



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 171283 Report

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

Pham number 171283 has 131 members, 20 are drafts.

Phages represented in each track:

- Track 1 : Baine\_18, Lola20\_17, Anseraureola\_17, Cayde6\_18
- Track 2 : Snuffles\_18, Stem\_17
- Track 3 : BurtonThePup\_17, MasterPitts\_18, JaimeB\_17, Octopus\_17, Otwor\_17, Goobery\_17, EdElric\_17, Alucard\_17, YertPhresh\_17, LionelHutz\_17, Gabbspett\_18, Puddles3\_18, Jannah\_17, Rhogar\_17, Bradley2\_17, Horacetta\_17, SeaWolves\_17, Owens\_17, Slentz\_17, Erin\_17, Rhysand\_17, Ciel\_17, Jahseh\_17, PaoPu\_17, NeumannU\_17, BinkBonk\_17, TimoTea\_17, Hulk\_17, Chatham\_17, Vanisius\_17, Aztec\_17, SantasSleigh\_17, Josuke\_17, Picnic\_17, Godfather\_17, Gardevoir\_17, Eightball\_17, GoldenBlanche\_18, Dooby\_17, Scrunchy\_17, Danno\_17, Charbie\_17, Minima\_17, LemonPepper\_18, ManAs\_17, Aries55\_17, Jerky\_17, KyriosFaba\_17, Maneater\_18, Gillker\_17, Scamander\_17, Pondwater\_17, Majesty\_17, Sage7\_19, JoBros\_17, BarBear\_17, Kojax4\_17, Astro16\_17, Cheesecake\_17, TeddyBoy\_17, Avvas\_17, LaviMo\_17, Yasuo\_17, Dongwon\_17, Burgy\_17, DaftyDuck\_18, Sara\_17, Witch\_17, Yubaba\_17
- Track 4 : Miaurora\_17, Lunatic\_17, Trireme\_17
- Track 5 : McShie\_17, BrokMonster\_17
- Track 6 : Quaker\_17, Livingwater\_17
- Track 7 : Leafy\_17
- Track 8 : Nobel\_17, Publix\_17, Namsahir\_18, PuffyCat\_17, Ekko14\_17, Bullzi2019\_17, TinyTruffula\_17, HarperAnne\_17, Clownery\_17, Elspeth\_17, Niffler\_17, TomBrady12\_17, Slizam\_17
- Track 9 : MirimarMandM\_17, Upsilon\_17, PoRanda\_17
- Track 10 : Hernandez44\_17, Luxx\_17
- Track 11 : Oaklynn\_18, Azizam\_17
- Track 12 : KayPaulus\_17, Wolfpack\_17
- Track 13 : MelBee03\_17, Kevanna\_17
- Track 14 : Belthelas\_17
- Track 15 : KillerTomato\_17, Bri160\_17
- Track 16 : Bintii\_18, JooneeDee\_18
- Track 17 : Danimal\_17
- Track 18 : Yami\_17
- Track 19 : Kaijohn\_17
- Track 20 : JRok\_17
- Track 21 : MrGreen\_17
- Track 22 : Noelani\_17
- Track 23 : Concrete\_17
- Track 24 : Sippinontea\_17

- Track 25 : BoomRoasted\_17
- Track 26 : Douggie\_17
- Track 27 : VitulaEligans\_17
- Track 28 : RoscoWindex\_18
- Track 29 : Loca\_17
- Track 30 : Bodhi17\_17
- Track 31 : Cazares\_17
- Track 32 : Biscayne\_17
- Track 33 : Floof\_21
- Track 34 : Zeta1847\_19
- Track 35 : PensacolaC28\_13

**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 108 of the 111 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alucard\_17, Anseraureola\_17, Aries55\_17, Astro16\_17, Avvas\_17, Azizam\_17, Aztec\_17, Baine\_18, BarBear\_17, Belthelas\_17, BinkBonk\_17, Bintii\_18, Biscayne\_17, Bodhi17\_17, BoomRoasted\_17, Bradley2\_17, Bri160\_17, BrokMonster\_17, Bullzi2019\_17, Burgy\_17, BurtonThePup\_17, Cayde6\_18, Charbie\_17, Chatham\_17, Cheesecake\_17, Ciel\_17, Clownery\_17, Concrete\_17, DaftyDuck\_18, Danimal\_17, Danno\_17, Dongwon\_17, Dooby\_17, Douggie\_17, EdElric\_17, Eightball\_17, Ekko14\_17, Elspeth\_17, Erin\_17, Gabbspett\_18, Gardevoir\_17, Gillker\_17, Godfather\_17, GoldenBlanche\_18, Goobery\_17, HarperAnne\_17, Hernandez44\_17, Horacetta\_17, Hulk\_17, JRok\_17, Jahseh\_17, JaimeB\_17, Jannah\_17, Jerky\_17, JoBros\_17, JooneeDee\_18, Josuke\_17, Kaijohn\_17, KayPaulus\_17, Kevanna\_17, KillerTomato\_17, Kojax4\_17, KyriosFaba\_17, LaviMo\_17, Leafy\_17, LemonPepper\_18, LionelHutz\_17, Livingwater\_17, Loca\_17, Lola20\_17, Lunatic\_17, Luxx\_17, Majesty\_17, ManAs\_17, Maneater\_18, MasterPitts\_18, McShie\_17, MelBee03\_17, Miaurora\_17, Minima\_17, MirimarMandM\_17, MrGreen\_17, Namsahir\_18, NeumannU\_17, Niffler\_17, Nobel\_17, Noelani\_17, Oaklynn\_18, Octopus\_17, Otwor\_17, Owens\_17, PaoPu\_17, Picnic\_17, PoRanda\_17, Pondwater\_17, Publix\_17, Puddles3\_18, PuffyCat\_17, Quaker\_17, Rhogar\_17, Rhysand\_17, Sage7\_19, SantasSleigh\_17, Sara\_17, Scamander\_17, Scrunchy\_17, SeaWolves\_17, Sippinontea\_17, Slentz\_17, Slizam\_17, TeddyBoy\_17, TimoTea\_17, TinyTruffula\_17, TomBrady12\_17, Trireme\_17, Upsilon\_17, Vanisius\_17, VitulaEligans\_17, Witch\_17, Wolfpack\_17, Yasuo\_17, YertPhresh\_17, Yubaba\_17, Zeta1847\_19,

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

- Cazares\_17, RoscoWindex\_18, Snuffles\_18, Stem\_17, Yami\_17,

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

- Floof\_21, PensacolaC28\_13,

**Summary by start number:**

Start 4:

- Found in 129 of 131 ( 98.5% ) of genes in pham
- Manual Annotations of this start: 108 of 111
- Called 96.1% of time when present
- Phage (with cluster) where this start called: Alucard\_17 (EE), Anseraureola\_17 (EE), Aries55\_17 (EE), Astro16\_17 (EE), Avvas\_17 (EE), Azizam\_17 (EE), Aztec\_17 (EE), Baine\_18 (EE), BarBear\_17 (EE), Belthelas\_17 (EE), BinkBonk\_17 (EE), Bintii\_18 (EE), Biscayne\_17 (EE), Bodhi17\_17 (EE), BoomRoasted\_17 (EE), Bradley2\_17 (EE), Bri160\_17 (EE), BrokMonster\_17 (EE), Bullzi2019\_17 (EE), Burgy\_17 (EE), BurtonThePup\_17 (EE), Cayde6\_18 (EE), Charbie\_17 (EE), Chatham\_17 (EE), Cheesecake\_17 (EE), Ciel\_17 (EE), Clownery\_17 (EE), Concrete\_17 (EE), DaftyDuck\_18 (EE), Danimal\_17 (EE), Danno\_17 (EE), Dongwon\_17 (EE), Dooby\_17 (EE), Duggie\_17 (EE), EdElric\_17 (EE), Eightball\_17 (EE), Ekko14\_17 (EE), Elspeth\_17 (EE), Erin\_17 (EE), Gabbspett\_18 (EE), Gardevoir\_17 (EE), Gillker\_17 (EE), Godfather\_17 (EE), GoldenBlanche\_18 (EE), Goobery\_17 (EE), HarperAnne\_17 (EE), Hernandez44\_17 (EE), Horacetta\_17 (EE), Hulk\_17 (EE), JRok\_17 (EE), Jahseh\_17 (EE), JaimeB\_17 (EE), Jannah\_17 (EE), Jerky\_17 (EE), JoBros\_17 (EE), JooneeDee\_18 (EE), Josuke\_17 (EE), Kaijohn\_17 (EE), KayPaulus\_17 (EE), Kevanna\_17 (EE), KillerTomato\_17 (EE), Kojax4\_17 (EE), KyriosFaba\_17 (EE), LaviMo\_17 (EE), Leafy\_17 (EE), LemonPepper\_18 (EE), LionelHutz\_17 (EE), Livingwater\_17 (EE), Loca\_17 (EE), Lola20\_17 (EE), Lunatic\_17 (EE), Luxx\_17 (EE), Majesty\_17 (EE), ManAs\_17 (EE), Maneater\_18 (EE), MasterPitts\_18 (EE), McShie\_17 (EE), MelBee03\_17 (EE), Miaurora\_17 (EE), Minima\_17 (EE), MirimarMandM\_17 (EE), MrGreen\_17 (EE), Namsahir\_18 (EE), NeumannU\_17 (EE), Niffler\_17 (EE), Nobel\_17 (EE), Noelani\_17 (EE), Oaklynn\_18 (EE), Octopus\_17 (EE), Otwor\_17 (EE), Owens\_17 (EE), PaoPu\_17 (EE), Picnic\_17 (EE), PoRanda\_17 (EE), Pondwater\_17 (EE), Publix\_17 (EE), Puddles3\_18 (EE), PuffyCat\_17 (EE), Quaker\_17 (EE), Rhogar\_17 (EE), Rhysand\_17 (EE), Sage7\_19 (EE), SantasSleigh\_17 (EE), Sara\_17 (EE), Scamander\_17 (EE), Scrunchy\_17 (EE), SeaWolves\_17 (EE), Sippinontea\_17 (EE), Slentz\_17 (EE), Slizam\_17 (EE), TeddyBoy\_17 (EE), TimoTea\_17 (EE), TinyTruffula\_17 (EE), TomBrady12\_17 (EE), Trireme\_17 (EE), Upsilon\_17 (EE), Vanisius\_17 (EE), VitulaEligans\_17 (EE), Witch\_17 (EE), Wolfpack\_17 (EE), Yasuo\_17 (EE), YertPhresh\_17 (EE), Yubaba\_17 (EE), Zeta1847\_19 (EH),

#### Start 5:

- Found in 1 of 131 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 111
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Floof\_21 (EH),

#### Start 6:

- Found in 128 of 131 ( 97.7% ) of genes in pham
- Manual Annotations of this start: 1 of 111
- Called 2.3% of time when present
- Phage (with cluster) where this start called: RoscoWindex\_18 (EE), Snuffles\_18 (EE), Stem\_17 (EE),

#### Start 9:

- Found in 127 of 131 ( 96.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 1.6% of time when present
- Phage (with cluster) where this start called: Cazares\_17 (EE), Yami\_17 (EE),

Start 11:

- Found in 3 of 131 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 1 of 111
- Called 33.3% of time when present
- Phage (with cluster) where this start called: PensacolaC28\_13 (singleton),

### **Summary by clusters:**

There are 3 clusters represented in this pham: EE, singleton, EH,

Info for manual annotations of cluster EE:

- Start number 4 was manually annotated 107 times for cluster EE.
- Start number 6 was manually annotated 1 time for cluster EE.

Info for manual annotations of cluster EH:

- Start number 4 was manually annotated 1 time for cluster EH.
- Start number 5 was manually annotated 1 time for cluster EH.

### **Gene Information:**

Gene: Alucard\_17 Start: 13564, Stop: 14250, Start Num: 4

Candidate Starts for Alucard\_17:

(Start: 4 @13564 has 108 MA's), (Start: 6 @13570 has 1 MA's), (8, 13603), (9, 13636), (12, 13729), (13, 13753), (14, 13756), (16, 13792), (17, 13831), (22, 13933), (25, 14095), (28, 14155),

Gene: Anseraureola\_17 Start: 13620, Stop: 14312, Start Num: 4

Candidate Starts for Anseraureola\_17:

(Start: 4 @13620 has 108 MA's), (Start: 6 @13626 has 1 MA's), (8, 13659), (9, 13692), (12, 13785), (13, 13809), (14, 13812), (16, 13848), (17, 13884), (24, 14133), (25, 14148), (28, 14217),

Gene: Aries55\_17 Start: 13641, Stop: 14336, Start Num: 4

Candidate Starts for Aries55\_17:

(Start: 4 @13641 has 108 MA's), (Start: 6 @13647 has 1 MA's), (8, 13680), (9, 13713), (12, 13806), (13, 13830), (14, 13833), (16, 13869), (17, 13908), (22, 14010), (25, 14172), (28, 14241),

Gene: Astro16\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for Astro16\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Avvas\_17 Start: 13641, Stop: 14336, Start Num: 4

Candidate Starts for Avvas\_17:

(Start: 4 @13641 has 108 MA's), (Start: 6 @13647 has 1 MA's), (8, 13680), (9, 13713), (12, 13806), (13, 13830), (14, 13833), (16, 13869), (17, 13908), (22, 14010), (25, 14172), (28, 14241),

Gene: Azizam\_17 Start: 13568, Stop: 14260, Start Num: 4

Candidate Starts for Azizam\_17:

(Start: 4 @13568 has 108 MA's), (Start: 6 @13574 has 1 MA's), (8, 13607), (9, 13640), (12, 13733), (13, 13757), (14, 13760), (16, 13796), (17, 13832), (24, 14081), (25, 14096), (32, 14201),

Gene: Aztec\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Aztec\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Baine\_18 Start: 13583, Stop: 14275, Start Num: 4

Candidate Starts for Baine\_18:

(Start: 4 @13583 has 108 MA's), (Start: 6 @13589 has 1 MA's), (8, 13622), (9, 13655), (12, 13748), (13, 13772), (14, 13775), (16, 13811), (17, 13847), (24, 14096), (25, 14111), (28, 14180),

Gene: BarBear\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for BarBear\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Belthelas\_17 Start: 13694, Stop: 14377, Start Num: 4

Candidate Starts for Belthelas\_17:

(Start: 4 @13694 has 108 MA's), (Start: 6 @13700 has 1 MA's), (8, 13733), (9, 13766), (12, 13859), (13, 13883), (14, 13886), (16, 13922), (17, 13958), (25, 14222), (28, 14282),

Gene: BinkBonk\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for BinkBonk\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Bintii\_18 Start: 13650, Stop: 14345, Start Num: 4

Candidate Starts for Bintii\_18:

(3, 13617), (Start: 4 @13650 has 108 MA's), (Start: 6 @13656 has 1 MA's), (8, 13689), (9, 13722), (12, 13815), (13, 13839), (14, 13842), (16, 13878), (17, 13917), (20, 13989), (22, 14019), (25, 14181), (28, 14250), (32, 14286),

Gene: Biscayne\_17 Start: 13696, Stop: 14391, Start Num: 4

Candidate Starts for Biscayne\_17:

(Start: 4 @13696 has 108 MA's), (Start: 6 @13702 has 1 MA's), (8, 13735), (9, 13768), (Start: 11 @13843 has 1 MA's), (12, 13861), (13, 13885), (14, 13888), (16, 13924), (17, 13963), (18, 13990), (22, 14065), (25, 14227), (28, 14296), (32, 14332),

Gene: Bodhi17\_17 Start: 13665, Stop: 14348, Start Num: 4

Candidate Starts for Bodhi17\_17:

(Start: 4 @13665 has 108 MA's), (Start: 6 @13671 has 1 MA's), (8, 13704), (9, 13737), (12, 13830), (13, 13854), (14, 13857), (16, 13893), (17, 13929), (25, 14193), (28, 14253),

Gene: BoomRoasted\_17 Start: 13633, Stop: 14325, Start Num: 4

Candidate Starts for BoomRoasted\_17:

(Start: 4 @13633 has 108 MA's), (Start: 6 @13639 has 1 MA's), (8, 13672), (9, 13705), (12, 13798), (13, 13822), (14, 13825), (16, 13861), (17, 13897), (24, 14146), (25, 14161), (28, 14230),

Gene: Bradley2\_17 Start: 13562, Stop: 14248, Start Num: 4

Candidate Starts for Bradley2\_17:

(Start: 4 @13562 has 108 MA's), (Start: 6 @13568 has 1 MA's), (8, 13601), (9, 13634), (12, 13727), (13, 13751), (14, 13754), (16, 13790), (17, 13829), (22, 13931), (25, 14093), (28, 14153),

Gene: Bri160\_17 Start: 13620, Stop: 14312, Start Num: 4

Candidate Starts for Bri160\_17:

(Start: 4 @13620 has 108 MA's), (Start: 6 @13626 has 1 MA's), (8, 13659), (9, 13692), (12, 13785), (13, 13809), (14, 13812), (16, 13848), (17, 13884), (24, 14133), (25, 14148), (28, 14217),

Gene: BrokMonster\_17 Start: 13617, Stop: 14309, Start Num: 4

Candidate Starts for BrokMonster\_17:

(Start: 4 @13617 has 108 MA's), (Start: 6 @13623 has 1 MA's), (8, 13656), (9, 13689), (12, 13782), (13, 13806), (14, 13809), (16, 13845), (17, 13881), (25, 14145), (32, 14250),

Gene: Bullzi2019\_17 Start: 13135, Stop: 13830, Start Num: 4

Candidate Starts for Bullzi2019\_17:

(Start: 4 @13135 has 108 MA's), (Start: 6 @13141 has 1 MA's), (8, 13174), (9, 13207), (12, 13300), (13, 13324), (14, 13327), (16, 13363), (17, 13402), (20, 13474), (22, 13504), (25, 13666), (28, 13735),

Gene: Burgy\_17 Start: 13641, Stop: 14336, Start Num: 4

Candidate Starts for Burgy\_17:

(Start: 4 @13641 has 108 MA's), (Start: 6 @13647 has 1 MA's), (8, 13680), (9, 13713), (12, 13806), (13, 13830), (14, 13833), (16, 13869), (17, 13908), (22, 14010), (25, 14172), (28, 14241),

Gene: BurtonThePup\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for BurtonThePup\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Cayde6\_18 Start: 13583, Stop: 14275, Start Num: 4

Candidate Starts for Cayde6\_18:

(Start: 4 @13583 has 108 MA's), (Start: 6 @13589 has 1 MA's), (8, 13622), (9, 13655), (12, 13748), (13, 13772), (14, 13775), (16, 13811), (17, 13847), (24, 14096), (25, 14111), (28, 14180),

Gene: Cazares\_17 Start: 13177, Stop: 13800, Start Num: 9

Candidate Starts for Cazares\_17:

(Start: 4 @13105 has 108 MA's), (Start: 6 @13111 has 1 MA's), (8, 13144), (9, 13177), (12, 13270), (13, 13294), (14, 13297), (16, 13333), (17, 13372), (20, 13444), (22, 13474), (25, 13636), (28, 13705), (32, 13741),

Gene: Charbie\_17 Start: 13618, Stop: 14313, Start Num: 4

Candidate Starts for Charbie\_17:

(Start: 4 @13618 has 108 MA's), (Start: 6 @13624 has 1 MA's), (8, 13657), (9, 13690), (12, 13783), (13, 13807), (14, 13810), (16, 13846), (17, 13885), (22, 13987), (25, 14149), (28, 14218),

Gene: Chatham\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Chatham\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Cheesecake\_17 Start: 13642, Stop: 14337, Start Num: 4

Candidate Starts for Cheesecake\_17:

(Start: 4 @13642 has 108 MA's), (Start: 6 @13648 has 1 MA's), (8, 13681), (9, 13714), (12, 13807), (13, 13831), (14, 13834), (16, 13870), (17, 13909), (22, 14011), (25, 14173), (28, 14242),

Gene: Ciel\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for Ciel\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Clownery\_17 Start: 13222, Stop: 13917, Start Num: 4

Candidate Starts for Clownery\_17:

(Start: 4 @13222 has 108 MA's), (Start: 6 @13228 has 1 MA's), (8, 13261), (9, 13294), (12, 13387), (13, 13411), (14, 13414), (16, 13450), (17, 13489), (20, 13561), (22, 13591), (25, 13753), (28, 13822),

Gene: Concrete\_17 Start: 13610, Stop: 14302, Start Num: 4

Candidate Starts for Concrete\_17:

(Start: 4 @13610 has 108 MA's), (Start: 6 @13616 has 1 MA's), (8, 13649), (9, 13682), (12, 13775), (13, 13799), (14, 13802), (16, 13838), (17, 13874), (24, 14123), (25, 14138), (28, 14207),

Gene: DaftyDuck\_18 Start: 13572, Stop: 14267, Start Num: 4

Candidate Starts for DaftyDuck\_18:

(Start: 4 @13572 has 108 MA's), (Start: 6 @13578 has 1 MA's), (8, 13611), (9, 13644), (12, 13737), (13, 13761), (14, 13764), (16, 13800), (17, 13839), (22, 13941), (25, 14103), (28, 14172),

Gene: Danimal\_17 Start: 13565, Stop: 14251, Start Num: 4

Candidate Starts for Danimal\_17:

(Start: 4 @13565 has 108 MA's), (Start: 6 @13571 has 1 MA's), (8, 13604), (9, 13637), (12, 13730), (13, 13754), (14, 13757), (16, 13793), (17, 13832), (22, 13934), (25, 14096), (28, 14156),

Gene: Danno\_17 Start: 13641, Stop: 14336, Start Num: 4

Candidate Starts for Danno\_17:

(Start: 4 @13641 has 108 MA's), (Start: 6 @13647 has 1 MA's), (8, 13680), (9, 13713), (12, 13806), (13, 13830), (14, 13833), (16, 13869), (17, 13908), (22, 14010), (25, 14172), (28, 14241),

Gene: Dongwon\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Dongwon\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Dooby\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Dooby\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Douggie\_17 Start: 13624, Stop: 14307, Start Num: 4

Candidate Starts for Douggie\_17:

(Start: 4 @13624 has 108 MA's), (Start: 6 @13630 has 1 MA's), (8, 13663), (9, 13696), (12, 13789), (13, 13813), (14, 13816), (16, 13852), (17, 13888), (25, 14152), (28, 14212),

Gene: EdElric\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for EdElric\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Eightball\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for Eightball\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Ekko14\_17 Start: 13103, Stop: 13798, Start Num: 4

Candidate Starts for Ekko14\_17:



(Start: 4 @13103 has 108 MA's), (Start: 6 @13109 has 1 MA's), (8, 13142), (9, 13175), (12, 13268), (13, 13292), (14, 13295), (16, 13331), (17, 13370), (20, 13442), (22, 13472), (25, 13634), (28, 13703),

Gene: Elspeth\_17 Start: 13103, Stop: 13798, Start Num: 4

Candidate Starts for Elspeth\_17:

(Start: 4 @13103 has 108 MA's), (Start: 6 @13109 has 1 MA's), (8, 13142), (9, 13175), (12, 13268), (13, 13292), (14, 13295), (16, 13331), (17, 13370), (20, 13442), (22, 13472), (25, 13634), (28, 13703),

Gene: Erin\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Erin\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Floof\_21 Start: 17890, Stop: 18708, Start Num: 5

Candidate Starts for Floof\_21:

(Start: 5 @17890 has 1 MA's), (16, 18124), (18, 18190), (21, 18238), (31, 18508), (34, 18592), (36, 18673),

Gene: Gabbspett\_18 Start: 13667, Stop: 14362, Start Num: 4

Candidate Starts for Gabbspett\_18:

(Start: 4 @13667 has 108 MA's), (Start: 6 @13673 has 1 MA's), (8, 13706), (9, 13739), (12, 13832), (13, 13856), (14, 13859), (16, 13895), (17, 13934), (22, 14036), (25, 14198), (28, 14267),

Gene: Gardevoir\_17 Start: 13597, Stop: 14283, Start Num: 4

Candidate Starts for Gardevoir\_17:

(Start: 4 @13597 has 108 MA's), (Start: 6 @13603 has 1 MA's), (8, 13636), (9, 13669), (12, 13762), (13, 13786), (14, 13789), (16, 13825), (17, 13864), (22, 13966), (25, 14128), (28, 14188),

Gene: Gillker\_17 Start: 13562, Stop: 14248, Start Num: 4

Candidate Starts for Gillker\_17:

(Start: 4 @13562 has 108 MA's), (Start: 6 @13568 has 1 MA's), (8, 13601), (9, 13634), (12, 13727), (13, 13751), (14, 13754), (16, 13790), (17, 13829), (22, 13931), (25, 14093), (28, 14153),

Gene: Godfather\_17 Start: 13641, Stop: 14336, Start Num: 4

Candidate Starts for Godfather\_17:

(Start: 4 @13641 has 108 MA's), (Start: 6 @13647 has 1 MA's), (8, 13680), (9, 13713), (12, 13806), (13, 13830), (14, 13833), (16, 13869), (17, 13908), (22, 14010), (25, 14172), (28, 14241),

Gene: GoldenBlanche\_18 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for GoldenBlanche\_18:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Goobery\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for Goobery\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: HarperAnne\_17 Start: 13102, Stop: 13797, Start Num: 4

Candidate Starts for HarperAnne\_17:

(Start: 4 @13102 has 108 MA's), (Start: 6 @13108 has 1 MA's), (8, 13141), (9, 13174), (12, 13267), (13, 13291), (14, 13294), (16, 13330), (17, 13369), (20, 13441), (22, 13471), (25, 13633), (28, 13702),

Gene: Hernandez44\_17 Start: 13667, Stop: 14362, Start Num: 4

Candidate Starts for Hernandez44\_17:

(Start: 4 @13667 has 108 MA's), (Start: 6 @13673 has 1 MA's), (8, 13706), (9, 13739), (12, 13832), (13, 13856), (14, 13859), (16, 13895), (17, 13934), (22, 14036), (25, 14198), (28, 14267), (32, 14303),

Gene: Horacetta\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Horacetta\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Hulk\_17 Start: 13579, Stop: 14274, Start Num: 4

Candidate Starts for Hulk\_17:

(Start: 4 @13579 has 108 MA's), (Start: 6 @13585 has 1 MA's), (8, 13618), (9, 13651), (12, 13744), (13, 13768), (14, 13771), (16, 13807), (17, 13846), (22, 13948), (25, 14110), (28, 14179),

Gene: JRok\_17 Start: 13566, Stop: 14258, Start Num: 4

Candidate Starts for JRok\_17:

(Start: 4 @13566 has 108 MA's), (Start: 6 @13572 has 1 MA's), (8, 13605), (9, 13638), (12, 13731), (13, 13755), (14, 13758), (16, 13794), (17, 13830), (24, 14079), (25, 14094), (32, 14199),

Gene: Jahseh\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Jahseh\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: JaimeB\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for JaimeB\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Jannah\_17 Start: 13630, Stop: 14316, Start Num: 4

Candidate Starts for Jannah\_17:

(Start: 4 @13630 has 108 MA's), (Start: 6 @13636 has 1 MA's), (8, 13669), (9, 13702), (12, 13795), (13, 13819), (14, 13822), (16, 13858), (17, 13897), (22, 13999), (25, 14161), (28, 14221),

Gene: Jerky\_17 Start: 13716, Stop: 14411, Start Num: 4

Candidate Starts for Jerky\_17:

(Start: 4 @13716 has 108 MA's), (Start: 6 @13722 has 1 MA's), (8, 13755), (9, 13788), (12, 13881), (13, 13905), (14, 13908), (16, 13944), (17, 13983), (22, 14085), (25, 14247), (28, 14316),

Gene: JoBros\_17 Start: 13564, Stop: 14250, Start Num: 4

Candidate Starts for JoBros\_17:

(Start: 4 @13564 has 108 MA's), (Start: 6 @13570 has 1 MA's), (8, 13603), (9, 13636), (12, 13729), (13, 13753), (14, 13756), (16, 13792), (17, 13831), (22, 13933), (25, 14095), (28, 14155),

Gene: JooneeDee\_18 Start: 13650, Stop: 14345, Start Num: 4

Candidate Starts for JooneeDee\_18:

(3, 13617), (Start: 4 @13650 has 108 MA's), (Start: 6 @13656 has 1 MA's), (8, 13689), (9, 13722), (12, 13815), (13, 13839), (14, 13842), (16, 13878), (17, 13917), (20, 13989), (22, 14019), (25, 14181), (28, 14250), (32, 14286),

Gene: Josuke\_17 Start: 13642, Stop: 14337, Start Num: 4

Candidate Starts for Josuke\_17:

(Start: 4 @13642 has 108 MA's), (Start: 6 @13648 has 1 MA's), (8, 13681), (9, 13714), (12, 13807), (13, 13831), (14, 13834), (16, 13870), (17, 13909), (22, 14011), (25, 14173), (28, 14242),

Gene: Kaijohn\_17 Start: 13601, Stop: 14293, Start Num: 4

Candidate Starts for Kaijohn\_17:

(Start: 4 @13601 has 108 MA's), (Start: 6 @13607 has 1 MA's), (8, 13640), (9, 13673), (12, 13766), (13, 13790), (14, 13793), (16, 13829), (17, 13865), (22, 13967), (25, 14129), (28, 14198),

Gene: KayPaulus\_17 Start: 13638, Stop: 14321, Start Num: 4

Candidate Starts for KayPaulus\_17:

(Start: 4 @13638 has 108 MA's), (Start: 6 @13644 has 1 MA's), (8, 13677), (9, 13710), (12, 13803), (13, 13827), (14, 13830), (16, 13866), (17, 13902), (25, 14166), (28, 14226),

Gene: Kevanna\_17 Start: 13627, Stop: 14310, Start Num: 4

Candidate Starts for Kevanna\_17:

(Start: 4 @13627 has 108 MA's), (Start: 6 @13633 has 1 MA's), (8, 13666), (9, 13699), (12, 13792), (13, 13816), (14, 13819), (16, 13855), (17, 13891), (25, 14155), (28, 14215), (32, 14251),

Gene: KillerTomato\_17 Start: 13620, Stop: 14312, Start Num: 4

Candidate Starts for KillerTomato\_17:

(Start: 4 @13620 has 108 MA's), (Start: 6 @13626 has 1 MA's), (8, 13659), (9, 13692), (12, 13785), (13, 13809), (14, 13812), (16, 13848), (17, 13884), (24, 14133), (25, 14148), (28, 14217),

Gene: Kojax4\_17 Start: 13641, Stop: 14336, Start Num: 4

Candidate Starts for Kojax4\_17:

(Start: 4 @13641 has 108 MA's), (Start: 6 @13647 has 1 MA's), (8, 13680), (9, 13713), (12, 13806), (13, 13830), (14, 13833), (16, 13869), (17, 13908), (22, 14010), (25, 14172), (28, 14241),

Gene: KyriosFaba\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for KyriosFaba\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: LaviMo\_17 Start: 13642, Stop: 14337, Start Num: 4

Candidate Starts for LaviMo\_17:

(Start: 4 @13642 has 108 MA's), (Start: 6 @13648 has 1 MA's), (8, 13681), (9, 13714), (12, 13807), (13, 13831), (14, 13834), (16, 13870), (17, 13909), (22, 14011), (25, 14173), (28, 14242),

Gene: Leafy\_17 Start: 13581, Stop: 14273, Start Num: 4

Candidate Starts for Leafy\_17:

(Start: 4 @13581 has 108 MA's), (Start: 6 @13587 has 1 MA's), (8, 13620), (9, 13653), (12, 13746), (13, 13770), (14, 13773), (16, 13809), (17, 13845), (24, 14094), (25, 14109), (28, 14178), (32, 14214),

Gene: LemonPepper\_18 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for LemonPepper\_18:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: LionelHutz\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for LionelHutz\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Livingwater\_17 Start: 13624, Stop: 14316, Start Num: 4

Candidate Starts for Livingwater\_17:

(Start: 4 @13624 has 108 MA's), (Start: 6 @13630 has 1 MA's), (8, 13663), (9, 13696), (12, 13789), (13, 13813), (14, 13816), (16, 13852), (17, 13888), (24, 14137), (25, 14152), (28, 14221), (32, 14257),

Gene: Loca\_17 Start: 13648, Stop: 14340, Start Num: 4

Candidate Starts for Loca\_17:

(Start: 4 @13648 has 108 MA's), (Start: 6 @13654 has 1 MA's), (8, 13687), (9, 13720), (12, 13813), (13, 13837), (14, 13840), (16, 13876), (17, 13912), (24, 14161), (25, 14176), (28, 14245),

Gene: Lola20\_17 Start: 13583, Stop: 14275, Start Num: 4

Candidate Starts for Lola20\_17:

(Start: 4 @13583 has 108 MA's), (Start: 6 @13589 has 1 MA's), (8, 13622), (9, 13655), (12, 13748), (13, 13772), (14, 13775), (16, 13811), (17, 13847), (24, 14096), (25, 14111), (28, 14180),

Gene: Lunatic\_17 Start: 13105, Stop: 13800, Start Num: 4

Candidate Starts for Lunatic\_17:

(Start: 4 @13105 has 108 MA's), (Start: 6 @13111 has 1 MA's), (8, 13144), (9, 13177), (12, 13270), (13, 13294), (14, 13297), (16, 13333), (17, 13372), (20, 13444), (22, 13474), (25, 13636), (28, 13705), (32, 13741),

Gene: Luxx\_17 Start: 13653, Stop: 14348, Start Num: 4

Candidate Starts for Luxx\_17:

(Start: 4 @13653 has 108 MA's), (Start: 6 @13659 has 1 MA's), (8, 13692), (9, 13725), (12, 13818), (13, 13842), (14, 13845), (16, 13881), (17, 13920), (22, 14022), (25, 14184), (28, 14253), (32, 14289),

Gene: Majesty\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for Majesty\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: ManAs\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for ManAs\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Maneater\_18 Start: 13617, Stop: 14312, Start Num: 4

Candidate Starts for Maneater\_18:

(Start: 4 @13617 has 108 MA's), (Start: 6 @13623 has 1 MA's), (8, 13656), (9, 13689), (12, 13782), (13, 13806), (14, 13809), (16, 13845), (17, 13884), (22, 13986), (25, 14148), (28, 14217),

Gene: MasterPitts\_18 Start: 13572, Stop: 14267, Start Num: 4

Candidate Starts for MasterPitts\_18:

(Start: 4 @13572 has 108 MA's), (Start: 6 @13578 has 1 MA's), (8, 13611), (9, 13644), (12, 13737), (13, 13761), (14, 13764), (16, 13800), (17, 13839), (22, 13941), (25, 14103), (28, 14172),

Gene: McShie\_17 Start: 13618, Stop: 14310, Start Num: 4

Candidate Starts for McShie\_17:

(Start: 4 @13618 has 108 MA's), (Start: 6 @13624 has 1 MA's), (8, 13657), (9, 13690), (12, 13783), (13, 13807), (14, 13810), (16, 13846), (17, 13882), (25, 14146), (32, 14251),

Gene: MelBee03\_17 Start: 13627, Stop: 14310, Start Num: 4

Candidate Starts for MelBee03\_17:

(Start: 4 @13627 has 108 MA's), (Start: 6 @13633 has 1 MA's), (8, 13666), (9, 13699), (12, 13792), (13, 13816), (14, 13819), (16, 13855), (17, 13891), (25, 14155), (28, 14215), (32, 14251),

Gene: Miaurora\_17 Start: 13222, Stop: 13917, Start Num: 4

Candidate Starts for Miaurora\_17:

(Start: 4 @13222 has 108 MA's), (Start: 6 @13228 has 1 MA's), (8, 13261), (9, 13294), (12, 13387), (13, 13411), (14, 13414), (16, 13450), (17, 13489), (20, 13561), (22, 13591), (25, 13753), (28, 13822), (32, 13858),

Gene: Minima\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Minima\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: MirimarMandM\_17 Start: 13693, Stop: 14388, Start Num: 4

Candidate Starts for MirimarMandM\_17:

(3, 13660), (Start: 4 @13693 has 108 MA's), (Start: 6 @13699 has 1 MA's), (8, 13732), (9, 13765), (12, 13858), (13, 13882), (14, 13885), (16, 13921), (17, 13960), (20, 14032), (22, 14062), (25, 14224), (28, 14293),

Gene: MrGreen\_17 Start: 13591, Stop: 14283, Start Num: 4

Candidate Starts for MrGreen\_17:

(Start: 4 @13591 has 108 MA's), (Start: 6 @13597 has 1 MA's), (8, 13630), (9, 13663), (12, 13756), (13, 13780), (16, 13819), (17, 13855), (24, 14104), (25, 14119), (28, 14188),

Gene: Namsahir\_18 Start: 13177, Stop: 13872, Start Num: 4

Candidate Starts for Namsahir\_18:

(Start: 4 @13177 has 108 MA's), (Start: 6 @13183 has 1 MA's), (8, 13216), (9, 13249), (12, 13342), (13, 13366), (14, 13369), (16, 13405), (17, 13444), (20, 13516), (22, 13546), (25, 13708), (28, 13777),

Gene: NeumannU\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for NeumannU\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Niffler\_17 Start: 13195, Stop: 13890, Start Num: 4

Candidate Starts for Niffler\_17:

(Start: 4 @13195 has 108 MA's), (Start: 6 @13201 has 1 MA's), (8, 13234), (9, 13267), (12, 13360), (13, 13384), (14, 13387), (16, 13423), (17, 13462), (20, 13534), (22, 13564), (25, 13726), (28, 13795),

Gene: Nobel\_17 Start: 13222, Stop: 13917, Start Num: 4

Candidate Starts for Nobel\_17:

(Start: 4 @13222 has 108 MA's), (Start: 6 @13228 has 1 MA's), (8, 13261), (9, 13294), (12, 13387), (13, 13411), (14, 13414), (16, 13450), (17, 13489), (20, 13561), (22, 13591), (25, 13753), (28, 13822),

Gene: Noelani\_17 Start: 13525, Stop: 14217, Start Num: 4

Candidate Starts for Noelani\_17:

(1, 13351), (Start: 4 @13525 has 108 MA's), (Start: 6 @13531 has 1 MA's), (8, 13564), (Start: 11 @13672 has 1 MA's), (12, 13690), (13, 13714), (14, 13717), (16, 13753), (17, 13789), (25, 14053), (28, 14122), (32, 14158),

Gene: Oaklynn\_18 Start: 13568, Stop: 14260, Start Num: 4

Candidate Starts for Oaklynn\_18:

(Start: 4 @13568 has 108 MA's), (Start: 6 @13574 has 1 MA's), (8, 13607), (9, 13640), (12, 13733), (13, 13757), (14, 13760), (16, 13796), (17, 13832), (24, 14081), (25, 14096), (32, 14201),

Gene: Octopus\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Octopus\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Otwor\_17 Start: 13643, Stop: 14338, Start Num: 4

Candidate Starts for Otwor\_17:

(Start: 4 @13643 has 108 MA's), (Start: 6 @13649 has 1 MA's), (8, 13682), (9, 13715), (12, 13808), (13, 13832), (14, 13835), (16, 13871), (17, 13910), (22, 14012), (25, 14174), (28, 14243),

Gene: Owens\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for Owens\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: PaoPu\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for PaoPu\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: PensacolaC28\_13 Start: 11328, Stop: 12149, Start Num: 11

Candidate Starts for PensacolaC28\_13:

(2, 11043), (7, 11217), (10, 11256), (Start: 11 @11328 has 1 MA's), (15, 11385), (27, 11763), (29, 11811), (30, 11814), (33, 11913),

Gene: Picnic\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Picnic\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: PoRanda\_17 Start: 13693, Stop: 14388, Start Num: 4

Candidate Starts for PoRanda\_17:

(3, 13660), (Start: 4 @13693 has 108 MA's), (Start: 6 @13699 has 1 MA's), (8, 13732), (9, 13765), (12, 13858), (13, 13882), (14, 13885), (16, 13921), (17, 13960), (20, 14032), (22, 14062), (25, 14224), (28, 14293),

Gene: Pondwater\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Pondwater\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Publix\_17 Start: 13177, Stop: 13872, Start Num: 4

Candidate Starts for Publix\_17:

(Start: 4 @13177 has 108 MA's), (Start: 6 @13183 has 1 MA's), (8, 13216), (9, 13249), (12, 13342), (13, 13366), (14, 13369), (16, 13405), (17, 13444), (20, 13516), (22, 13546), (25, 13708), (28, 13777),

Gene: Puddles3\_18 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Puddles3\_18:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: PuffyCat\_17 Start: 13147, Stop: 13842, Start Num: 4

Candidate Starts for PuffyCat\_17:

(Start: 4 @13147 has 108 MA's), (Start: 6 @13153 has 1 MA's), (8, 13186), (9, 13219), (12, 13312), (13, 13336), (14, 13339), (16, 13375), (17, 13414), (20, 13486), (22, 13516), (25, 13678), (28, 13747),

Gene: Quaker\_17 Start: 13624, Stop: 14316, Start Num: 4

Candidate Starts for Quaker\_17:

(Start: 4 @13624 has 108 MA's), (Start: 6 @13630 has 1 MA's), (8, 13663), (9, 13696), (12, 13789), (13, 13813), (14, 13816), (16, 13852), (17, 13888), (24, 14137), (25, 14152), (28, 14221), (32, 14257),

Gene: Rhogar\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for Rhogar\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Rhysand\_17 Start: 13642, Stop: 14337, Start Num: 4

Candidate Starts for Rhysand\_17:

(Start: 4 @13642 has 108 MA's), (Start: 6 @13648 has 1 MA's), (8, 13681), (9, 13714), (12, 13807), (13, 13831), (14, 13834), (16, 13870), (17, 13909), (22, 14011), (25, 14173), (28, 14242),

Gene: RoscoWindex\_18 Start: 13648, Stop: 14337, Start Num: 6

Candidate Starts for RoscoWindex\_18:

(Start: 4 @13642 has 108 MA's), (Start: 6 @13648 has 1 MA's), (8, 13681), (9, 13714), (12, 13807), (13, 13831), (14, 13834), (16, 13870), (17, 13909), (22, 14011), (25, 14173), (28, 14242),

Gene: Sage7\_19 Start: 13641, Stop: 14336, Start Num: 4

Candidate Starts for Sage7\_19:

(Start: 4 @13641 has 108 MA's), (Start: 6 @13647 has 1 MA's), (8, 13680), (9, 13713), (12, 13806), (13, 13830), (14, 13833), (16, 13869), (17, 13908), (22, 14010), (25, 14172), (28, 14241),

Gene: SantasSleigh\_17 Start: 13665, Stop: 14360, Start Num: 4

Candidate Starts for SantasSleigh\_17:

(Start: 4 @13665 has 108 MA's), (Start: 6 @13671 has 1 MA's), (8, 13704), (9, 13737), (12, 13830), (13, 13854), (14, 13857), (16, 13893), (17, 13932), (22, 14034), (25, 14196), (28, 14265),

Gene: Sara\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for Sara\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Scamander\_17 Start: 13641, Stop: 14336, Start Num: 4

Candidate Starts for Scamander\_17:

(Start: 4 @13641 has 108 MA's), (Start: 6 @13647 has 1 MA's), (8, 13680), (9, 13713), (12, 13806), (13, 13830), (14, 13833), (16, 13869), (17, 13908), (22, 14010), (25, 14172), (28, 14241),

Gene: Scrunchy\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for Scrunchy\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: SeaWolves\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for SeaWolves\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Sippinontea\_17 Start: 13656, Stop: 14339, Start Num: 4

Candidate Starts for Sippinontea\_17:

(Start: 4 @13656 has 108 MA's), (Start: 6 @13662 has 1 MA's), (8, 13695), (9, 13728), (12, 13821), (13, 13845), (14, 13848), (16, 13884), (17, 13920), (25, 14184), (28, 14244),

Gene: Slentz\_17 Start: 13635, Stop: 14330, Start Num: 4

Candidate Starts for Slentz\_17:

(Start: 4 @13635 has 108 MA's), (Start: 6 @13641 has 1 MA's), (8, 13674), (9, 13707), (12, 13800), (13, 13824), (14, 13827), (16, 13863), (17, 13902), (22, 14004), (25, 14166), (28, 14235),

Gene: Slizam\_17 Start: 13153, Stop: 13848, Start Num: 4

Candidate Starts for Slizam\_17:

(Start: 4 @13153 has 108 MA's), (Start: 6 @13159 has 1 MA's), (8, 13192), (9, 13225), (12, 13318), (13, 13342), (14, 13345), (16, 13381), (17, 13420), (20, 13492), (22, 13522), (25, 13684), (28, 13753),

Gene: Snuffles\_18 Start: 13331, Stop: 14020, Start Num: 6

Candidate Starts for Snuffles\_18:

(Start: 4 @13325 has 108 MA's), (Start: 6 @13331 has 1 MA's), (8, 13364), (9, 13397), (12, 13490), (13, 13514), (14, 13517), (16, 13553), (17, 13592), (20, 13664), (22, 13694), (25, 13856), (28, 13925),

Gene: Stem\_17 Start: 13159, Stop: 13848, Start Num: 6

Candidate Starts for Stem\_17:

(Start: 4 @13153 has 108 MA's), (Start: 6 @13159 has 1 MA's), (8, 13192), (9, 13225), (12, 13318), (13, 13342), (14, 13345), (16, 13381), (17, 13420), (20, 13492), (22, 13522), (25, 13684), (28, 13753),

Gene: TeddyBoy\_17 Start: 13636, Stop: 14331, Start Num: 4

Candidate Starts for TeddyBoy\_17:

(Start: 4 @13636 has 108 MA's), (Start: 6 @13642 has 1 MA's), (8, 13675), (9, 13708), (12, 13801), (13, 13825), (14, 13828), (16, 13864), (17, 13903), (22, 14005), (25, 14167), (28, 14236),

Gene: TimoTea\_17 Start: 13617, Stop: 14312, Start Num: 4

Candidate Starts for TimoTea\_17:

(Start: 4 @13617 has 108 MA's), (Start: 6 @13623 has 1 MA's), (8, 13656), (9, 13689), (12, 13782), (13, 13806), (14, 13809), (16, 13845), (17, 13884), (22, 13986), (25, 14148), (28, 14217),

Gene: TinyTruffula\_17 Start: 13222, Stop: 13917, Start Num: 4

Candidate Starts for TinyTruffula\_17:

(Start: 4 @13222 has 108 MA's), (Start: 6 @13228 has 1 MA's), (8, 13261), (9, 13294), (12, 13387), (13, 13411), (14, 13414), (16, 13450), (17, 13489), (20, 13561), (22, 13591), (25, 13753), (28, 13822),

Gene: TomBrady12\_17 Start: 13154, Stop: 13849, Start Num: 4

Candidate Starts for TomBrady12\_17:

(Start: 4 @13154 has 108 MA's), (Start: 6 @13160 has 1 MA's), (8, 13193), (9, 13226), (12, 13319), (13, 13343), (14, 13346), (16, 13382), (17, 13421), (20, 13493), (22, 13523), (25, 13685), (28, 13754),

Gene: Trireme\_17 Start: 13220, Stop: 13915, Start Num: 4

Candidate Starts for Trireme\_17:

(Start: 4 @13220 has 108 MA's), (Start: 6 @13226 has 1 MA's), (8, 13259), (9, 13292), (12, 13385), (13, 13409), (14, 13412), (16, 13448), (17, 13487), (20, 13559), (22, 13589), (25, 13751), (28, 13820), (32, 13856),



Gene: Upsilon\_17 Start: 13693, Stop: 14388, Start Num: 4

Candidate Starts for Upsilon\_17:

(3, 13660), (Start: 4 @13693 has 108 MA's), (Start: 6 @13699 has 1 MA's), (8, 13732), (9, 13765), (12, 13858), (13, 13882), (14, 13885), (16, 13921), (17, 13960), (20, 14032), (22, 14062), (25, 14224), (28, 14293),

Gene: Vanisius\_17 Start: 13642, Stop: 14337, Start Num: 4

Candidate Starts for Vanisius\_17:

(Start: 4 @13642 has 108 MA's), (Start: 6 @13648 has 1 MA's), (8, 13681), (9, 13714), (12, 13807), (13, 13831), (14, 13834), (16, 13870), (17, 13909), (22, 14011), (25, 14173), (28, 14242),

Gene: VitulaEligans\_17 Start: 13723, Stop: 14418, Start Num: 4

Candidate Starts for VitulaEligans\_17:

(Start: 4 @13723 has 108 MA's), (Start: 6 @13729 has 1 MA's), (8, 13762), (9, 13795), (12, 13888), (13, 13912), (14, 13915), (16, 13951), (17, 13990), (22, 14092), (25, 14254), (28, 14323),

Gene: Witch\_17 Start: 13564, Stop: 14250, Start Num: 4

Candidate Starts for Witch\_17:

(Start: 4 @13564 has 108 MA's), (Start: 6 @13570 has 1 MA's), (8, 13603), (9, 13636), (12, 13729), (13, 13753), (14, 13756), (16, 13792), (17, 13831), (22, 13933), (25, 14095), (28, 14155),

Gene: Wolfpack\_17 Start: 13638, Stop: 14321, Start Num: 4

Candidate Starts for Wolfpack\_17:

(Start: 4 @13638 has 108 MA's), (Start: 6 @13644 has 1 MA's), (8, 13677), (9, 13710), (12, 13803), (13, 13827), (14, 13830), (16, 13866), (17, 13902), (25, 14166), (28, 14226),

Gene: Yami\_17 Start: 13177, Stop: 13800, Start Num: 9

Candidate Starts for Yami\_17:

(Start: 4 @13105 has 108 MA's), (Start: 6 @13111 has 1 MA's), (8, 13144), (9, 13177), (12, 13270), (13, 13294), (14, 13297), (16, 13333), (17, 13372), (20, 13444), (22, 13474), (25, 13636), (28, 13705),

Gene: Yasuo\_17 Start: 13626, Stop: 14321, Start Num: 4

Candidate Starts for Yasuo\_17:

(Start: 4 @13626 has 108 MA's), (Start: 6 @13632 has 1 MA's), (8, 13665), (9, 13698), (12, 13791), (13, 13815), (14, 13818), (16, 13854), (17, 13893), (22, 13995), (25, 14157), (28, 14226),

Gene: YertPhresh\_17 Start: 13563, Stop: 14249, Start Num: 4

Candidate Starts for YertPhresh\_17:

(Start: 4 @13563 has 108 MA's), (Start: 6 @13569 has 1 MA's), (8, 13602), (9, 13635), (12, 13728), (13, 13752), (14, 13755), (16, 13791), (17, 13830), (22, 13932), (25, 14094), (28, 14154),

Gene: Yubaba\_17 Start: 13597, Stop: 14283, Start Num: 4

Candidate Starts for Yubaba\_17:

(Start: 4 @13597 has 108 MA's), (Start: 6 @13603 has 1 MA's), (8, 13636), (9, 13669), (12, 13762), (13, 13786), (14, 13789), (16, 13825), (17, 13864), (22, 13966), (25, 14128), (28, 14188),

Gene: Zeta1847\_19 Start: 17757, Stop: 18641, Start Num: 4

Candidate Starts for Zeta1847\_19:

(Start: 4 @17757 has 108 MA's), (16, 17979), (19, 18072), (23, 18222), (26, 18285), (35, 18465), (37, 18561),