 23990), (192, 24086), (218, 24236), (243, 24350), (256, 24419), (264, 24443), (278, 24473), (280, 24488),

Gene: AN9\_34 Start: 22703, Stop: 24556, Start Num: 8

Candidate Starts for AN9\_34:

(Start: 5 @22697 has 3 MA's), (Start: 8 @22703 has 25 MA's), (21, 22823), (36, 22913), (45, 22973), (46, 22997), (52, 23024), (69, 23117), (72, 23141), (73, 23147), (90, 23249), (136, 23654), (147, 23723), (171, 23891), (180, 23978), (192, 24074), (218, 24221), (243, 24335), (256, 24404), (264, 24428), (278, 24458), (280, 24473),

Gene: ANI8\_34 Start: 22697, Stop: 24556, Start Num: 5

Candidate Starts for ANI8\_34:

(Start: 5 @22697 has 3 MA's), (Start: 8 @22703 has 25 MA's), (21, 22823), (36, 22913), (45, 22973), (46, 22997), (52, 23024), (69, 23117), (72, 23141), (73, 23147), (90, 23249), (136, 23654), (147, 23723), (171, 23891), (180, 23978), (192, 24074), (218, 24221), (243, 24335), (256, 24404), (264, 24428), (278, 24458), (280, 24473),

Gene: AbbysRanger\_31 Start: 22986, Stop: 24845, Start Num: 4

Candidate Starts for AbbysRanger\_31:

(2, 22926), (Start: 4 @22986 has 138 MA's), (15, 23052), (16, 23097), (18, 23103), (24, 23136), (28, 23154), (34, 23199), (35, 23205), (36, 23211), (49, 23304), (51, 23319), (67, 23391), (77, 23451), (85, 23502), (88, 23514), (100, 23592), (108, 23661), (119, 23784), (122, 23808), (131, 23889), (136, 23934), (139, 23943), (140, 23946), (157, 24075), (159, 24084), (166, 24126), (169, 24153), (173, 24189), (176, 24216), (179, 24228), (197, 24384), (230, 24558), (232, 24564), (241, 24609), (252, 24660), (253, 24663), (259, 24699), (275, 24735),

Gene: Abdiel\_30 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Abdiel\_30:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (230, 24526), (232, 24532), (241, 24577), (248, 24610), (252, 24628), (253, 24631), (259, 24667), (275, 24703),

Gene: Achebe\_30 Start: 22969, Stop: 24828, Start Num: 4

Candidate Starts for Achebe\_30:

(2, 22909), (Start: 4 @22969 has 138 MA's), (15, 23035), (16, 23080), (18, 23086), (24, 23119), (28, 23137), (34, 23182), (35, 23188), (36, 23194), (49, 23287), (51, 23302), (67, 23374), (77, 23434), (85, 23485), (88, 23497), (100, 23575), (108, 23644), (119, 23767), (122, 23791), (131, 23872), (136, 23917), (139, 23926), (140, 23929), (157, 24058), (159, 24067), (166, 24109), (169, 24136), (173, 24172), (176, 24199), (179, 24211), (197, 24367), (230, 24541), (232, 24547), (241, 24592), (252, 24643), (253, 24646), (259, 24682), (275, 24718),

Gene: Acolyte\_31 Start: 23339, Stop: 25057, Start Num: 6



Candidate Starts for Acolyte\_31:

(Start: 6 @23339 has 1 MA's), (12, 23363), (22, 23468), (38, 23564), (43, 23600), (45, 23612), (47, 23639), (48, 23642), (55, 23687), (64, 23717), (72, 23768), (84, 23822), (112, 24026), (136, 24263), (165, 24461), (180, 24584), (192, 24680), (239, 24908), (246, 24941),

Gene: Adzzy\_32 Start: 21442, Stop: 23085, Start Num: 8

Candidate Starts for Adzzy\_32:

(Start: 8 @21442 has 25 MA's), (19, 21553), (27, 21589), (43, 21700), (45, 21712), (72, 21880), (73, 21886), (112, 22150), (113, 22174), (116, 22201), (127, 22288), (136, 22372), (138, 22378), (140, 22384), (143, 22414), (152, 22498), (155, 22519), (176, 22672), (182, 22711), (192, 22798), (205, 22870), (220, 22957), (224, 22966), (237, 23014),

Gene: Albee\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Albee\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Alberto7\_32 Start: 23262, Stop: 25118, Start Num: 4

Candidate Starts for Alberto7\_32:

(Start: 4 @23262 has 138 MA's), (19, 23388), (24, 23412), (41, 23517), (42, 23523), (46, 23571), (49, 23580), (55, 23622), (67, 23667), (68, 23673), (85, 23778), (88, 23790), (100, 23868), (108, 23937), (131, 24165), (132, 24189), (133, 24192), (139, 24219), (140, 24222), (154, 24327), (157, 24348), (159, 24357), (173, 24462), (179, 24501), (184, 24546), (207, 24708), (208, 24714), (230, 24831), (232, 24837), (241, 24882), (252, 24933), (253, 24936), (268, 24999), (275, 25008), (285, 25095),

Gene: Annyong\_31 Start: 22961, Stop: 24817, Start Num: 4

Candidate Starts for Annyong\_31:

(Start: 4 @22961 has 138 MA's), (19, 23087), (24, 23111), (41, 23216), (42, 23222), (46, 23270), (49, 23279), (55, 23321), (67, 23366), (68, 23372), (85, 23477), (88, 23489), (100, 23567), (108, 23636), (131, 23864), (132, 23888), (133, 23891), (139, 23918), (140, 23921), (154, 24026), (157, 24047), (159, 24056), (173, 24161), (179, 24200), (184, 24245), (208, 24413), (230, 24530), (232, 24536), (241, 24581), (252, 24632), (253, 24635), (268, 24698), (275, 24707), (285, 24794),

Gene: Arturo\_30 Start: 23069, Stop: 24925, Start Num: 4

Candidate Starts for Arturo\_30:

(Start: 4 @23069 has 138 MA's), (19, 23195), (24, 23219), (41, 23324), (42, 23330), (46, 23378), (49, 23387), (55, 23429), (67, 23474), (68, 23480), (85, 23585), (88, 23597), (97, 23660), (100, 23675), (108, 23744), (131, 23972), (132, 23996), (133, 23999), (139, 24026), (140, 24029), (154, 24134), (157, 24155), (159, 24164), (173, 24269), (179, 24308), (184, 24353), (195, 24452), (230, 24638), (232, 24644), (241, 24689), (252, 24740), (253, 24743), (268, 24806), (275, 24815), (285, 24902),

Gene: AvatarAhPeg\_32 Start: 23239, Stop: 25098, Start Num: 4

Candidate Starts for AvatarAhPeg\_32:

(Start: 4 @23239 has 138 MA's), (15, 23305), (24, 23389), (28, 23407), (34, 23452), (42, 23500), (49, 23557), (55, 23599), (68, 23650), (70, 23671), (77, 23704), (85, 23755), (88, 23767), (94, 23821), (100, 23845), (108, 23914), (131, 24142), (133, 24169), (139, 24196), (140, 24199), (154, 24307), (157, 24328), (159, 24337), (169, 24406), (173, 24442), (179, 24481), (186, 24550), (207, 24688), (230, 24811), (232, 24817), (268, 24979), (275, 24988),

Gene: Avle17\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Avle17\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (207, 24406), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Baby16\_31 Start: 22969, Stop: 24825, Start Num: 4

Candidate Starts for Baby16\_31:

(Start: 4 @22969 has 138 MA's), (19, 23095), (24, 23119), (41, 23224), (42, 23230), (46, 23278), (49, 23287), (55, 23329), (67, 23374), (68, 23380), (85, 23485), (88, 23497), (100, 23575), (108, 23644), (131, 23872), (132, 23896), (133, 23899), (139, 23926), (140, 23929), (154, 24034), (159, 24064), (162, 24079), (173, 24169), (179, 24208), (184, 24253), (208, 24421), (230, 24538), (232, 24544), (241, 24589), (252, 24640), (253, 24643), (268, 24706), (275, 24715), (285, 24802),

Gene: Backyardigan\_31 Start: 22981, Stop: 24840, Start Num: 4

Candidate Starts for Backyardigan\_31:

(2, 22921), (Start: 4 @22981 has 138 MA's), (15, 23047), (16, 23092), (18, 23098), (24, 23131), (28, 23149), (34, 23194), (35, 23200), (36, 23206), (49, 23299), (51, 23314), (67, 23386), (77, 23446), (85, 23497), (88, 23509), (100, 23587), (108, 23656), (119, 23779), (122, 23803), (131, 23884), (136, 23929), (139, 23938), (140, 23941), (157, 24070), (159, 24079), (166, 24121), (169, 24148), (173, 24184), (176, 24211), (179, 24223), (197, 24379), (230, 24553), (232, 24559), (241, 24604), (252, 24655), (253, 24658), (259, 24694), (275, 24730),

Gene: Badger\_31 Start: 22970, Stop: 24829, Start Num: 4

Candidate Starts for Badger\_31:

(2, 22910), (Start: 4 @22970 has 138 MA's), (15, 23036), (16, 23081), (18, 23087), (24, 23120), (28, 23138), (34, 23183), (35, 23189), (36, 23195), (49, 23288), (51, 23303), (67, 23375), (77, 23435), (85, 23486), (88, 23498), (100, 23576), (108, 23645), (119, 23768), (122, 23792), (131, 23873), (136, 23918), (139, 23927), (140, 23930), (157, 24059), (159, 24068), (166, 24110), (169, 24137), (173, 24173), (176, 24200), (179, 24212), (197, 24368), (230, 24542), (232, 24548), (241, 24593), (252, 24644), (253, 24647), (259, 24683), (275, 24719),

Gene: BangNhom\_31 Start: 23274, Stop: 25130, Start Num: 4

Candidate Starts for BangNhom\_31:

(Start: 4 @23274 has 138 MA's), (19, 23400), (24, 23424), (41, 23529), (42, 23535), (46, 23583), (55, 23634), (68, 23685), (85, 23790), (88, 23802), (100, 23880), (108, 23949), (124, 24117), (127, 24147), (131, 24177), (132, 24201), (133, 24204), (139, 24231), (140, 24234), (154, 24339), (157, 24360), (159, 24369), (179, 24513), (184, 24558), (207, 24720), (230, 24843), (241, 24894), (268, 25011), (275, 25020), (285, 25107),

Gene: Bartimeaus\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Bartimeaus\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: BellusTerra\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for BellusTerra\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (88, 23485), (100, 23563), (108, 23632), (131, 23860),

(132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (182, 24223), (184, 24241), (195, 24340), (230, 24526), (241, 24577), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Blackmoor\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Blackmoor\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Bombshell\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Bombshell\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Bradman\_30 Start: 21646, Stop: 23397, Start Num: 8

Candidate Starts for Bradman\_30:

(Start: 8 @21646 has 25 MA's), (12, 21667), (21, 21766), (24, 21781), (36, 21856), (45, 21916), (65, 22027), (69, 22060), (72, 22084), (73, 22090), (86, 22162), (97, 22237), (102, 22270), (106, 22300), (136, 22588), (152, 22708), (163, 22777), (192, 23008), (205, 23083), (207, 23095), (209, 23104), (215, 23143), (257, 23338), (266, 23365), (267, 23368), (274, 23380),

Gene: Broseidon\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Broseidon\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (175, 24172), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Bruiser\_30 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Bruiser\_30:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (207, 24406), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: BubbleTrouble\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for BubbleTrouble\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Bumblebee11\_31 Start: 22972, Stop: 24831, Start Num: 4

Candidate Starts for Bumblebee11\_31:

(2, 22912), (Start: 4 @22972 has 138 MA's), (15, 23038), (16, 23083), (18, 23089), (24, 23122), (28, 23140), (34, 23185), (35, 23191), (36, 23197), (49, 23290), (51, 23305), (67, 23377), (77, 23437), (85, 23488), (88, 23500), (100, 23578), (108, 23647), (119, 23770), (122, 23794), (131, 23875), (136, 23920), (139, 23929), (140, 23932), (157, 24061), (159, 24070), (166, 24112), (169, 24139), (173, 24175), (176, 24202), (179, 24214), (197, 24370), (230, 24544), (232, 24550), (241, 24595), (252, 24646), (253, 24649), (259, 24685), (275, 24721),

Gene: Burger\_30 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Burger\_30:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: C3\_29 Start: 22703, Stop: 24556, Start Num: 8

Candidate Starts for C3\_29:

(Start: 5 @22697 has 3 MA's), (Start: 8 @22703 has 25 MA's), (21, 22823), (36, 22913), (45, 22973), (46, 22997), (52, 23024), (69, 23117), (72, 23141), (73, 23147), (90, 23249), (136, 23654), (147, 23723), (171, 23891), (180, 23978), (192, 24074), (218, 24221), (243, 24335), (256, 24404), (264, 24428), (278, 24458), (280, 24473),

Gene: Caelakin\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Caelakin\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (207, 24406), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Camperdownii\_30 Start: 22579, Stop: 24435, Start Num: 4

Candidate Starts for Camperdownii\_30:

(Start: 4 @22579 has 138 MA's), (19, 22705), (24, 22729), (41, 22834), (42, 22840), (46, 22888), (55, 22939), (68, 22990), (85, 23095), (88, 23107), (100, 23185), (108, 23254), (124, 23422), (127, 23452), (131, 23482), (133, 23509), (139, 23536), (140, 23539), (154, 23644), (157, 23665), (159, 23674), (173, 23779), (179, 23818), (182, 23845), (184, 23863), (185, 23866), (197, 23974), (208, 24031), (230, 24148), (232, 24154), (268, 24316), (275, 24325),

Gene: Caraxes\_30 Start: 21397, Stop: 22950, Start Num: 8

Candidate Starts for Caraxes\_30:

(Start: 5 @21391 has 3 MA's), (Start: 8 @21397 has 25 MA's), (21, 21517), (28, 21550), (29, 21553), (33, 21580), (45, 21667), (69, 21754), (89, 21856), (152, 22384), (153, 22390), (157, 22420), (163, 22453), (165, 22465), (176, 22558), (180, 22588), (192, 22684), (205, 22756), (217, 22822), (219, 22834), (234, 22879),

Gene: CentreCat\_31 Start: 22961, Stop: 24817, Start Num: 4

Candidate Starts for CentreCat\_31:

(Start: 4 @22961 has 138 MA's), (19, 23087), (24, 23111), (41, 23216), (42, 23222), (46, 23270), (49, 23279), (55, 23321), (67, 23366), (68, 23372), (85, 23477), (88, 23489), (100, 23567), (108, 23636), (131, 23864), (132, 23888), (133, 23891), (139, 23918), (140, 23921), (154, 24026), (159, 24056), (162, 24071), (173, 24161), (179, 24200), (184, 24245), (208, 24413), (230, 24530), (232, 24536), (241, 24581), (252, 24632), (253, 24635), (268, 24698), (275, 24707), (285, 24794),

Gene: Cerulean\_32 Start: 23275, Stop: 25131, Start Num: 4

Candidate Starts for Cerulean\_32:

(Start: 4 @23275 has 138 MA's), (19, 23401), (24, 23425), (41, 23530), (42, 23536), (46, 23584), (55, 23635), (68, 23686), (85, 23791), (88, 23803), (100, 23881), (108, 23950), (124, 24118), (127, 24148), (131, 24178), (132, 24202), (133, 24205), (139, 24232), (140, 24235), (154, 24340), (157, 24361), (159, 24370), (179, 24514), (184, 24559), (207, 24721), (230, 24844), (241, 24895), (268, 25012), (275, 25021), (285, 25108),

Gene: ChampagnePapi\_32 Start: 23274, Stop: 25130, Start Num: 4

Candidate Starts for ChampagnePapi\_32:

(Start: 4 @23274 has 138 MA's), (19, 23400), (24, 23424), (41, 23529), (42, 23535), (46, 23583), (55, 23634), (68, 23685), (85, 23790), (88, 23802), (100, 23880), (108, 23949), (131, 24177), (132, 24201), (133, 24204), (139, 24231), (140, 24234), (154, 24339), (159, 24369), (162, 24384), (173, 24474), (179, 24513), (184, 24558), (208, 24726), (230, 24843), (241, 24894), (268, 25011), (275, 25020), (285, 25107),

Gene: Chaph\_31 Start: 22969, Stop: 24825, Start Num: 4

Candidate Starts for Chaph\_31:

(Start: 4 @22969 has 138 MA's), (19, 23095), (24, 23119), (41, 23224), (42, 23230), (46, 23278), (49, 23287), (55, 23329), (67, 23374), (68, 23380), (85, 23485), (88, 23497), (100, 23575), (108, 23644), (131, 23872), (132, 23896), (133, 23899), (139, 23926), (140, 23929), (154, 24034), (159, 24064), (162, 24079), (173, 24169), (179, 24208), (184, 24253), (208, 24421), (230, 24538), (232, 24544), (241, 24589), (252, 24640), (253, 24643), (268, 24706), (275, 24715), (285, 24802),

Gene: Chargerpower\_32 Start: 22051, Stop: 23787, Start Num: 50

Candidate Starts for Chargerpower\_32:

(Start: 50 @22051 has 1 MA's), (81, 22222), (82, 22243), (83, 22255), (95, 22333), (111, 22432), (117, 22492), (134, 22666), (148, 22750), (167, 22894), (176, 22978), (201, 23167), (251, 23404), (272, 23494), (279, 23509), (290, 23647), (291, 23656), (293, 23671), (295, 23704),

Gene: Charm\_31 Start: 22329, Stop: 24071, Start Num: 7

Candidate Starts for Charm\_31:

(Start: 7 @22329 has 8 MA's), (9, 22335), (28, 22485), (33, 22515), (40, 22566), (48, 22632), (57, 22680), (66, 22704), (79, 22779), (105, 22893), (123, 23004), (130, 23070), (146, 23184), (150, 23220), (161, 23301), (167, 23340), (181, 23454), (183, 23466), (201, 23613), (204, 23628), (211, 23673), (258, 23925), (269, 23958), (271, 23961), (281, 23997), (284, 24060),

Gene: Che12\_33 Start: 21672, Stop: 23324, Start Num: 8

Candidate Starts for Che12\_33:

(Start: 8 @21672 has 25 MA's), (19, 21783), (27, 21819), (42, 21918), (45, 21942), (72, 22110), (73, 22116), (139, 22626), (152, 22737), (165, 22818), (176, 22911), (180, 22941), (192, 23037), (205, 23109), (220, 23196), (225, 23208),

Gene: Cici\_31 Start: 22966, Stop: 24825, Start Num: 4

Candidate Starts for Cici\_31:

(2, 22906), (Start: 4 @22966 has 138 MA's), (15, 23032), (16, 23077), (18, 23083), (24, 23116), (28, 23134), (34, 23179), (35, 23185), (36, 23191), (49, 23284), (51, 23299), (67, 23371), (77, 23431), (85, 23482), (88, 23494), (100, 23572), (108, 23641), (119, 23764), (122, 23788), (131, 23869), (136, 23914), (139, 23923), (140, 23926), (157, 24055), (159, 24064), (166, 24106), (169, 24133), (173, 24169), (176, 24196), (179, 24208), (197, 24364), (230, 24538), (232, 24544), (241, 24589), (252, 24640), (253, 24643), (259, 24679), (275, 24715),

Gene: Cindaradix\_30 Start: 22690, Stop: 24546, Start Num: 4

Candidate Starts for Cindaradix\_30:

(Start: 4 @22690 has 138 MA's), (24, 22840), (28, 22858), (30, 22870), (34, 22903), (36, 22915), (42, 22951), (49, 23008), (51, 23023), (77, 23155), (85, 23206), (88, 23218), (100, 23296), (103, 23317), (108, 23365), (131, 23593), (139, 23647), (140, 23650), (154, 23755), (157, 23776), (159, 23785), (173, 23890), (197, 24085), (208, 24142), (230, 24259), (232, 24265), (275, 24436),

Gene: Cintron\_31 Start: 23005, Stop: 24864, Start Num: 4

Candidate Starts for Cintron\_31:

(Start: 4 @23005 has 138 MA's), (19, 23131), (24, 23155), (41, 23260), (42, 23266), (46, 23314), (49, 23323), (55, 23365), (67, 23410), (68, 23416), (85, 23521), (88, 23533), (100, 23611), (108, 23680), (124, 23848), (131, 23908), (132, 23932), (133, 23935), (139, 23962), (140, 23965), (154, 24070), (159, 24100), (162, 24115), (173, 24205), (179, 24244), (182, 24271), (184, 24289), (232, 24580), (248, 24658), (250, 24670), (252, 24676), (259, 24715), (268, 24742), (273, 24748), (285, 24841),

Gene: Citius\_31 Start: 22975, Stop: 24831, Start Num: 4

Candidate Starts for Citius\_31:

(Start: 4 @22975 has 138 MA's), (19, 23101), (24, 23125), (41, 23230), (42, 23236), (46, 23284), (55, 23335), (67, 23380), (68, 23386), (85, 23491), (88, 23503), (100, 23581), (108, 23650), (131, 23878), (132, 23902), (133, 23905), (139, 23932), (140, 23935), (154, 24040), (159, 24070), (162, 24085), (173, 24175), (179, 24214), (184, 24259), (208, 24427), (230, 24544), (232, 24550), (241, 24595), (252, 24646), (253, 24649), (268, 24712), (275, 24721), (285, 24808),

Gene: Clarenza\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Clarenza\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Cocoaberry\_31 Start: 22964, Stop: 24820, Start Num: 4

Candidate Starts for Cocoaberry\_31:

(Start: 4 @22964 has 138 MA's), (19, 23090), (24, 23114), (41, 23219), (42, 23225), (46, 23273), (49, 23282), (55, 23324), (67, 23369), (68, 23375), (85, 23480), (88, 23492), (100, 23570), (108, 23639), (131, 23867), (132, 23891), (133, 23894), (139, 23921), (140, 23924), (154, 24029), (157, 24050), (159, 24059), (173, 24164), (179, 24203), (184, 24248), (207, 24410), (208, 24416), (230, 24533), (232, 24539), (241, 24584), (252, 24635), (253, 24638), (268, 24701), (275, 24710), (285, 24797),

Gene: Commander\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Commander\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Connomayer\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Connomayer\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: D29\_31 Start: 22559, Stop: 24412, Start Num: 8

Candidate Starts for D29\_31:

(Start: 5 @22553 has 3 MA's), (Start: 8 @22559 has 25 MA's), (21, 22679), (36, 22769), (45, 22829), (52, 22880), (69, 22973), (72, 22997), (73, 23003), (136, 23510), (147, 23579), (157, 23666), (171, 23747), (243, 24191), (247, 24206), (256, 24260), (264, 24284), (267, 24293), (280, 24329),

Gene: D32\_34 Start: 22559, Stop: 24412, Start Num: 8

Candidate Starts for D32\_34:

(Start: 5 @22553 has 3 MA's), (Start: 8 @22559 has 25 MA's), (21, 22679), (36, 22769), (45, 22829), (52, 22880), (69, 22973), (72, 22997), (73, 23003), (136, 23510), (147, 23579), (157, 23666), (171, 23747), (243, 24191), (247, 24206), (256, 24260), (264, 24284), (267, 24293), (280, 24329),

Gene: DBQu4n\_34 Start: 22559, Stop: 24412, Start Num: 8

Candidate Starts for DBQu4n\_34:

(Start: 5 @22553 has 3 MA's), (Start: 8 @22559 has 25 MA's), (21, 22679), (36, 22769), (45, 22829), (52, 22880), (69, 22973), (72, 22997), (73, 23003), (136, 23510), (147, 23579), (157, 23666), (171, 23747), (178, 23813), (192, 23930), (235, 24149), (238, 24161), (243, 24191), (256, 24260), (264, 24284), (267, 24293), (280, 24329),

Gene: Datway\_31 Start: 22981, Stop: 24840, Start Num: 4

Candidate Starts for Datway\_31:

(2, 22921), (Start: 4 @22981 has 138 MA's), (15, 23047), (16, 23092), (18, 23098), (24, 23131), (28, 23149), (34, 23194), (35, 23200), (36, 23206), (49, 23299), (51, 23314), (67, 23386), (77, 23446), (85, 23497), (88, 23509), (100, 23587), (108, 23656), (119, 23779), (122, 23803), (131, 23884), (136, 23929), (139, 23938), (140, 23941), (157, 24070), (159, 24079), (166, 24121), (169, 24148), (173, 24184), (176, 24211), (179, 24223), (197, 24379), (230, 24553), (232, 24559), (241, 24604), (252, 24655), (253, 24658), (259, 24694), (275, 24730),

Gene: Deano\_31 Start: 22968, Stop: 24824, Start Num: 4

Candidate Starts for Deano\_31:

(Start: 4 @22968 has 138 MA's), (19, 23094), (24, 23118), (41, 23223), (42, 23229), (46, 23277), (49, 23286), (55, 23328), (67, 23373), (68, 23379), (85, 23484), (88, 23496), (100, 23574), (108, 23643), (131, 23871), (132, 23895), (133, 23898), (139, 23925), (140, 23928), (154, 24033), (159, 24063), (162, 24078), (173, 24168), (179, 24207), (184, 24252), (208, 24420), (230, 24537), (232, 24543), (241, 24588), (252, 24639), (253, 24642), (268, 24705), (275, 24714), (285, 24801),

Gene: Dhanush\_31 Start: 22963, Stop: 24819, Start Num: 4

Candidate Starts for Dhanush\_31:

(Start: 4 @22963 has 138 MA's), (19, 23089), (24, 23113), (41, 23218), (42, 23224), (46, 23272), (49, 23281), (55, 23323), (67, 23368), (68, 23374), (85, 23479), (88, 23491), (100, 23569), (108, 23638), (131, 23866), (132, 23890), (133, 23893), (139, 23920), (140, 23923), (154, 24028), (159, 24058), (162, 24073), (173, 24163), (179, 24202), (184, 24247), (208, 24415), (230, 24532), (232, 24538), (241, 24583), (252, 24634), (253, 24637), (268, 24700), (275, 24709), (285, 24796),

Gene: DirtyDunning\_31 Start: 22953, Stop: 24809, Start Num: 4

Candidate Starts for DirtyDunning\_31:

(Start: 4 @22953 has 138 MA's), (19, 23079), (24, 23103), (41, 23208), (42, 23214), (46, 23262), (49, 23271), (55, 23313), (67, 23358), (68, 23364), (85, 23469), (88, 23481), (97, 23544), (100, 23559), (108, 23628), (124, 23796), (131, 23856), (133, 23883), (139, 23910), (140, 23913), (154, 24018), (157, 24039), (159, 24048), (173, 24153), (184, 24237), (195, 24336), (230, 24522), (232, 24528), (241, 24573), (252, 24624), (253, 24627), (268, 24690), (275, 24699), (285, 24786),

Gene: DreamTeam1\_31 Start: 22328, Stop: 23986, Start Num: 7

Candidate Starts for DreamTeam1\_31:

(Start: 7 @22328 has 8 MA's), (9, 22334), (28, 22484), (33, 22514), (40, 22565), (48, 22631), (57, 22679), (66, 22703), (79, 22778), (105, 22892), (146, 23183), (150, 23219), (167, 23339), (181, 23453), (201, 23612), (204, 23627), (213, 23681), (269, 23870),

Gene: Druantia\_31 Start: 22961, Stop: 24817, Start Num: 4

Candidate Starts for Druantia\_31:

(Start: 4 @22961 has 138 MA's), (19, 23087), (24, 23111), (41, 23216), (42, 23222), (46, 23270), (49, 23279), (55, 23321), (67, 23366), (68, 23372), (85, 23477), (88, 23489), (100, 23567), (108, 23636), (131, 23864), (132, 23888), (133, 23891), (139, 23918), (140, 23921), (154, 24026), (159, 24056), (162, 24071), (173, 24161), (179, 24200), (184, 24245), (208, 24413), (230, 24530), (232, 24536), (241, 24581), (252, 24632), (253, 24635), (268, 24698), (275, 24707), (285, 24794),

Gene: Duplo\_34 Start: 22597, Stop: 24450, Start Num: 8

Candidate Starts for Duplo\_34:

(Start: 5 @22591 has 3 MA's), (Start: 8 @22597 has 25 MA's), (21, 22717), (36, 22807), (45, 22867), (52, 22918), (69, 23011), (72, 23035), (73, 23041), (136, 23548), (147, 23617), (157, 23704), (171, 23785), (192, 23968), (235, 24187), (238, 24199), (243, 24229), (256, 24298), (264, 24322), (267, 24331), (280, 24367),

Gene: Eagle\_30 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Eagle\_30:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (55, 23320), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (124, 23803), (127, 23833), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (179, 24199), (184, 24244), (207, 24406), (230, 24529), (241, 24580), (268, 24697), (275, 24706), (285, 24793),

Gene: Eapen\_31 Start: 22959, Stop: 24815, Start Num: 4

Candidate Starts for Eapen\_31:

(Start: 4 @22959 has 138 MA's), (19, 23085), (24, 23109), (41, 23214), (42, 23220), (46, 23268), (55, 23319), (67, 23364), (68, 23370), (85, 23475), (88, 23487), (100, 23565), (108, 23634), (131, 23862), (132, 23886), (133, 23889), (139, 23916), (140, 23919), (154, 24024), (159, 24054), (162, 24069), (173, 24159), (179, 24198), (184, 24243), (208, 24411), (230, 24528), (232, 24534), (241, 24579), (252, 24630), (253, 24633), (268, 24696), (275, 24705), (285, 24792),

Gene: Eris\_30 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Eris\_30:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Eros\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Eros\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),



Gene: Eurydice\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Eurydice\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (182, 24223), (184, 24241), (195, 24340), (230, 24526), (241, 24577), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Florean\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Florean\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Flux\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Flux\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Funston\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Funston\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Gadost\_31 Start: 22964, Stop: 24820, Start Num: 4

Candidate Starts for Gadost\_31:

(Start: 4 @22964 has 138 MA's), (19, 23090), (24, 23114), (41, 23219), (42, 23225), (46, 23273), (49, 23282), (55, 23324), (67, 23369), (68, 23375), (85, 23480), (88, 23492), (100, 23570), (108, 23639), (131, 23867), (132, 23891), (133, 23894), (139, 23921), (140, 23924), (154, 24029), (157, 24050), (159, 24059), (173, 24164), (179, 24203), (184, 24248), (207, 24410), (208, 24416), (230, 24533), (232, 24539), (241, 24584), (252, 24635), (253, 24638), (268, 24701), (275, 24710), (285, 24797),

Gene: HamSlice\_30 Start: 22958, Stop: 24814, Start Num: 4

Candidate Starts for HamSlice\_30:

(Start: 4 @22958 has 138 MA's), (19, 23084), (24, 23108), (41, 23213), (42, 23219), (46, 23267), (55, 23318), (67, 23363), (68, 23369), (85, 23474), (88, 23486), (100, 23564), (108, 23633), (131, 23861), (132, 23885), (133, 23888), (139, 23915), (140, 23918), (154, 24023), (159, 24053), (162, 24068), (173, 24158), (179, 24197), (184, 24242), (208, 24410), (230, 24527), (232, 24533), (241, 24578), (252, 24629), (253, 24632), (268, 24695), (275, 24704), (285, 24791),

Gene: Happiness\_31 Start: 22966, Stop: 24822, Start Num: 4

Candidate Starts for Happiness\_31:

(Start: 4 @22966 has 138 MA's), (19, 23092), (24, 23116), (36, 23191), (41, 23221), (46, 23275), (49, 23284), (55, 23326), (68, 23377), (85, 23482), (88, 23494), (100, 23572), (108, 23641), (124, 23809), (127, 23839), (131, 23869), (132, 23893), (133, 23896), (139, 23923), (140, 23926), (154, 24031),

(157, 24052), (159, 24061), (173, 24166), (179, 24205), (184, 24250), (207, 24412), (230, 24535), (241, 24586), (252, 24637), (253, 24640), (268, 24703), (275, 24712), (285, 24799),

Gene: Holli\_31 Start: 22750, Stop: 24606, Start Num: 4

Candidate Starts for Holli\_31:

(Start: 4 @22750 has 138 MA's), (19, 22876), (24, 22900), (41, 23005), (42, 23011), (46, 23059), (49, 23068), (55, 23110), (67, 23155), (68, 23161), (85, 23266), (88, 23278), (100, 23356), (108, 23425), (131, 23653), (132, 23677), (133, 23680), (139, 23707), (140, 23710), (154, 23815), (159, 23845), (162, 23860), (173, 23950), (179, 23989), (184, 24034), (208, 24202), (230, 24319), (232, 24325), (241, 24370), (252, 24421), (253, 24424), (268, 24487), (275, 24496), (285, 24583),

Gene: Houdini22\_31 Start: 22964, Stop: 24820, Start Num: 4

Candidate Starts for Houdini22\_31:

(Start: 4 @22964 has 138 MA's), (19, 23090), (24, 23114), (41, 23219), (42, 23225), (46, 23273), (49, 23282), (55, 23324), (67, 23369), (68, 23375), (85, 23480), (88, 23492), (100, 23570), (108, 23639), (131, 23867), (132, 23891), (133, 23894), (139, 23921), (140, 23924), (154, 24029), (157, 24050), (159, 24059), (173, 24164), (179, 24203), (184, 24248), (207, 24410), (208, 24416), (230, 24533), (232, 24539), (241, 24584), (252, 24635), (253, 24638), (268, 24701), (275, 24710), (285, 24797),

Gene: Huxley\_31 Start: 23021, Stop: 24877, Start Num: 4

Candidate Starts for Huxley\_31:

(Start: 4 @23021 has 138 MA's), (19, 23147), (24, 23171), (41, 23276), (42, 23282), (46, 23330), (55, 23381), (67, 23426), (68, 23432), (85, 23537), (88, 23549), (97, 23612), (100, 23627), (108, 23696), (131, 23924), (132, 23948), (133, 23951), (139, 23978), (140, 23981), (154, 24086), (157, 24107), (159, 24116), (173, 24221), (179, 24260), (184, 24305), (230, 24590), (232, 24596), (241, 24641), (252, 24692), (253, 24695), (268, 24758), (275, 24767), (285, 24854),

Gene: ICleared\_31 Start: 22958, Stop: 24814, Start Num: 4

Candidate Starts for ICleared\_31:

(Start: 4 @22958 has 138 MA's), (19, 23084), (24, 23108), (41, 23213), (42, 23219), (46, 23267), (55, 23318), (67, 23363), (68, 23369), (85, 23474), (88, 23486), (100, 23564), (108, 23633), (131, 23861), (132, 23885), (133, 23888), (139, 23915), (140, 23918), (154, 24023), (157, 24044), (159, 24053), (173, 24158), (179, 24197), (184, 24242), (207, 24404), (208, 24410), (230, 24527), (232, 24533), (241, 24578), (252, 24629), (253, 24632), (268, 24695), (275, 24704), (285, 24791),

Gene: Iceman\_32 Start: 23249, Stop: 25105, Start Num: 4

Candidate Starts for Iceman\_32:

(Start: 4 @23249 has 138 MA's), (19, 23375), (24, 23399), (41, 23504), (42, 23510), (46, 23558), (55, 23609), (67, 23654), (68, 23660), (85, 23765), (88, 23777), (100, 23855), (108, 23924), (131, 24152), (132, 24176), (133, 24179), (139, 24206), (140, 24209), (154, 24314), (159, 24344), (162, 24359), (173, 24449), (179, 24488), (184, 24533), (208, 24701), (229, 24812), (230, 24818), (232, 24824), (241, 24869), (252, 24920), (253, 24923), (268, 24986), (275, 24995), (285, 25082),

Gene: Iracema64\_32 Start: 23268, Stop: 25124, Start Num: 4

Candidate Starts for Iracema64\_32:

(Start: 4 @23268 has 138 MA's), (19, 23394), (24, 23418), (41, 23523), (42, 23529), (46, 23577), (49, 23586), (55, 23628), (67, 23673), (68, 23679), (85, 23784), (88, 23796), (97, 23859), (100, 23874), (108, 23943), (124, 24111), (131, 24171), (133, 24198), (139, 24225), (140, 24228), (154, 24333), (157, 24354), (159, 24363), (173, 24468), (184, 24552), (195, 24651), (230, 24837), (232, 24843), (241, 24888), (252, 24939), (253, 24942), (268, 25005), (275, 25014), (285, 25101),

Gene: Jaykayelowell\_31 Start: 22956, Stop: 24812, Start Num: 4

Candidate Starts for Jaykayelowell\_31:

(Start: 4 @22956 has 138 MA's), (19, 23082), (24, 23106), (41, 23211), (42, 23217), (46, 23265), (55, 23316), (67, 23361), (68, 23367), (85, 23472), (88, 23484), (100, 23562), (108, 23631), (131, 23859), (133, 23886), (139, 23913), (140, 23916), (154, 24021), (159, 24051), (162, 24066), (173, 24156), (179, 24195), (184, 24240), (208, 24408), (230, 24525), (232, 24531), (241, 24576), (252, 24627), (253, 24630), (268, 24693), (275, 24702), (285, 24789),

Gene: Jeeves\_31 Start: 21978, Stop: 23861, Start Num: 7

Candidate Starts for Jeeves\_31:

(Start: 7 @21978 has 8 MA's), (9, 21984), (37, 22194), (42, 22227), (45, 22251), (46, 22272), (62, 22347), (74, 22437), (92, 22551), (110, 22692), (115, 22746), (129, 22881), (134, 22935), (148, 23019), (160, 23118), (167, 23163), (176, 23247), (188, 23346), (192, 23370), (201, 23436), (204, 23451), (223, 23571), (238, 23598), (254, 23688), (261, 23724), (269, 23748), (280, 23781), (283, 23823), (284, 23850), (287, 23853),

Gene: JetBlade\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for JetBlade\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: JoongJeon\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for JoongJeon\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Journey13\_29 Start: 21908, Stop: 23737, Start Num: 8

Candidate Starts for Journey13\_29:

(Start: 8 @21908 has 25 MA's), (23, 22037), (24, 22043), (42, 22154), (45, 22178), (68, 22313), (72, 22346), (73, 22352), (102, 22532), (136, 22850), (151, 22952), (152, 22973), (153, 22979), (155, 22994), (165, 23054), (168, 23081), (196, 23300), (251, 23564), (264, 23624), (284, 23726), (286, 23729),

Gene: Jsquared\_30 Start: 21719, Stop: 23470, Start Num: 8

Candidate Starts for Jsquared\_30:

(Start: 8 @21719 has 25 MA's), (12, 21740), (21, 21839), (24, 21854), (36, 21929), (42, 21965), (43, 21977), (45, 21989), (46, 22013), (48, 22019), (65, 22100), (69, 22133), (72, 22157), (73, 22163), (86, 22235), (102, 22343), (136, 22661), (152, 22781), (163, 22850), (192, 23081), (205, 23156), (207, 23168), (209, 23177), (215, 23216), (257, 23411), (266, 23438), (267, 23441), (274, 23453),

Gene: KFPoly\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for KFPoly\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (157, 24043), (159, 24052), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Kamy\_31 Start: 22958, Stop: 24814, Start Num: 4

Candidate Starts for Kampy\_31:

(Start: 4 @22958 has 138 MA's), (19, 23084), (24, 23108), (41, 23213), (42, 23219), (46, 23267), (49, 23276), (55, 23318), (67, 23363), (68, 23369), (85, 23474), (88, 23486), (100, 23564), (108, 23633), (131, 23861), (132, 23885), (133, 23888), (139, 23915), (140, 23918), (154, 24023), (159, 24053), (162, 24068), (173, 24158), (179, 24197), (182, 24224), (184, 24242), (195, 24341), (230, 24527), (241, 24578), (253, 24632), (268, 24695), (275, 24704), (285, 24791),

Gene: Katalie136\_31 Start: 22972, Stop: 24831, Start Num: 4

Candidate Starts for Katalie136\_31:

(2, 22912), (Start: 4 @22972 has 138 MA's), (15, 23038), (16, 23083), (18, 23089), (24, 23122), (28, 23140), (34, 23185), (35, 23191), (36, 23197), (49, 23290), (51, 23305), (67, 23377), (77, 23437), (85, 23488), (88, 23500), (100, 23578), (108, 23647), (119, 23770), (122, 23794), (131, 23875), (136, 23920), (139, 23929), (140, 23932), (157, 24061), (159, 24070), (166, 24112), (169, 24139), (173, 24175), (176, 24202), (179, 24214), (197, 24370), (230, 24544), (232, 24550), (241, 24595), (252, 24646), (253, 24649), (259, 24685), (275, 24721),

Gene: Kerberos\_34 Start: 22559, Stop: 24412, Start Num: 8

Candidate Starts for Kerberos\_34:

(Start: 5 @22553 has 3 MA's), (Start: 8 @22559 has 25 MA's), (21, 22679), (36, 22769), (45, 22829), (52, 22880), (69, 22973), (72, 22997), (73, 23003), (136, 23510), (147, 23579), (157, 23666), (171, 23747), (192, 23930), (235, 24149), (238, 24161), (243, 24191), (256, 24260), (264, 24284), (267, 24293), (280, 24329),

Gene: Kimona\_28 Start: 20738, Stop: 22444, Start Num: 4

Candidate Starts for Kimona\_28:

(Start: 4 @20738 has 138 MA's), (11, 20771), (14, 20786), (32, 20936), (33, 20942), (46, 21053), (48, 21059), (69, 21116), (84, 21185), (89, 21218), (91, 21230), (112, 21389), (152, 21752), (194, 22079), (198, 22100), (201, 22112), (212, 22166), (215, 22190), (235, 22271), (255, 22379), (264, 22409), (277, 22436),

Gene: Kingmustik0402\_31 Start: 22952, Stop: 24808, Start Num: 4

Candidate Starts for Kingmustik0402\_31:

(Start: 4 @22952 has 138 MA's), (19, 23078), (24, 23102), (41, 23207), (42, 23213), (46, 23261), (49, 23270), (55, 23312), (67, 23357), (68, 23363), (85, 23468), (88, 23480), (100, 23558), (108, 23627), (131, 23855), (132, 23879), (133, 23882), (139, 23909), (140, 23912), (154, 24017), (159, 24047), (162, 24062), (173, 24152), (179, 24191), (184, 24236), (208, 24404), (230, 24521), (232, 24527), (241, 24572), (252, 24623), (253, 24626), (268, 24689), (275, 24698), (285, 24785),

Gene: Kinmap\_32 Start: 22357, Stop: 24255, Start Num: 7

Candidate Starts for Kinmap\_32:

(1, 22222), (Start: 7 @22357 has 8 MA's), (9, 22363), (27, 22507), (45, 22630), (54, 22696), (58, 22717), (92, 22936), (98, 22978), (110, 23077), (126, 23281), (134, 23362), (135, 23374), (148, 23446), (150, 23470), (158, 23536), (201, 23863), (204, 23878), (265, 24130), (276, 24154), (284, 24244), (287, 24247),

Gene: Koduck\_31 Start: 21936, Stop: 23582, Start Num: 8

Candidate Starts for Koduck\_31:

(Start: 8 @21936 has 25 MA's), (21, 22056), (24, 22071), (36, 22146), (43, 22194), (45, 22206), (53, 22263), (72, 22374), (73, 22380), (86, 22452), (113, 22671), (127, 22785), (136, 22869), (138, 22875), (143, 22911), (152, 22995), (164, 23073), (176, 23169), (182, 23208), (192, 23295), (205, 23367), (218, 23442), (220, 23454), (224, 23463), (233, 23493), (249, 23562),

Gene: Koreni\_30 Start: 22606, Stop: 24462, Start Num: 4

Candidate Starts for Koreni\_30:

(Start: 4 @22606 has 138 MA's), (19, 22732), (24, 22756), (41, 22861), (42, 22867), (46, 22915), (49, 22924), (55, 22966), (67, 23011), (68, 23017), (85, 23122), (88, 23134), (100, 23212), (108, 23281), (131, 23509), (132, 23533), (133, 23536), (139, 23563), (140, 23566), (154, 23671), (157, 23692), (159, 23701), (173, 23806), (179, 23845), (184, 23890), (207, 24052), (208, 24058), (230, 24175), (232, 24181), (241, 24226), (252, 24277), (253, 24280), (268, 24343), (275, 24352), (285, 24439),

Gene: Kratak\_31 Start: 22952, Stop: 24808, Start Num: 4

Candidate Starts for Kratak\_31:

(Start: 4 @22952 has 138 MA's), (19, 23078), (24, 23102), (41, 23207), (42, 23213), (46, 23261), (55, 23312), (67, 23357), (68, 23363), (85, 23468), (88, 23480), (97, 23543), (100, 23558), (108, 23627), (131, 23855), (132, 23879), (133, 23882), (139, 23909), (140, 23912), (154, 24017), (157, 24038), (159, 24047), (173, 24152), (179, 24191), (184, 24236), (195, 24335), (230, 24521), (232, 24527), (241, 24572), (252, 24623), (253, 24626), (268, 24689), (275, 24698), (285, 24785),

Gene: Kremtemulon\_31 Start: 23008, Stop: 24867, Start Num: 4

Candidate Starts for Kremtemulon\_31:

(Start: 4 @23008 has 138 MA's), (19, 23134), (24, 23158), (41, 23263), (42, 23269), (46, 23317), (49, 23326), (55, 23368), (68, 23419), (85, 23524), (88, 23536), (100, 23614), (108, 23683), (131, 23911), (133, 23938), (139, 23965), (140, 23968), (154, 24073), (159, 24103), (162, 24118), (173, 24208), (179, 24247), (182, 24274), (184, 24292), (232, 24583), (248, 24661), (250, 24673), (252, 24679), (259, 24718), (268, 24745), (273, 24751), (285, 24844),

Gene: Kyee\_31 Start: 22958, Stop: 24814, Start Num: 4

Candidate Starts for Kyee\_31:

(Start: 4 @22958 has 138 MA's), (19, 23084), (24, 23108), (41, 23213), (42, 23219), (46, 23267), (49, 23276), (55, 23318), (67, 23363), (68, 23369), (85, 23474), (88, 23486), (100, 23564), (108, 23633), (131, 23861), (132, 23885), (133, 23888), (139, 23915), (140, 23918), (154, 24023), (157, 24044), (159, 24053), (173, 24158), (179, 24197), (184, 24242), (208, 24410), (230, 24527), (232, 24533), (241, 24578), (252, 24629), (253, 24632), (268, 24695), (275, 24704), (285, 24791),

Gene: L5\_31 Start: 21890, Stop: 23536, Start Num: 8

Candidate Starts for L5\_31:

(Start: 8 @21890 has 25 MA's), (21, 22010), (24, 22025), (36, 22100), (43, 22148), (45, 22160), (65, 22271), (72, 22328), (73, 22334), (86, 22406), (113, 22625), (127, 22739), (136, 22823), (138, 22829), (143, 22865), (152, 22949), (164, 23027), (176, 23123), (182, 23162), (192, 23249), (220, 23408), (233, 23447),

Gene: LHTSCC\_32 Start: 23274, Stop: 25130, Start Num: 4

Candidate Starts for LHTSCC\_32:

(Start: 4 @23274 has 138 MA's), (19, 23400), (24, 23424), (41, 23529), (42, 23535), (46, 23583), (55, 23634), (68, 23685), (85, 23790), (88, 23802), (100, 23880), (108, 23949), (124, 24117), (127, 24147), (131, 24177), (132, 24201), (133, 24204), (139, 24231), (140, 24234), (154, 24339), (157, 24360), (159, 24369), (179, 24513), (184, 24558), (207, 24720), (230, 24843), (241, 24894), (268, 25011), (275, 25020), (285, 25107),

Gene: LappelDuVide\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for LappelDuVide\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Lemur\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Lemur\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: LeoAvram\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for LeoAvram\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (195, 24340), (230, 24526), (241, 24577), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: LittleB\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for LittleB\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: LittleGuy\_31 Start: 22903, Stop: 24762, Start Num: 4

Candidate Starts for LittleGuy\_31:

(Start: 4 @22903 has 138 MA's), (19, 23029), (24, 23053), (41, 23158), (42, 23164), (46, 23212), (49, 23221), (55, 23263), (67, 23308), (68, 23314), (85, 23419), (88, 23431), (100, 23509), (108, 23578), (139, 23860), (140, 23863), (154, 23968), (159, 23998), (173, 24103), (179, 24142), (182, 24169), (184, 24187), (232, 24478), (248, 24556), (250, 24568), (252, 24574), (259, 24613), (268, 24640), (273, 24646), (275, 24649), (285, 24739),

Gene: LochMonster\_31 Start: 22932, Stop: 24788, Start Num: 4

Candidate Starts for LochMonster\_31:

(Start: 4 @22932 has 138 MA's), (19, 23058), (24, 23082), (41, 23187), (42, 23193), (46, 23241), (49, 23250), (55, 23292), (67, 23337), (68, 23343), (85, 23448), (88, 23460), (97, 23523), (100, 23538), (108, 23607), (124, 23775), (131, 23835), (133, 23862), (139, 23889), (140, 23892), (154, 23997), (157, 24018), (159, 24027), (173, 24132), (184, 24216), (195, 24315), (230, 24501), (232, 24507), (241, 24552), (252, 24603), (253, 24606), (268, 24669), (275, 24678), (285, 24765),

Gene: Lorenzo\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Lorenzo\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (207, 24406), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Lunsford\_32 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Lunsford\_32:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860),

(132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: MajorMajor\_30 Start: 21646, Stop: 23397, Start Num: 8

Candidate Starts for MajorMajor\_30:

(Start: 8 @21646 has 25 MA's), (12, 21667), (21, 21766), (24, 21781), (36, 21856), (45, 21916), (65, 22027), (69, 22060), (72, 22084), (73, 22090), (86, 22162), (97, 22237), (102, 22270), (106, 22300), (136, 22588), (152, 22708), (163, 22777), (192, 23008), (205, 23083), (207, 23095), (209, 23104), (215, 23143), (257, 23338), (266, 23365), (267, 23368), (274, 23380),

Gene: Malec\_32 Start: 23029, Stop: 25110, Start Num: 7

Candidate Starts for Malec\_32:

(Start: 7 @23029 has 8 MA's), (12, 23053), (19, 23143), (22, 23158), (39, 23257), (48, 23332), (56, 23380), (90, 23569), (96, 23608), (109, 23704), (132, 23953), (145, 24016), (149, 24061), (163, 24163), (180, 24301), (187, 24364), (190, 24394), (206, 24478), (222, 24568), (225, 24577), (229, 24592), (231, 24601), (276, 24775), (289, 24895), (292, 24934), (294, 24970), (296, 24994), (297, 25027), (298, 25096), (299, 25099),

Gene: Maverick\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Maverick\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (207, 24406), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Maxo\_31 Start: 22958, Stop: 24814, Start Num: 4

Candidate Starts for Maxo\_31:

(Start: 4 @22958 has 138 MA's), (19, 23084), (24, 23108), (41, 23213), (42, 23219), (46, 23267), (49, 23276), (55, 23318), (67, 23363), (68, 23369), (85, 23474), (88, 23486), (100, 23564), (108, 23633), (131, 23861), (132, 23885), (133, 23888), (139, 23915), (140, 23918), (154, 24023), (159, 24053), (162, 24068), (173, 24158), (179, 24197), (182, 24224), (184, 24242), (195, 24341), (230, 24527), (241, 24578), (253, 24632), (268, 24695), (275, 24704), (285, 24791),

Gene: Mazhar510\_31 Start: 22961, Stop: 24817, Start Num: 4

Candidate Starts for Mazhar510\_31:

(Start: 4 @22961 has 138 MA's), (19, 23087), (24, 23111), (41, 23216), (42, 23222), (46, 23270), (55, 23321), (67, 23366), (68, 23372), (85, 23477), (88, 23489), (100, 23567), (108, 23636), (131, 23864), (132, 23888), (133, 23891), (139, 23918), (140, 23921), (154, 24026), (157, 24047), (159, 24056), (173, 24161), (179, 24200), (184, 24245), (207, 24407), (208, 24413), (230, 24530), (232, 24536), (241, 24581), (252, 24632), (253, 24635), (268, 24698), (275, 24707), (285, 24794),

Gene: Medusa\_31 Start: 22961, Stop: 24817, Start Num: 4

Candidate Starts for Medusa\_31:

(Start: 4 @22961 has 138 MA's), (19, 23087), (24, 23111), (41, 23216), (42, 23222), (46, 23270), (49, 23279), (55, 23321), (67, 23366), (68, 23372), (85, 23477), (88, 23489), (100, 23567), (108, 23636), (131, 23864), (132, 23888), (133, 23891), (139, 23918), (140, 23921), (154, 24026), (159, 24056), (162, 24071), (173, 24161), (179, 24200), (184, 24245), (208, 24413), (230, 24530), (232, 24536), (241, 24581), (252, 24632), (253, 24635), (268, 24698), (275, 24707), (285, 24794),

Gene: MeeZee\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for MeeZee\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Melvin\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Melvin\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Millski\_30 Start: 22963, Stop: 24819, Start Num: 4

Candidate Starts for Millski\_30:

(Start: 4 @22963 has 138 MA's), (19, 23089), (24, 23113), (41, 23218), (42, 23224), (46, 23272), (49, 23281), (55, 23323), (67, 23368), (68, 23374), (85, 23479), (88, 23491), (100, 23569), (108, 23638), (131, 23866), (132, 23890), (133, 23893), (139, 23920), (140, 23923), (154, 24028), (159, 24058), (162, 24073), (173, 24163), (179, 24202), (184, 24247), (208, 24415), (230, 24532), (232, 24538), (241, 24583), (252, 24634), (253, 24637), (268, 24700), (275, 24709), (285, 24796),

Gene: Miramae\_31 Start: 22903, Stop: 24762, Start Num: 4

Candidate Starts for Miramae\_31:

(Start: 4 @22903 has 138 MA's), (15, 22969), (24, 23053), (28, 23071), (34, 23116), (42, 23164), (49, 23221), (55, 23263), (68, 23314), (70, 23335), (77, 23368), (85, 23419), (88, 23431), (94, 23485), (100, 23509), (108, 23578), (131, 23806), (133, 23833), (139, 23860), (140, 23863), (154, 23971), (157, 23992), (159, 24001), (169, 24070), (173, 24106), (179, 24145), (186, 24214), (207, 24352), (230, 24475), (232, 24481), (268, 24643), (275, 24652),

Gene: MissWhite\_31 Start: 21856, Stop: 23703, Start Num: 8

Candidate Starts for MissWhite\_31:

(Start: 8 @21856 has 25 MA's), (12, 21877), (23, 21985), (42, 22102), (45, 22126), (75, 22306), (90, 22402), (101, 22474), (127, 22711), (136, 22795), (140, 22807), (141, 22828), (148, 22876), (152, 22921), (153, 22927), (155, 22942), (157, 22957), (163, 22990), (165, 23002), (172, 23053), (192, 23221), (199, 23266), (203, 23284), (251, 23512), (256, 23548), (267, 23581),

Gene: Morpher26\_31 Start: 22972, Stop: 24831, Start Num: 4

Candidate Starts for Morpher26\_31:

(2, 22912), (Start: 4 @22972 has 138 MA's), (15, 23038), (16, 23083), (18, 23089), (24, 23122), (28, 23140), (34, 23185), (35, 23191), (36, 23197), (49, 23290), (51, 23305), (67, 23377), (77, 23437), (85, 23488), (88, 23500), (100, 23578), (108, 23647), (119, 23770), (122, 23794), (131, 23875), (136, 23920), (139, 23929), (140, 23932), (157, 24061), (159, 24070), (166, 24112), (169, 24139), (173, 24175), (176, 24202), (179, 24214), (197, 24370), (230, 24544), (232, 24550), (241, 24595), (252, 24646), (253, 24649), (259, 24685), (275, 24721),

Gene: Morrow\_31 Start: 22963, Stop: 24819, Start Num: 4

Candidate Starts for Morrow\_31:

(Start: 4 @22963 has 138 MA's), (19, 23089), (24, 23113), (41, 23218), (42, 23224), (46, 23272), (49, 23281), (55, 23323), (67, 23368), (68, 23374), (88, 23491), (100, 23569), (108, 23638), (131, 23866), (132, 23890), (133, 23893), (140, 23923), (154, 24028), (159, 24058), (162, 24073), (173, 24163), (179, 24202), (182, 24229), (184, 24247), (195, 24346), (230, 24532), (241, 24583), (253, 24637), (268, 24700), (275, 24709), (285, 24796),



Gene: Mundrea\_31 Start: 22930, Stop: 24786, Start Num: 4

Candidate Starts for Mundrea\_31:

(Start: 4 @22930 has 138 MA's), (24, 23080), (28, 23098), (30, 23110), (34, 23143), (36, 23155), (49, 23248), (51, 23263), (77, 23395), (85, 23446), (88, 23458), (100, 23536), (108, 23605), (131, 23833), (139, 23887), (140, 23890), (154, 23995), (157, 24016), (159, 24025), (173, 24130), (197, 24325), (208, 24382), (230, 24499), (232, 24505), (275, 24676),

Gene: MyraDee\_29 Start: 20768, Stop: 22630, Start Num: 4

Candidate Starts for MyraDee\_29:

(Start: 4 @20768 has 138 MA's), (10, 20789), (13, 20810), (20, 20894), (26, 20924), (43, 21038), (52, 21101), (53, 21107), (63, 21152), (100, 21344), (106, 21392), (108, 21413), (119, 21536), (121, 21557), (124, 21581), (139, 21695), (140, 21698), (154, 21806), (157, 21827), (159, 21836), (169, 21905), (173, 21941), (180, 21998), (189, 22085), (191, 22091), (216, 22250), (222, 22289), (228, 22304), (230, 22313), (232, 22319), (244, 22382), (257, 22457), (262, 22472), (267, 22487), (288, 22607),

Gene: Naji\_34 Start: 22559, Stop: 24412, Start Num: 8

Candidate Starts for Naji\_34:

(Start: 5 @22553 has 3 MA's), (Start: 8 @22559 has 25 MA's), (21, 22679), (36, 22769), (45, 22829), (52, 22880), (69, 22973), (72, 22997), (73, 23003), (136, 23510), (147, 23579), (157, 23666), (171, 23747), (243, 24191), (247, 24206), (256, 24260), (264, 24284), (267, 24293), (280, 24329),

Gene: Nebs\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Nebs\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (182, 24223), (184, 24241), (195, 24340), (230, 24526), (241, 24577), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Nemo27\_31 Start: 22959, Stop: 24815, Start Num: 4

Candidate Starts for Nemo27\_31:

(Start: 4 @22959 has 138 MA's), (19, 23085), (24, 23109), (41, 23214), (42, 23220), (46, 23268), (49, 23277), (55, 23319), (67, 23364), (68, 23370), (85, 23475), (88, 23487), (100, 23565), (108, 23634), (131, 23862), (132, 23886), (133, 23889), (139, 23916), (140, 23919), (154, 24024), (157, 24045), (159, 24054), (173, 24159), (179, 24198), (184, 24243), (207, 24405), (208, 24411), (230, 24528), (232, 24534), (241, 24579), (252, 24630), (253, 24633), (268, 24696), (275, 24705), (285, 24792),

Gene: Noelle\_31 Start: 23041, Stop: 24900, Start Num: 4

Candidate Starts for Noelle\_31:

(Start: 4 @23041 has 138 MA's), (25, 23194), (31, 23227), (32, 23233), (34, 23254), (36, 23266), (47, 23353), (51, 23374), (70, 23473), (85, 23557), (88, 23569), (98, 23635), (100, 23647), (108, 23716), (131, 23944), (136, 23989), (139, 23998), (140, 24001), (157, 24130), (159, 24139), (166, 24181), (169, 24208), (173, 24244), (176, 24271), (179, 24283), (182, 24310), (197, 24439), (208, 24496), (210, 24499), (230, 24613), (232, 24619), (245, 24685), (252, 24715), (270, 24784), (275, 24790),

Gene: NorthStar\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for NorthStar\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (94, 23542), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529),

(232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: NotAPhaseMom\_31 Start: 22964, Stop: 24820, Start Num: 4

Candidate Starts for NotAPhaseMom\_31:

(Start: 4 @22964 has 138 MA's), (19, 23090), (24, 23114), (41, 23219), (42, 23225), (46, 23273), (49, 23282), (55, 23324), (67, 23369), (68, 23375), (85, 23480), (88, 23492), (100, 23570), (108, 23639), (131, 23867), (132, 23891), (133, 23894), (139, 23921), (140, 23924), (154, 24029), (157, 24050), (159, 24059), (173, 24164), (179, 24203), (184, 24248), (207, 24410), (208, 24416), (230, 24533), (232, 24539), (241, 24584), (252, 24635), (268, 24701), (275, 24710), (285, 24797),

Gene: Nyxis\_31 Start: 22903, Stop: 24762, Start Num: 4

Candidate Starts for Nyxis\_31:

(Start: 4 @22903 has 138 MA's), (19, 23029), (24, 23053), (41, 23158), (42, 23164), (46, 23212), (49, 23221), (55, 23263), (67, 23308), (68, 23314), (88, 23431), (100, 23509), (108, 23578), (139, 23860), (140, 23863), (154, 23968), (159, 23998), (173, 24103), (179, 24142), (182, 24169), (184, 24187), (232, 24478), (248, 24556), (250, 24568), (252, 24574), (259, 24613), (268, 24640), (273, 24646), (275, 24649), (285, 24739),

Gene: OKaNui\_32 Start: 23013, Stop: 24869, Start Num: 4

Candidate Starts for OKaNui\_32:

(Start: 4 @23013 has 138 MA's), (19, 23139), (24, 23163), (41, 23268), (42, 23274), (46, 23322), (49, 23331), (55, 23373), (67, 23418), (68, 23424), (85, 23529), (88, 23541), (94, 23595), (100, 23619), (108, 23688), (124, 23856), (131, 23916), (132, 23940), (133, 23943), (136, 23961), (139, 23970), (140, 23973), (154, 24078), (159, 24108), (162, 24123), (173, 24213), (179, 24252), (184, 24297), (208, 24465), (230, 24582), (232, 24588), (241, 24633), (252, 24684), (253, 24687), (268, 24750), (275, 24759), (285, 24846),

Gene: Obama12\_32 Start: 23276, Stop: 25132, Start Num: 4

Candidate Starts for Obama12\_32:

(Start: 4 @23276 has 138 MA's), (19, 23402), (24, 23426), (41, 23531), (42, 23537), (46, 23585), (55, 23636), (68, 23687), (85, 23792), (88, 23804), (100, 23882), (108, 23951), (124, 24119), (127, 24149), (131, 24179), (132, 24203), (133, 24206), (139, 24233), (140, 24236), (154, 24341), (157, 24362), (159, 24371), (179, 24515), (184, 24560), (207, 24722), (230, 24845), (241, 24896), (268, 25013), (275, 25022), (285, 25109),

Gene: Odin\_30 Start: 21523, Stop: 23199, Start Num: 8

Candidate Starts for Odin\_30:

(Start: 5 @21517 has 3 MA's), (Start: 8 @21523 has 25 MA's), (21, 21643), (28, 21676), (29, 21679), (33, 21706), (45, 21793), (69, 21880), (89, 21982), (116, 22204), (136, 22390), (152, 22510), (192, 22810), (205, 22885), (209, 22906), (215, 22945), (237, 23035), (257, 23140), (266, 23167), (267, 23170), (274, 23182),

Gene: Ohfah\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Ohfah\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (182, 24223), (184, 24241), (195, 24340), (230, 24526), (241, 24577), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Palestino\_30 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Palestino\_30:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (59, 23335), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Peaches\_31 Start: 22959, Stop: 24815, Start Num: 4

Candidate Starts for Peaches\_31:

(Start: 4 @22959 has 138 MA's), (19, 23085), (24, 23109), (41, 23214), (42, 23220), (46, 23268), (49, 23277), (55, 23319), (67, 23364), (68, 23370), (85, 23475), (88, 23487), (100, 23565), (108, 23634), (131, 23862), (132, 23886), (133, 23889), (139, 23916), (140, 23919), (154, 24024), (159, 24054), (162, 24069), (173, 24159), (179, 24198), (184, 24243), (208, 24411), (230, 24528), (232, 24534), (241, 24579), (252, 24630), (253, 24633), (268, 24696), (275, 24705), (285, 24792),

Gene: Perplexer\_31 Start: 22969, Stop: 24828, Start Num: 4

Candidate Starts for Perplexer\_31:

(2, 22909), (Start: 4 @22969 has 138 MA's), (15, 23035), (16, 23080), (18, 23086), (24, 23119), (28, 23137), (34, 23182), (35, 23188), (36, 23194), (49, 23287), (51, 23302), (67, 23374), (77, 23434), (85, 23485), (88, 23497), (100, 23575), (108, 23644), (119, 23767), (122, 23791), (131, 23872), (136, 23917), (139, 23926), (140, 23929), (157, 24058), (159, 24067), (166, 24109), (169, 24136), (173, 24172), (176, 24199), (179, 24211), (197, 24367), (230, 24541), (232, 24547), (241, 24592), (252, 24643), (253, 24646), (259, 24682), (275, 24718),

Gene: PeterPeter\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for PeterPeter\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (207, 24406), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: PetiteSangsue\_31 Start: 22972, Stop: 24831, Start Num: 4

Candidate Starts for PetiteSangsue\_31:

(2, 22912), (Start: 4 @22972 has 138 MA's), (15, 23038), (16, 23083), (18, 23089), (24, 23122), (28, 23140), (34, 23185), (35, 23191), (36, 23197), (49, 23290), (51, 23305), (67, 23377), (77, 23437), (85, 23488), (88, 23500), (100, 23578), (108, 23647), (119, 23770), (122, 23794), (131, 23875), (136, 23920), (139, 23929), (140, 23932), (157, 24061), (159, 24070), (166, 24112), (169, 24139), (173, 24175), (176, 24202), (179, 24214), (197, 24370), (230, 24544), (232, 24550), (241, 24595), (252, 24646), (253, 24649), (259, 24685), (275, 24721),

Gene: Ph8s\_32 Start: 21442, Stop: 23091, Start Num: 8

Candidate Starts for Ph8s\_32:

(Start: 8 @21442 has 25 MA's), (19, 21553), (27, 21589), (42, 21688), (45, 21712), (72, 21880), (73, 21886), (152, 22504), (156, 22531), (165, 22585), (176, 22678), (180, 22708), (192, 22804), (205, 22876), (220, 22963), (224, 22972), (237, 23020),

Gene: Phacado\_31 Start: 22959, Stop: 24815, Start Num: 4

Candidate Starts for Phacado\_31:

(Start: 4 @22959 has 138 MA's), (19, 23085), (24, 23109), (41, 23214), (42, 23220), (46, 23268), (49, 23277), (55, 23319), (67, 23364), (68, 23370), (85, 23475), (88, 23487), (100, 23565), (108, 23634), (131, 23862), (132, 23886), (133, 23889), (139, 23916), (140, 23919), (154, 24024), (157, 24045), (159, 24054), (173, 24159), (179, 24198), (184, 24243), (207, 24405), (208, 24411), (230, 24528), (232, 24534), (241, 24579), (252, 24630), (253, 24633), (268, 24696), (275, 24705), (285, 24792),

Gene: Phelipe\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Phelipe\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Phighter1804\_31 Start: 22935, Stop: 24791, Start Num: 4

Candidate Starts for Phighter1804\_31:

(Start: 4 @22935 has 138 MA's), (19, 23061), (24, 23085), (41, 23190), (42, 23196), (46, 23244), (49, 23253), (55, 23295), (67, 23340), (68, 23346), (85, 23451), (88, 23463), (97, 23526), (100, 23541), (108, 23610), (124, 23778), (131, 23838), (133, 23865), (139, 23892), (140, 23895), (154, 24000), (157, 24021), (159, 24030), (173, 24135), (184, 24219), (195, 24318), (230, 24504), (232, 24510), (241, 24555), (252, 24606), (253, 24609), (268, 24672), (275, 24681), (285, 24768),

Gene: Phontbonne\_31 Start: 22904, Stop: 24763, Start Num: 4

Candidate Starts for Phontbonne\_31:

(Start: 4 @22904 has 138 MA's), (19, 23030), (24, 23054), (41, 23159), (42, 23165), (46, 23213), (49, 23222), (55, 23264), (67, 23309), (68, 23315), (88, 23432), (100, 23510), (108, 23579), (139, 23861), (140, 23864), (154, 23969), (159, 23999), (173, 24104), (179, 24143), (182, 24170), (184, 24188), (232, 24479), (248, 24557), (250, 24569), (252, 24575), (259, 24614), (268, 24641), (273, 24647), (285, 24740),

Gene: Pipcraft\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Pipcraft\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Polymorphads\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Polymorphads\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (182, 24223), (184, 24241), (195, 24340), (230, 24526), (241, 24577), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Pomar16\_34 Start: 22600, Stop: 24453, Start Num: 8

Candidate Starts for Pomar16\_34:

(Start: 5 @22594 has 3 MA's), (Start: 8 @22600 has 25 MA's), (21, 22720), (36, 22810), (45, 22870), (46, 22894), (52, 22921), (69, 23014), (72, 23038), (73, 23044), (136, 23551), (147, 23620), (171, 23788), (192, 23971), (243, 24232), (247, 24247), (256, 24301), (260, 24310), (264, 24325), (267, 24334), (280, 24370),

Gene: Pukovnik\_33 Start: 24251, Stop: 26089, Start Num: 8

Candidate Starts for Pukovnik\_33:

(Start: 8 @24251 has 25 MA's), (12, 24272), (19, 24362), (21, 24371), (33, 24428), (36, 24455), (49, 24548), (56, 24593), (76, 24689), (108, 24905), (119, 25028), (120, 25037), (131, 25133), (139, 25187), (140, 25190), (154, 25298), (159, 25328), (169, 25397), (173, 25433), (175, 25445), (179,

25472), (230, 25802), (241, 25853), (248, 25886), (252, 25904), (253, 25907), (268, 25970),

Gene: Pumbaa\_31 Start: 22935, Stop: 24791, Start Num: 4

Candidate Starts for Pumbaa\_31:

(Start: 4 @22935 has 138 MA's), (19, 23061), (24, 23085), (42, 23196), (46, 23244), (48, 23250), (49, 23253), (55, 23295), (68, 23346), (85, 23451), (88, 23463), (100, 23541), (108, 23610), (124, 23778), (127, 23808), (131, 23838), (133, 23865), (139, 23892), (140, 23895), (154, 24000), (157, 24021), (159, 24030), (173, 24135), (179, 24174), (182, 24201), (184, 24219), (185, 24222), (197, 24330), (208, 24387), (230, 24504), (232, 24510), (268, 24672), (275, 24681),

Gene: Quokka\_29 Start: 21646, Stop: 23397, Start Num: 8

Candidate Starts for Quokka\_29:

(Start: 8 @21646 has 25 MA's), (12, 21667), (21, 21766), (24, 21781), (36, 21856), (45, 21916), (65, 22027), (69, 22060), (72, 22084), (73, 22090), (86, 22162), (97, 22237), (102, 22270), (106, 22300), (136, 22588), (152, 22708), (163, 22777), (192, 23008), (205, 23083), (207, 23095), (209, 23104), (215, 23143), (257, 23338), (266, 23365), (267, 23368), (274, 23380),

Gene: Rahalelujah\_30 Start: 22236, Stop: 23978, Start Num: 7

Candidate Starts for Rahalelujah\_30:

(Start: 7 @22236 has 8 MA's), (9, 22242), (21, 22359), (28, 22392), (45, 22509), (48, 22539), (57, 22587), (60, 22596), (61, 22599), (79, 22686), (87, 22731), (93, 22758), (115, 22833), (123, 22911), (130, 22977), (148, 23103), (204, 23535), (211, 23580), (236, 23712), (265, 23853), (269, 23865), (281, 23904), (284, 23967),

Gene: Relief\_31 Start: 22958, Stop: 24814, Start Num: 4

Candidate Starts for Relief\_31:

(Start: 4 @22958 has 138 MA's), (19, 23084), (24, 23108), (41, 23213), (42, 23219), (46, 23267), (55, 23318), (67, 23363), (68, 23369), (85, 23474), (88, 23486), (100, 23564), (108, 23633), (131, 23861), (132, 23885), (133, 23888), (139, 23915), (140, 23918), (154, 24023), (159, 24053), (162, 24068), (173, 24158), (179, 24197), (184, 24242), (208, 24410), (230, 24527), (232, 24533), (241, 24578), (252, 24629), (253, 24632), (268, 24695), (275, 24704), (285, 24791),

Gene: Romney\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Romney\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Roosevelt\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Roosevelt\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Rosa24\_30 Start: 22935, Stop: 24791, Start Num: 4

Candidate Starts for Rosa24\_30:

(Start: 4 @22935 has 138 MA's), (19, 23061), (24, 23085), (46, 23244), (49, 23253), (55, 23295), (67, 23340), (68, 23346), (85, 23451), (88, 23463), (100, 23541), (108, 23610), (124, 23778), (127, 23808), (131, 23838), (133, 23865), (139, 23892), (140, 23895), (154, 24000), (157, 24021), (159, 24030),

(173, 24135), (179, 24174), (184, 24219), (207, 24381), (230, 24504), (232, 24510), (268, 24672), (275, 24681),

Gene: Ruin\_31 Start: 22956, Stop: 24812, Start Num: 4

Candidate Starts for Ruin\_31:

(Start: 4 @22956 has 138 MA's), (19, 23082), (24, 23106), (41, 23211), (42, 23217), (46, 23265), (49, 23274), (55, 23316), (67, 23361), (68, 23367), (85, 23472), (88, 23484), (100, 23562), (108, 23631), (131, 23859), (132, 23883), (133, 23886), (139, 23913), (140, 23916), (154, 24021), (159, 24051), (162, 24066), (173, 24156), (179, 24195), (184, 24240), (208, 24408), (230, 24525), (232, 24531), (241, 24576), (252, 24627), (253, 24630), (268, 24693), (275, 24702), (285, 24789),

Gene: Sabertooth\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Sabertooth\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Scamp\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Scamp\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Serenity\_30 Start: 21771, Stop: 23522, Start Num: 8

Candidate Starts for Serenity\_30:

(Start: 8 @21771 has 25 MA's), (12, 21792), (21, 21891), (24, 21906), (36, 21981), (45, 22041), (65, 22152), (69, 22185), (72, 22209), (73, 22215), (86, 22287), (102, 22395), (114, 22512), (136, 22713), (152, 22833), (163, 22902), (192, 23133), (205, 23208), (207, 23220), (209, 23229), (215, 23268), (257, 23463), (266, 23490), (267, 23493), (274, 23505),

Gene: Shaka\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Shaka\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (207, 24406), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: SheaKeira\_31 Start: 22351, Stop: 24009, Start Num: 7

Candidate Starts for SheaKeira\_31:

(Start: 7 @22351 has 8 MA's), (17, 22453), (28, 22507), (32, 22531), (33, 22537), (44, 22618), (45, 22624), (48, 22654), (57, 22702), (66, 22726), (79, 22801), (130, 23092), (158, 23308), (167, 23362), (181, 23476), (183, 23488), (201, 23635), (204, 23650), (263, 23875), (282, 23938),

Gene: SheldonCooper\_32 Start: 23275, Stop: 25131, Start Num: 4

Candidate Starts for SheldonCooper\_32:

(Start: 4 @23275 has 138 MA's), (19, 23401), (24, 23425), (41, 23530), (42, 23536), (46, 23584), (55, 23635), (68, 23686), (85, 23791), (88, 23803), (100, 23881), (108, 23950), (124, 24118), (127, 24148), (131, 24178), (132, 24202), (133, 24205), (139, 24232), (140, 24235), (154, 24340), (157, 24361),

(159, 24370), (179, 24514), (184, 24559), (207, 24721), (230, 24844), (241, 24895), (268, 25012), (275, 25021), (285, 25108),

Gene: Shygu2\_31 Start: 22966, Stop: 24825, Start Num: 4

Candidate Starts for Shygu2\_31:

(2, 22903), (Start: 4 @22966 has 138 MA's), (14, 23014), (15, 23032), (24, 23116), (28, 23134), (34, 23179), (36, 23191), (67, 23371), (77, 23431), (85, 23482), (88, 23494), (100, 23572), (108, 23641), (131, 23869), (133, 23896), (139, 23923), (140, 23926), (154, 24034), (157, 24055), (159, 24064), (169, 24133), (173, 24169), (179, 24208), (207, 24415), (230, 24538), (241, 24589), (268, 24706), (275, 24715),

Gene: Skipitt\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for Skipitt\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Sparxx\_31 Start: 22958, Stop: 24814, Start Num: 4

Candidate Starts for Sparxx\_31:

(Start: 4 @22958 has 138 MA's), (19, 23084), (24, 23108), (41, 23213), (42, 23219), (46, 23267), (49, 23276), (55, 23318), (67, 23363), (68, 23369), (85, 23474), (88, 23486), (100, 23564), (108, 23633), (131, 23861), (132, 23885), (133, 23888), (139, 23915), (140, 23918), (154, 24023), (159, 24053), (162, 24068), (173, 24158), (179, 24197), (182, 24224), (184, 24242), (195, 24341), (230, 24527), (241, 24578), (253, 24632), (268, 24695), (275, 24704), (285, 24791),

Gene: Spino\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Spino\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (207, 24406), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: StarStuff\_34 Start: 22559, Stop: 24412, Start Num: 8

Candidate Starts for StarStuff\_34:

(Start: 5 @22553 has 3 MA's), (Start: 8 @22559 has 25 MA's), (21, 22679), (36, 22769), (45, 22829), (52, 22880), (69, 22973), (72, 22997), (73, 23003), (136, 23510), (147, 23579), (157, 23666), (171, 23747), (192, 23930), (235, 24149), (238, 24161), (243, 24191), (256, 24260), (264, 24284), (267, 24293), (280, 24329),

Gene: Stink\_32 Start: 23240, Stop: 25099, Start Num: 4

Candidate Starts for Stink\_32:

(Start: 4 @23240 has 138 MA's), (15, 23306), (24, 23390), (28, 23408), (34, 23453), (42, 23501), (49, 23558), (55, 23600), (68, 23651), (70, 23672), (77, 23705), (85, 23756), (88, 23768), (94, 23822), (100, 23846), (108, 23915), (131, 24143), (133, 24170), (139, 24197), (140, 24200), (154, 24308), (157, 24329), (159, 24338), (169, 24407), (173, 24443), (179, 24482), (186, 24551), (207, 24689), (230, 24812), (232, 24818), (268, 24980), (275, 24989),

Gene: Sunhee\_30 Start: 22065, Stop: 23957, Start Num: 8

Candidate Starts for Sunhee\_30:

(Start: 8 @22065 has 25 MA's), (12, 22086), (33, 22248), (37, 22278), (43, 22323), (45, 22335), (74, 22524), (77, 22536), (92, 22638), (125, 22980), (126, 22983), (134, 23064), (144, 23124), (148, 23148), (161, 23253), (167, 23292), (173, 23349), (174, 23352), (201, 23565), (204, 23580), (223, 23700), (284, 23946), (287, 23949),

Gene: Superchunk\_30 Start: 21397, Stop: 22950, Start Num: 8

Candidate Starts for Superchunk\_30:

(Start: 5 @21391 has 3 MA's), (Start: 8 @21397 has 25 MA's), (21, 21517), (28, 21550), (29, 21553), (33, 21580), (45, 21667), (69, 21754), (89, 21856), (152, 22384), (153, 22390), (157, 22420), (163, 22453), (165, 22465), (176, 22558), (180, 22588), (192, 22684), (205, 22756), (217, 22822), (219, 22834), (234, 22879),

Gene: SwirlSquare\_33 Start: 21533, Stop: 23197, Start Num: 8

Candidate Starts for SwirlSquare\_33:

(Start: 8 @21533 has 25 MA's), (19, 21644), (27, 21680), (42, 21779), (45, 21803), (72, 21971), (73, 21977), (152, 22598), (165, 22679), (176, 22772), (180, 22802), (192, 22898), (205, 22970), (220, 23057), (237, 23126),

Gene: Taquarus\_31 Start: 22963, Stop: 24819, Start Num: 4

Candidate Starts for Taquarus\_31:

(Start: 4 @22963 has 138 MA's), (19, 23089), (24, 23113), (41, 23218), (42, 23224), (46, 23272), (49, 23281), (55, 23323), (67, 23368), (68, 23374), (85, 23479), (88, 23491), (100, 23569), (108, 23638), (131, 23866), (132, 23890), (133, 23893), (139, 23920), (140, 23923), (154, 24028), (159, 24058), (162, 24073), (173, 24163), (179, 24202), (184, 24247), (208, 24415), (230, 24532), (232, 24538), (241, 24583), (252, 24634), (253, 24637), (268, 24700), (275, 24709), (285, 24796),

Gene: Thanksgivukkah\_31 Start: 22961, Stop: 24817, Start Num: 4

Candidate Starts for Thanksgivukkah\_31:

(Start: 4 @22961 has 138 MA's), (19, 23087), (24, 23111), (41, 23216), (42, 23222), (46, 23270), (49, 23279), (55, 23321), (67, 23366), (68, 23372), (85, 23477), (88, 23489), (100, 23567), (108, 23636), (131, 23864), (132, 23888), (133, 23891), (139, 23918), (140, 23921), (154, 24026), (159, 24056), (162, 24071), (173, 24161), (179, 24200), (184, 24245), (208, 24413), (230, 24530), (232, 24536), (241, 24581), (252, 24632), (253, 24635), (268, 24698), (275, 24707), (285, 24794),

Gene: TinaFeyge\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for TinaFeyge\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (94, 23539), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Tinybot\_30 Start: 22937, Stop: 24793, Start Num: 4

Candidate Starts for Tinybot\_30:

(Start: 4 @22937 has 138 MA's), (19, 23063), (24, 23087), (46, 23246), (49, 23255), (55, 23297), (67, 23342), (68, 23348), (85, 23453), (88, 23465), (100, 23543), (108, 23612), (124, 23780), (127, 23810), (131, 23840), (133, 23867), (139, 23894), (140, 23897), (154, 24002), (157, 24023), (159, 24032), (173, 24137), (179, 24176), (184, 24221), (207, 24383), (230, 24506), (232, 24512), (268, 24674), (275, 24683),

Gene: TipsytheTRex\_30 Start: 21878, Stop: 23713, Start Num: 7

Candidate Starts for TipsytheTRex\_30:



(Start: 7 @21878 has 8 MA's), (21, 22001), (24, 22016), (28, 22034), (36, 22091), (43, 22139), (45, 22151), (65, 22262), (72, 22319), (73, 22325), (102, 22505), (112, 22589), (116, 22640), (118, 22661), (127, 22727), (136, 22811), (140, 22823), (152, 22931), (165, 23012), (177, 23111), (192, 23231), (230, 23435), (235, 23450), (256, 23561), (271, 23603),

Gene: TiroTheta9\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for TiroTheta9\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),

Gene: Toaka\_30 Start: 22544, Stop: 24361, Start Num: 7

Candidate Starts for Toaka\_30:

(Start: 7 @22544 has 8 MA's), (9, 22550), (18, 22649), (42, 22793), (45, 22817), (104, 23180), (105, 23183), (115, 23216), (123, 23294), (125, 23318), (128, 23336), (130, 23360), (148, 23486), (158, 23576), (176, 23714), (204, 23918), (211, 23963), (213, 23972), (226, 24047), (227, 24050), (284, 24350),

Gene: Tomathan\_34 Start: 22559, Stop: 24412, Start Num: 8

Candidate Starts for Tomathan\_34:

(Start: 5 @22553 has 3 MA's), (Start: 8 @22559 has 25 MA's), (21, 22679), (36, 22769), (45, 22829), (52, 22880), (69, 22973), (72, 22997), (73, 23003), (136, 23510), (147, 23579), (157, 23666), (171, 23747), (192, 23930), (235, 24149), (238, 24161), (243, 24191), (256, 24260), (264, 24284), (267, 24293), (280, 24329),

Gene: Travvers\_34 Start: 22559, Stop: 24412, Start Num: 8

Candidate Starts for Travvers\_34:

(Start: 5 @22553 has 3 MA's), (Start: 8 @22559 has 25 MA's), (21, 22679), (36, 22769), (45, 22829), (52, 22880), (69, 22973), (72, 22997), (73, 23003), (136, 23510), (147, 23579), (157, 23666), (171, 23747), (243, 24191), (247, 24206), (256, 24260), (264, 24284), (267, 24293), (280, 24329),

Gene: TroyPia\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for TroyPia\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: TygerBlood\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for TygerBlood\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Ulysses\_30 Start: 22678, Stop: 24534, Start Num: 4

Candidate Starts for Ulysses\_30:

(Start: 4 @22678 has 138 MA's), (19, 22804), (24, 22828), (41, 22933), (42, 22939), (46, 22987), (49, 22996), (55, 23038), (67, 23083), (68, 23089), (85, 23194), (88, 23206), (97, 23269), (100, 23284),

(108, 23353), (124, 23521), (131, 23581), (133, 23608), (139, 23635), (140, 23638), (154, 23743), (157, 23764), (159, 23773), (173, 23878), (184, 23962), (195, 24061), (230, 24247), (232, 24253), (241, 24298), (252, 24349), (253, 24352), (268, 24415), (275, 24424), (285, 24511),

Gene: VA6\_31 Start: 22715, Stop: 24568, Start Num: 8

Candidate Starts for VA6\_31:

(Start: 5 @22709 has 3 MA's), (Start: 8 @22715 has 25 MA's), (21, 22835), (36, 22925), (45, 22985), (46, 23009), (52, 23036), (69, 23129), (72, 23153), (73, 23159), (90, 23261), (136, 23666), (147, 23735), (171, 23903), (180, 23990), (192, 24086), (218, 24233), (243, 24347), (256, 24416), (264, 24440), (278, 24470), (280, 24485),

Gene: VC3\_34 Start: 22703, Stop: 24556, Start Num: 8

Candidate Starts for VC3\_34:

(Start: 5 @22697 has 3 MA's), (Start: 8 @22703 has 25 MA's), (21, 22823), (36, 22913), (45, 22973), (46, 22997), (52, 23024), (69, 23117), (72, 23141), (73, 23147), (90, 23249), (136, 23654), (147, 23723), (171, 23891), (180, 23978), (192, 24074), (218, 24221), (243, 24335), (256, 24404), (264, 24428), (278, 24458), (280, 24473),

Gene: Wander\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Wander\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (157, 24046), (159, 24055), (173, 24160), (179, 24199), (184, 24244), (207, 24406), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Wilbur\_31 Start: 22960, Stop: 24816, Start Num: 4

Candidate Starts for Wilbur\_31:

(Start: 4 @22960 has 138 MA's), (19, 23086), (24, 23110), (41, 23215), (42, 23221), (46, 23269), (49, 23278), (55, 23320), (67, 23365), (68, 23371), (85, 23476), (88, 23488), (100, 23566), (108, 23635), (131, 23863), (132, 23887), (133, 23890), (139, 23917), (140, 23920), (154, 24025), (159, 24055), (162, 24070), (173, 24160), (179, 24199), (184, 24244), (208, 24412), (230, 24529), (232, 24535), (241, 24580), (252, 24631), (253, 24634), (268, 24697), (275, 24706), (285, 24793),

Gene: Wile\_31 Start: 22982, Stop: 24841, Start Num: 4

Candidate Starts for Wile\_31:

(2, 22922), (3, 22937), (Start: 4 @22982 has 138 MA's), (15, 23048), (16, 23093), (18, 23099), (24, 23132), (28, 23150), (34, 23195), (35, 23201), (36, 23207), (49, 23300), (51, 23315), (67, 23387), (77, 23447), (85, 23498), (88, 23510), (100, 23588), (108, 23657), (119, 23780), (122, 23804), (131, 23885), (136, 23930), (139, 23939), (140, 23942), (157, 24071), (159, 24080), (166, 24122), (169, 24149), (173, 24185), (176, 24212), (179, 24224), (197, 24380), (230, 24554), (232, 24560), (241, 24605), (252, 24656), (253, 24659), (259, 24695), (275, 24731),

Gene: Wizard007\_31 Start: 22962, Stop: 24818, Start Num: 4

Candidate Starts for Wizard007\_31:

(Start: 4 @22962 has 138 MA's), (19, 23088), (24, 23112), (41, 23217), (42, 23223), (46, 23271), (49, 23280), (55, 23322), (67, 23367), (68, 23373), (85, 23478), (88, 23490), (100, 23568), (108, 23637), (131, 23865), (132, 23889), (133, 23892), (139, 23919), (140, 23922), (154, 24027), (159, 24057), (162, 24072), (173, 24162), (179, 24201), (184, 24246), (208, 24414), (230, 24531), (232, 24537), (241, 24582), (252, 24633), (253, 24636), (268, 24699), (275, 24708), (285, 24795),

Gene: Xena\_31 Start: 22969, Stop: 24828, Start Num: 4

Candidate Starts for Xena\_31:

(2, 22909), (Start: 4 @22969 has 138 MA's), (15, 23035), (16, 23080), (18, 23086), (24, 23119), (28, 23137), (34, 23182), (35, 23188), (36, 23194), (49, 23287), (51, 23302), (67, 23374), (77, 23434), (85, 23485), (88, 23497), (100, 23575), (108, 23644), (119, 23767), (122, 23791), (131, 23872), (136, 23917), (139, 23926), (140, 23929), (157, 24058), (159, 24067), (166, 24109), (169, 24136), (173, 24172), (176, 24199), (179, 24211), (197, 24367), (230, 24541), (232, 24547), (241, 24592), (252, 24643), (253, 24646), (259, 24682), (275, 24718),

Gene: XianYue\_31 Start: 22723, Stop: 24396, Start Num: 5

Candidate Starts for XianYue\_31:

(Start: 5 @22723 has 3 MA's), (19, 22840), (21, 22849), (22, 22855), (27, 22876), (32, 22906), (43, 22987), (71, 23155), (79, 23179), (99, 23287), (107, 23353), (138, 23620), (170, 23833), (193, 24019), (200, 24064), (202, 24073), (214, 24124), (215, 24142), (264, 24361), (277, 24388),

Gene: Yecey3\_32 Start: 22435, Stop: 24132, Start Num: 5

Candidate Starts for Yecey3\_32:

(Start: 5 @22435 has 3 MA's), (17, 22540), (28, 22594), (33, 22624), (42, 22687), (45, 22711), (72, 22789), (78, 22810), (80, 22813), (88, 22864), (90, 22885), (102, 22963), (103, 22966), (136, 23278), (137, 23281), (142, 23314), (143, 23320), (152, 23404), (153, 23410), (155, 23425), (165, 23485), (182, 23617), (192, 23704), (216, 23839), (221, 23866), (240, 23941), (242, 23956), (251, 23992), (254, 24016), (263, 24049), (267, 24061),

Gene: YoSam321\_31 Start: 22957, Stop: 24813, Start Num: 4

Candidate Starts for YoSam321\_31:

(Start: 4 @22957 has 138 MA's), (19, 23083), (24, 23107), (41, 23212), (42, 23218), (46, 23266), (49, 23275), (55, 23317), (67, 23362), (68, 23368), (85, 23473), (88, 23485), (100, 23563), (108, 23632), (131, 23860), (132, 23884), (133, 23887), (139, 23914), (140, 23917), (154, 24022), (159, 24052), (162, 24067), (173, 24157), (179, 24196), (184, 24241), (208, 24409), (230, 24526), (232, 24532), (241, 24577), (252, 24628), (253, 24631), (268, 24694), (275, 24703), (285, 24790),