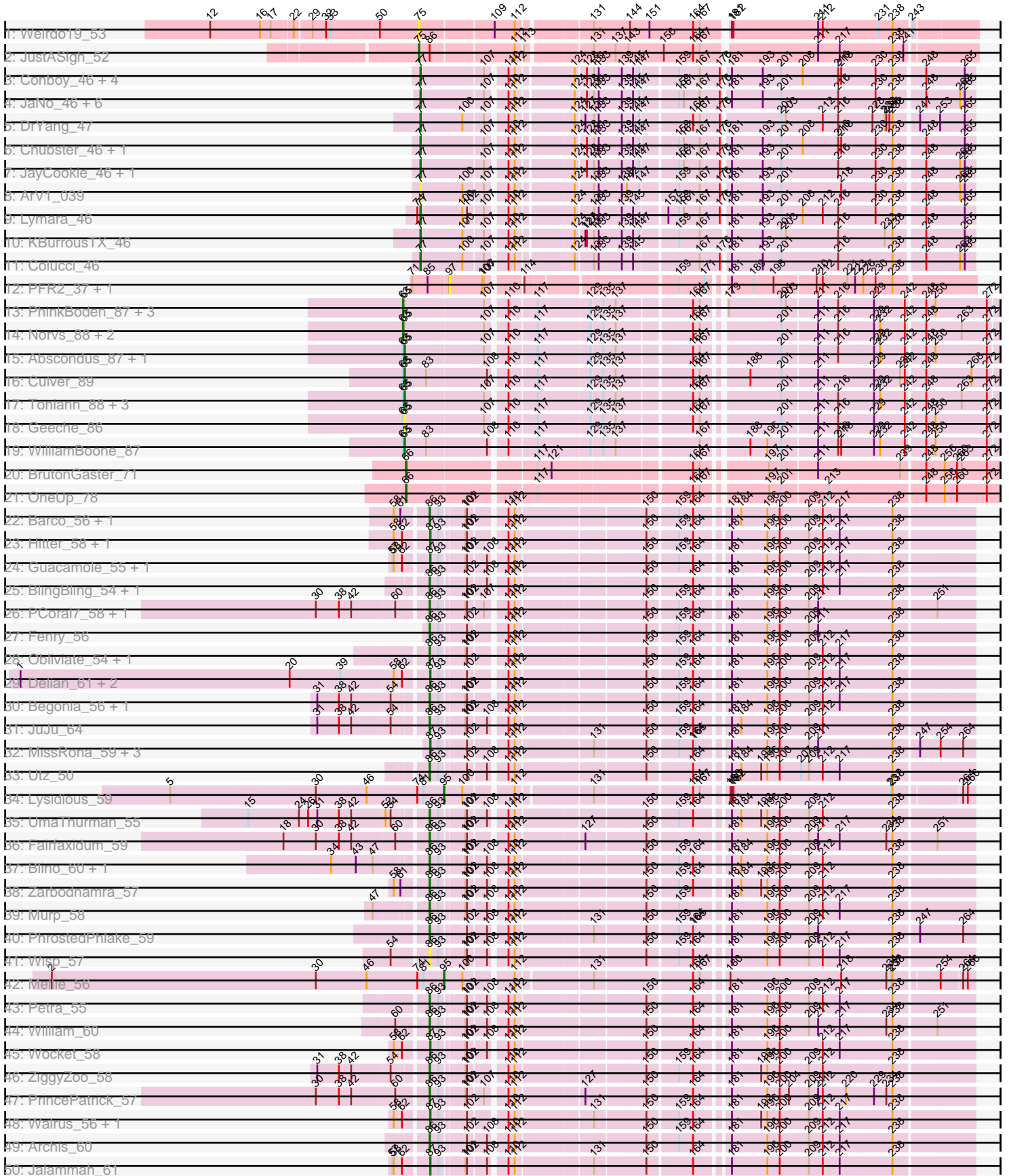
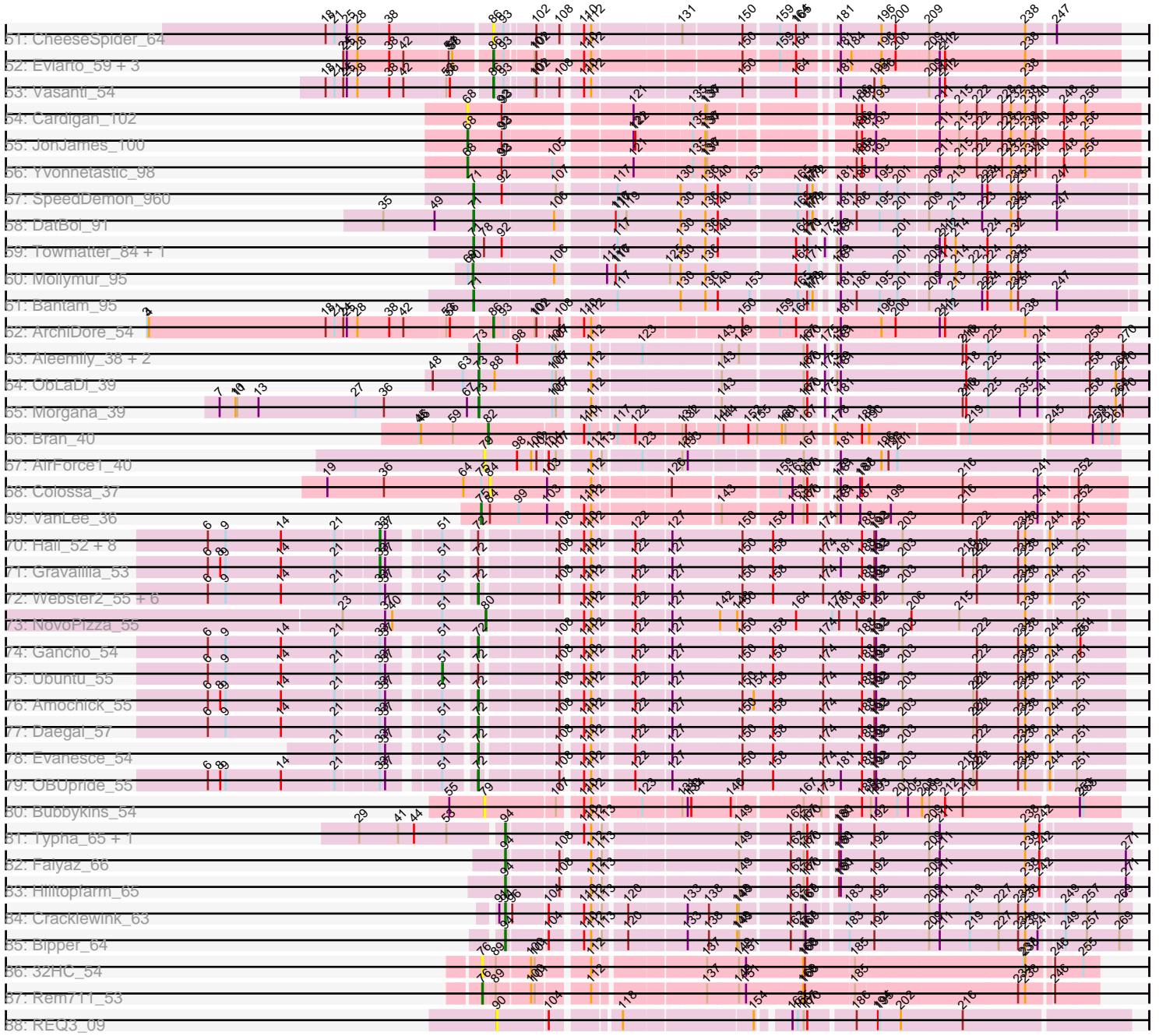


Pham 294509



Pham 294509



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 294509 Report

This analysis was run 04/18/26 on database version 643.

Pham number 294509 has 145 members, 17 are drafts.

Phages represented in each track:

- Track 1 : Weirdo19\_53
- Track 2 : JustASigh\_52
- Track 3 : Conboy\_46, Chocolat\_46, EdgarPoe\_46, PrincessTrina\_46, Linus\_46
- Track 4 : JaNo\_46, Tophat\_46, Kabreeze\_46, RosiePosie\_46, HumptyDumpty\_46, Mordred\_46, Chipper1996\_460
- Track 5 : DrYang\_47
- Track 6 : Chubster\_46, MoyaNatalis\_46
- Track 7 : JayCookie\_46, Scavito\_46
- Track 8 : ArV1\_039
- Track 9 : Lymara\_46
- Track 10 : KBurrousTX\_46
- Track 11 : Colucci\_46
- Track 12 : PFR2\_37, PFR1\_35
- Track 13 : PhinkBoden\_87, Cucurbita\_89, Bachita\_89, Engineer\_89
- Track 14 : Norvs\_88, Smoothie\_89, ClubL\_87
- Track 15 : Abscondus\_87, Dusty\_85
- Track 16 : Culver\_89
- Track 17 : Toniann\_88, Aphelion\_87, Lozinak\_88, Miskis\_80
- Track 18 : Geeche\_86
- Track 19 : WilliamBoone\_87
- Track 20 : BrutonGaster\_71
- Track 21 : OneUp\_78
- Track 22 : Barco\_56, Zilla\_57
- Track 23 : Hitter\_58, Samba\_57
- Track 24 : Guacamole\_55, JasperJr\_55
- Track 25 : BlingBling\_54, Melba\_56
- Track 26 : PCoral7\_58, Toast\_58
- Track 27 : Fenry\_56
- Track 28 : Obliviate\_54, KappaFarmDelta\_59
- Track 29 : Delian\_61, CaptainKirk2\_58, MintFen\_58
- Track 30 : Begonia\_56, Malachai\_56
- Track 31 : JuJu\_64
- Track 32 : MissRona\_59, Blueberry\_58, Gambino\_61, Azula\_59
- Track 33 : Utz\_50
- Track 34 : Lysidious\_59
- Track 35 : UmaThurman\_55
- Track 36 : Fairfaxidum\_59

- Track 37 : Blino\_60, CarolAnn\_59
- Track 38 : Zarbodnamra\_57
- Track 39 : Murp\_58
- Track 40 : PhrostedPhlake\_59
- Track 41 : Wisp\_57
- Track 42 : Mellie\_56
- Track 43 : Petra\_55
- Track 44 : William\_60
- Track 45 : Wocket\_58
- Track 46 : ZiggyZoo\_58
- Track 47 : PrincePatrick\_57
- Track 48 : Walrus\_56, Pipp\_60
- Track 49 : Archis\_60
- Track 50 : Jalammah\_61
- Track 51 : CheeseSpider\_64
- Track 52 : Eviarto\_59, BatStarr\_58, Nymphadora\_59, TimTam\_59
- Track 53 : Vasanti\_54
- Track 54 : Cardigan\_102
- Track 55 : JonJames\_100
- Track 56 : Yvonnetastic\_98
- Track 57 : SpeedDemon\_960
- Track 58 : DatBoi\_91
- Track 59 : Towmatter\_84, Daredevil\_85
- Track 60 : Mollymur\_95
- Track 61 : Bantam\_95
- Track 62 : ArchiDore\_54
- Track 63 : Aleemily\_38, ModicumRichard\_39, Cafasso\_39
- Track 64 : ObLaDi\_39
- Track 65 : Morgana\_39
- Track 66 : Bran\_40
- Track 67 : AirForce1\_40
- Track 68 : Colossa\_37
- Track 69 : VanLee\_36
- Track 70 : Hail\_52, Luke\_54, Hadrien\_54, Wishmaker\_52, Giles\_52, Forge\_52, Luna22\_52, Kinbote\_54, Dewey\_52
- Track 71 : Gravallia\_53
- Track 72 : Webster2\_55, LilHazelNut\_55, BloominB\_55, Ein37\_55, Amymech\_55, DeepSoil15\_55, HH92\_54
- Track 73 : NovoPizza\_55
- Track 74 : Gancho\_54
- Track 75 : Ubuntu\_55
- Track 76 : Amochick\_55
- Track 77 : Daegal\_57
- Track 78 : Evanesce\_54
- Track 79 : OBUpride\_55
- Track 80 : Bubbykins\_54
- Track 81 : Typha\_65, AuntGwenStacy\_66
- Track 82 : Faiyaz\_66
- Track 83 : Hilltopfarm\_65
- Track 84 : Cracklewink\_63
- Track 85 : Bipper\_64
- Track 86 : 32HC\_54
- Track 87 : Rem711\_53

- Track 88 : REQ3\_09

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

The start number called the most often in the published annotations is 86, it was called in 30 of the 128 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ArchiDore\_54, Archis\_60, Barco\_56, BatStarr\_58, Begonia\_56, BlingBling\_54, Blino\_60, CarolAnn\_59, CheeseSpider\_64, Eviarto\_59, Fairfaxidum\_59, Fenry\_56, JuJu\_64, KappaFarmDelta\_59, Malachai\_56, Melba\_56, Murp\_58, Nymphadora\_59, Obliviate\_54, PCoral7\_58, Petra\_55, PhrostedPhlake\_59, PrincePatrick\_57, TimTam\_59, Toast\_58, UmaThurman\_55, Utz\_50, Vasanti\_54, William\_60, Wisp\_57, Zarbodnamra\_57, ZiggyZoo\_58, Zilla\_57,

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

- JustASigh\_52,

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

- 32HC\_54, Abscondus\_87, AirForce1\_40, Aleemily\_38, Amochick\_55, Amymech\_55, Aphelion\_87, ArV1\_039, AuntGwenStacy\_66, Azula\_59, Bachita\_89, Bantam\_95, Bipper\_64, BloominB\_55, Blueberry\_58, Bran\_40, BrutonGaster\_71, Bubbykins\_54, Cafasso\_39, CaptainKirk2\_58, Cardigan\_102, Chipper1996\_460, Chocolat\_46, Chubster\_46, ClubL\_87, Colossa\_37, Colucci\_46, Conboy\_46, Cracklewink\_63, Cucurbita\_89, Culver\_89, Daegal\_57, Daredevil\_85, DatBoi\_91, DeepSoil15\_55, Delian\_61, Dewey\_52, DrYang\_47, Dusty\_85, EdgarPoe\_46, Ein37\_55, Engineer\_89, Evanesce\_54, Faiyaz\_66, Forge\_52, Gambino\_61, Gancho\_54, Geeche\_86, Giles\_52, Gravaiillia\_53, Guacamole\_55, HH92\_54, Hadrien\_54, Hail\_52, Hilltopfarm\_65, Hitter\_58, HumptyDumpty\_46, JaNo\_46, Jalammah\_61, JasperJr\_55, JayCookie\_46, JonJames\_100, KBurrousTX\_46, Kabreeze\_46, Kinbote\_54, LilHazelNut\_55, Linus\_46, Lozinak\_88, Luke\_54, Luna22\_52, Lymara\_46, Lysidious\_59, Mellie\_56, MintFen\_58, Miskis\_80, MissRona\_59, ModicumRichard\_39, Mollymur\_95, Mordred\_46, Morgana\_39, MoyaNatalis\_46, Norvs\_88, NovoPizza\_55, OBUpride\_55, ObLaDi\_39, OneUp\_78, PFR1\_35, PFR2\_37, PhinkBoden\_87, Pipp\_60, PrincessTrina\_46, REQ3\_09, Rem711\_53, RosiePosie\_46, Samba\_57, Scavito\_46, Smoothie\_89, SpeedDemon\_960, Toniann\_88, Tophat\_46, Towmatter\_84, Typha\_65, Ubuntu\_55, VanLee\_36, Walrus\_56, Webster2\_55, Weirdo19\_53, WilliamBoone\_87, Wishmaker\_52, Wocket\_58, Yvonnestic\_98,

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

Start 33:

- Found in 24 of 145 ( 16.6% ) of genes in pham
- Manual Annotations of this start: 10 of 128
- Called 41.7% of time when present
- Phage (with cluster) where this start called: Dewey\_52 (Q), Forge\_52 (Q), Giles\_52 (Q), Gravaiillia\_53 (Q), Hadrien\_54 (Q), Hail\_52 (Q), Kinbote\_54 (Q), Luke\_54 (Q), Luna22\_52 (Q), Wishmaker\_52 (Q),

Start 51:

- Found in 24 of 145 ( 16.6% ) of genes in pham
- Manual Annotations of this start: 1 of 128
- Called 4.2% of time when present
- Phage (with cluster) where this start called: Ubuntu\_55 (Q),

Start 63:

- Found in 17 of 145 ( 11.7% ) of genes in pham
- Manual Annotations of this start: 7 of 128
- Called 41.2% of time when present
- Phage (with cluster) where this start called: Bachita\_89 (CQ1), ClubL\_87 (CQ1), Cucurbita\_89 (CQ1), Engineer\_89 (CQ1), Norvs\_88 (CQ1), PhinkBoden\_87 (CQ1), Smoothie\_89 (CQ1),

Start 65:

- Found in 16 of 145 ( 11.0% ) of genes in pham
- Manual Annotations of this start: 8 of 128
- Called 56.2% of time when present
- Phage (with cluster) where this start called: Abscondus\_87 (CQ1), Aphelion\_87 (CQ1), Culver\_89 (CQ1), Dusty\_85 (CQ1), Geeche\_86 (CQ1), Lozinak\_88 (CQ1), Miskis\_80 (CQ1), Toniann\_88 (CQ1), WilliamBoone\_87 (CQ1),

Start 66:

- Found in 2 of 145 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BrutonGaster\_71 (CQ2), OneUp\_78 (CQ2),

Start 68:

- Found in 3 of 145 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 2 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cardigan\_102 (DD), JonJames\_100 (DD), Yvonnetastic\_98 (DD),

Start 70:

- Found in 1 of 145 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Mollymur\_95 (DL),

Start 71:

- Found in 7 of 145 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 5 of 128
- Called 71.4% of time when present
- Phage (with cluster) where this start called: Bantam\_95 (DL), Daredevil\_85 (DL), DatBoi\_91 (DL), SpeedDemon\_960 (DL), Towmatter\_84 (DL),

Start 72:

- Found in 23 of 145 ( 15.9% ) of genes in pham
- Manual Annotations of this start: 11 of 128
- Called 52.2% of time when present

- Phage (with cluster) where this start called: Amochick\_55 (Q), Amymech\_55 (Q), BloominB\_55 (Q), Daegal\_57 (Q), DeepSoil15\_55 (Q), Ein37\_55 (Q), Evanesce\_54 (Q), Gancho\_54 (Q), HH92\_54 (Q), LilHazelNut\_55 (Q), OBUpride\_55 (Q), Webster2\_55 (Q),

#### Start 73:

- Found in 5 of 145 ( 3.4% ) of genes in pham
- Manual Annotations of this start: 5 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aleemily\_38 (DZ), Cafasso\_39 (DZ), ModicumRichard\_39 (DZ), Morgana\_39 (DZ), ObLaDi\_39 (DZ),

#### Start 75:

- Found in 4 of 145 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 2 of 128
- Called 75.0% of time when present
- Phage (with cluster) where this start called: JustASigh\_52 (AH), VanLee\_36 (KA), Weirido19\_53 (AH),

#### Start 76:

- Found in 2 of 145 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: 32HC\_54 (Z), Rem711\_53 (Z),

#### Start 77:

- Found in 21 of 145 ( 14.5% ) of genes in pham
- Manual Annotations of this start: 19 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ArV1\_039 (AR), Chipper1996\_460 (AR), Chocolat\_46 (AR), Chubster\_46 (AR), Colucci\_46 (AR), Conboy\_46 (AR), DrYang\_47 (AR), EdgarPoe\_46 (AR), HumptyDumpty\_46 (AR), JaNo\_46 (AR), JayCookie\_46 (AR), KBurrousTX\_46 (AR), Kabreeze\_46 (AR), Linus\_46 (AR), Lymara\_46 (AR), Mordred\_46 (AR), MoyaNatalis\_46 (AR), PrincessTrina\_46 (AR), RosiePosie\_46 (AR), Scavito\_46 (AR), Tophat\_46 (AR),

#### Start 79:

- Found in 2 of 145 ( 1.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AirForce1\_40 (FL), Bubbykins\_54 (UNK),

#### Start 80:

- Found in 1 of 145 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: NovoPizza\_55 (Q),

#### Start 82:

- Found in 1 of 145 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 128
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Bran\_40 (EP),

#### Start 84:

- Found in 2 of 145 ( 1.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Colossa\_37 (KA),

#### Start 86:

- Found in 34 of 145 ( 23.4% ) of genes in pham
- Manual Annotations of this start: 30 of 128
- Called 97.1% of time when present
- Phage (with cluster) where this start called: ArchiDore\_54 (DW), Archis\_60 (CV), Barco\_56 (CV), BatStarr\_58 (CZ1), Begonia\_56 (CV), BlingBling\_54 (CV), Blino\_60 (CV), CarolAnn\_59 (CV), CheeseSpider\_64 (CV), Eviarto\_59 (CZ1), Fairfaxidum\_59 (CV), Fenry\_56 (CV), JuJu\_64 (CV), KappaFarmDelta\_59 (CV), Malachai\_56 (CV), Melba\_56 (CV), Murp\_58 (CV), Nymphadora\_59 (CZ1), Obliviate\_54 (CV), PCoral7\_58 (CV), Petra\_55 (CV), PhrostedPhlake\_59 (CV), PrincePatrick\_57 (CV), TimTam\_59 (CZ1), Toast\_58 (CV), UmaThurman\_55 (CV), Utz\_50 (CV), Vasanti\_54 (CZ2), William\_60 (CV), Wisp\_57 (CV), Zarbodnamra\_57 (CV), ZiggyZoo\_58 (CV), Zilla\_57 (CV),

#### Start 87:

- Found in 15 of 145 ( 10.3% ) of genes in pham
- Manual Annotations of this start: 15 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Azula\_59 (CV), Blueberry\_58 (CV), CaptainKirk2\_58 (CV), Delian\_61 (CV), Gambino\_61 (CV), Guacamole\_55 (CV), Hitter\_58 (CV), Jalammah\_61 (CV), JasperJr\_55 (CV), MintFen\_58 (CV), MissRona\_59 (CV), Pipp\_60 (CV), Samba\_57 (CV), Walrus\_56 (CV), Wocket\_58 (CV),

#### Start 90:

- Found in 1 of 145 ( 0.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: REQ3\_09 (singleton),

#### Start 94:

- Found in 6 of 145 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 5 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AuntGwenStacy\_66 (Y), Bipper\_64 (Y), Cracklewink\_63 (Y), Faiyaz\_66 (Y), Hilltopfarm\_65 (Y), Typha\_65 (Y),

#### Start 95:

- Found in 2 of 145 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lysidious\_59 (CV), Mellie\_56 (CV),

#### Start 97:

- Found in 2 of 145 ( 1.4% ) of genes in pham

- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: PFR1\_35 (BX), PFR2\_37 (BX),

### **Summary by clusters:**

There are 20 clusters represented in this pham: KA, DL, UNK, CZ2, AH, DD, CZ1, singleton, EP, Q, AR, DZ, DW, Y, CQ2, CQ1, Z, FL, CV, BX,

Info for manual annotations of cluster AH:

- Start number 75 was manually annotated 1 time for cluster AH.

Info for manual annotations of cluster AR:

- Start number 77 was manually annotated 19 times for cluster AR.

Info for manual annotations of cluster CQ1:

- Start number 63 was manually annotated 7 times for cluster CQ1.
- Start number 65 was manually annotated 8 times for cluster CQ1.

Info for manual annotations of cluster CQ2:

- Start number 66 was manually annotated 2 times for cluster CQ2.

Info for manual annotations of cluster CV:

- Start number 86 was manually annotated 24 times for cluster CV.
- Start number 87 was manually annotated 15 times for cluster CV.
- Start number 95 was manually annotated 2 times for cluster CV.

Info for manual annotations of cluster CZ1:

- Start number 86 was manually annotated 4 times for cluster CZ1.

Info for manual annotations of cluster CZ2:

- Start number 86 was manually annotated 1 time for cluster CZ2.

Info for manual annotations of cluster DD:

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

Info for manual annotations of cluster DL:

- Start number 70 was manually annotated 1 time for cluster DL.
- Start number 71 was manually annotated 5 times for cluster DL.

Info for manual annotations of cluster DW:

- Start number 86 was manually annotated 1 time for cluster DW.

Info for manual annotations of cluster DZ:

- Start number 73 was manually annotated 5 times for cluster DZ.

Info for manual annotations of cluster EP:

- Start number 82 was manually annotated 1 time for cluster EP.

Info for manual annotations of cluster KA:

- Start number 75 was manually annotated 1 time for cluster KA.

Info for manual annotations of cluster Q:

- Start number 33 was manually annotated 10 times for cluster Q.
- Start number 51 was manually annotated 1 time for cluster Q.
- Start number 72 was manually annotated 11 times for cluster Q.
- Start number 80 was manually annotated 1 time for cluster Q.

Info for manual annotations of cluster Y:

- Start number 94 was manually annotated 5 times for cluster Y.

Info for manual annotations of cluster Z:

- Start number 76 was manually annotated 1 time for cluster Z.

### **Gene Information:**

Gene: 32HC\_54 Start: 36687, Stop: 37607, Start Num: 76

Candidate Starts for 32HC\_54:

(Start: 76 @36687 has 1 MA's), (89, 36705), (100, 36756), (101, 36762), (112, 36837), (137, 37002), (149, 37050), (151, 37062), (166, 37152), (168, 37155), (185, 37233), (237, 37500), (238, 37503), (246, 37539), (255, 37581),

Gene: Abscondus\_87 Start: 53597, Stop: 54637, Start Num: 65

Candidate Starts for Abscondus\_87:

(Start: 63 @53594 has 7 MA's), (Start: 65 @53597 has 8 MA's), (107, 53744), (110, 53777), (117, 53828), (129, 53927), (135, 53948), (137, 53972), (164, 54101), (167, 54113), (201, 54239), (211, 54302), (216, 54341), (229, 54410), (232, 54422), (242, 54470), (248, 54503), (250, 54521), (272, 54620),

Gene: AirForce1\_40 Start: 30261, Stop: 31193, Start Num: 79

Candidate Starts for AirForce1\_40:

(79, 30261), (98, 30315), (100, 30339), (102, 30348), (104, 30363), (107, 30375), (112, 30420), (113, 30432), (123, 30489), (131, 30543), (133, 30549), (167, 30714), (181, 30750), (196, 30816), (198, 30828), (201, 30840),

Gene: Aleemily\_38 Start: 31779, Stop: 32792, Start Num: 73

Candidate Starts for Aleemily\_38:

(Start: 73 @31779 has 5 MA's), (98, 31842), (105, 31899), (107, 31905), (112, 31950), (123, 32022), (143, 32142), (149, 32169), (167, 32262), (170, 32268), (175, 32283), (179, 32292), (181, 32298), (216, 32496), (218, 32502), (225, 32538), (241, 32622), (258, 32694), (270, 32748),

Gene: Amochick\_55 Start: 38924, Stop: 39895, Start Num: 72

Candidate Starts for Amochick\_55:

(6, 38531), (8, 38552), (9, 38561), (14, 38654), (21, 38738), (Start: 33 @38804 has 10 MA's), (37, 38813), (Start: 51 @38882 has 1 MA's), (Start: 72 @38924 has 11 MA's), (108, 39035), (110, 39062), (112, 39074), (122, 39131), (127, 39182), (150, 39293), (154, 39311), (158, 39341), (174, 39422), (188, 39488), (192, 39506), (193, 39509), (203, 39551), (221, 39659), (222, 39665), (234, 39734), (238, 39746), (244, 39779), (251, 39818),

Gene: Amymech\_55 Start: 38900, Stop: 39871, Start Num: 72

Candidate Starts for Amymech\_55:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Aphelion\_87 Start: 54219, Stop: 55259, Start Num: 65

Candidate Starts for Aphelion\_87:

(Start: 63 @54216 has 7 MA's), (Start: 65 @54219 has 8 MA's), (107, 54366), (110, 54399), (117, 54450), (129, 54549), (135, 54570), (137, 54594), (164, 54723), (167, 54735), (201, 54861), (211, 54924), (216, 54963), (229, 55032), (232, 55044), (242, 55092), (248, 55125), (263, 55194), (272, 55242),

Gene: ArV1\_039 Start: 34906, Stop: 35859, Start Num: 77

Candidate Starts for ArV1\_039:

(Start: 77 @34906 has 19 MA's), (100, 34981), (107, 35017), (110, 35050), (112, 35062), (124, 35155), (131, 35185), (133, 35191), (139, 35236), (142, 35245), (147, 35269), (159, 35329), (167, 35365), (176, 35404), (181, 35416), (193, 35473), (201, 35506), (218, 35620), (230, 35686), (238, 35719), (248, 35770), (262, 35833), (265, 35842),

Gene: ArchiDore\_54 Start: 40092, Stop: 41021, Start Num: 86

Candidate Starts for ArchiDore\_54:

(3, 39528), (4, 39531), (18, 39831), (21, 39846), (24, 39861), (25, 39867), (28, 39885), (38, 39939), (42, 39963), (53, 40029), (56, 40035), (Start: 86 @40092 has 30 MA's), (93, 40107), (101, 40149), (102, 40152), (108, 40185), (110, 40212), (112, 40224), (150, 40449), (159, 40500), (164, 40524), (181, 40578), (196, 40644), (200, 40665), (211, 40734), (212, 40743), (238, 40875),

Gene: Archis\_60 Start: 37454, Stop: 38383, Start Num: 86

Candidate Starts for Archis\_60:

(Start: 86 @37454 has 30 MA's), (93, 37469), (102, 37514), (108, 37547), (110, 37574), (112, 37586), (150, 37811), (159, 37862), (164, 37886), (181, 37940), (196, 38006), (200, 38027), (209, 38078), (212, 38105), (217, 38135), (238, 38237),

Gene: AuntGwenStacy\_66 Start: 45547, Stop: 46461, Start Num: 94

Candidate Starts for AuntGwenStacy\_66:

(29, 45319), (41, 45385), (44, 45412), (53, 45466), (Start: 94 @45547 has 5 MA's), (110, 45652), (112, 45664), (113, 45676), (149, 45877), (162, 45949), (167, 45970), (170, 45976), (180, 46009), (181, 46012), (192, 46066), (209, 46147), (211, 46165), (238, 46306), (242, 46330),

Gene: Azula\_59 Start: 39736, Stop: 40665, Start Num: 87

Candidate Starts for Azula\_59:

(Start: 87 @39736 has 15 MA's), (93, 39751), (102, 39796), (110, 39856), (112, 39868), (131, 40003), (150, 40093), (159, 40144), (164, 40168), (165, 40171), (181, 40222), (196, 40288), (200, 40309), (209, 40360), (211, 40378), (238, 40519), (247, 40564), (254, 40603), (264, 40642),

Gene: Bachita\_89 Start: 54642, Stop: 55685, Start Num: 63

Candidate Starts for Bachita\_89:

(Start: 63 @54642 has 7 MA's), (Start: 65 @54645 has 8 MA's), (107, 54792), (110, 54825), (117, 54876), (129, 54975), (135, 54996), (137, 55020), (164, 55149), (167, 55161), (179, 55191), (201, 55287), (203, 55296), (211, 55350), (216, 55389), (229, 55458), (242, 55518), (248, 55551), (250, 55569), (272, 55668),

Gene: Bantam\_95 Start: 64152, Stop: 63124, Start Num: 71

Candidate Starts for Bantam\_95:

(Start: 71 @64152 has 5 MA's), (117, 63930), (130, 63825), (136, 63783), (140, 63762), (153, 63708), (165, 63642), (170, 63627), (171, 63624), (172, 63618), (181, 63597), (186, 63570), (195, 63534), (201, 63507), (209, 63462), (213, 63423), (223, 63372), (224, 63363), (232, 63324), (234, 63312), (247, 63246),

Gene: Barco\_56 Start: 37010, Stop: 37939, Start Num: 86

Candidate Starts for Barco\_56:

(58, 36959), (61, 36971), (Start: 86 @37010 has 30 MA's), (93, 37025), (101, 37067), (102, 37070), (110, 37130), (112, 37142), (150, 37367), (159, 37418), (164, 37442), (181, 37496), (184, 37514), (196, 37562), (200, 37583), (209, 37634), (212, 37661), (217, 37691), (238, 37793),

Gene: BatStarr\_58 Start: 41291, Stop: 42220, Start Num: 86

Candidate Starts for BatStarr\_58:

(24, 41057), (25, 41063), (28, 41081), (38, 41135), (42, 41159), (54, 41231), (57, 41234), (58, 41237), (Start: 86 @41291 has 30 MA's), (93, 41306), (101, 41348), (102, 41351), (110, 41411), (112, 41423), (150, 41648), (159, 41699), (164, 41723), (181, 41777), (184, 41795), (196, 41843), (200, 41864), (209, 41915), (211, 41933), (212, 41942), (238, 42074),

Gene: Begonia\_56 Start: 39249, Stop: 40178, Start Num: 86

Candidate Starts for Begonia\_56:

(31, 39057), (38, 39099), (42, 39123), (54, 39195), (Start: 86 @39249 has 30 MA's), (93, 39264), (101, 39306), (102, 39309), (110, 39369), (112, 39381), (150, 39606), (159, 39657), (164, 39681), (181, 39735), (196, 39801), (200, 39822), (209, 39873), (212, 39900), (217, 39930), (238, 40032),

Gene: Bipper\_64 Start: 44977, Stop: 45906, Start Num: 94

Candidate Starts for Bipper\_64:

(Start: 94 @44977 has 5 MA's), (104, 45037), (110, 45082), (112, 45094), (113, 45106), (120, 45139), (133, 45226), (138, 45262), (148, 45304), (149, 45307), (162, 45379), (167, 45400), (169, 45403), (183, 45463), (192, 45502), (209, 45583), (211, 45601), (219, 45652), (227, 45700), (234, 45733), (238, 45745), (241, 45766), (249, 45799), (257, 45832), (269, 45886),

Gene: BlingBling\_54 Start: 37467, Stop: 38396, Start Num: 86

Candidate Starts for BlingBling\_54:

(Start: 86 @37467 has 30 MA's), (93, 37482), (102, 37527), (108, 37560), (110, 37587), (112, 37599), (150, 37824), (164, 37899), (181, 37953), (196, 38019), (200, 38040), (209, 38091), (212, 38118), (217, 38148), (238, 38250),

Gene: Blino\_60 Start: 42431, Stop: 43360, Start Num: 86

Candidate Starts for Blino\_60:

(34, 42269), (43, 42317), (47, 42350), (Start: 86 @42431 has 30 MA's), (93, 42446), (101, 42488), (102, 42491), (108, 42524), (110, 42551), (112, 42563), (150, 42788), (159, 42839), (164, 42863), (181, 42917), (184, 42935), (196, 42983), (200, 43004), (209, 43055), (212, 43082), (238, 43214),

Gene: BloominB\_55 Start: 38900, Stop: 39871, Start Num: 72

Candidate Starts for BloominB\_55:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Blueberry\_58 Start: 39736, Stop: 40665, Start Num: 87

Candidate Starts for Blueberry\_58:

(Start: 87 @39736 has 15 MA's), (93, 39751), (102, 39796), (110, 39856), (112, 39868), (131, 40003), (150, 40093), (159, 40144), (164, 40168), (165, 40171), (181, 40222), (196, 40288), (200, 40309), (209, 40360), (211, 40378), (238, 40519), (247, 40564), (254, 40603), (264, 40642),

Gene: Bran\_40 Start: 30480, Stop: 31427, Start Num: 82

Candidate Starts for Bran\_40:

(45, 30363), (46, 30366), (59, 30420), (Start: 82 @30480 has 1 MA's), (110, 30621), (111, 30630), (117, 30663), (122, 30693), (131, 30759), (132, 30765), (141, 30813), (144, 30822), (152, 30861), (155, 30876), (160, 30918), (161, 30924), (167, 30954), (178, 30987), (188, 31032), (190, 31041), (219, 31185), (245, 31311), (259, 31383), (261, 31398), (267, 31416),

Gene: BrutonGaster\_71 Start: 49921, Stop: 50958, Start Num: 66

Candidate Starts for BrutonGaster\_71:

(Start: 66 @49921 has 2 MA's), (117, 50146), (121, 50173), (164, 50416), (167, 50428), (197, 50533), (201, 50554), (211, 50617), (239, 50776), (248, 50818), (256, 50854), (260, 50878), (263, 50887), (272, 50935),

Gene: Bubbykins\_54 Start: 41419, Stop: 42384, Start Num: 79

Candidate Starts for Bubbykins\_54:

(55, 41359), (79, 41419), (107, 41530), (110, 41563), (112, 41575), (123, 41647), (131, 41707), (133, 41713), (134, 41719), (146, 41785), (167, 41887), (173, 41917), (188, 41974), (191, 41986), (193, 41995), (201, 42028), (205, 42046), (208, 42070), (209, 42082), (212, 42109), (216, 42136), (253, 42319), (255, 42322),

Gene: Cafasso\_39 Start: 32353, Stop: 33366, Start Num: 73

Candidate Starts for Cafasso\_39:

(Start: 73 @32353 has 5 MA's), (98, 32416), (105, 32473), (107, 32479), (112, 32524), (123, 32596), (143, 32716), (149, 32743), (167, 32836), (170, 32842), (175, 32857), (179, 32866), (181, 32872), (216, 33070), (218, 33076), (225, 33112), (241, 33196), (258, 33268), (270, 33322),

Gene: CaptainKirk2\_58 Start: 37249, Stop: 38178, Start Num: 87

Candidate Starts for CaptainKirk2\_58:

(1, 36475), (20, 37000), (39, 37099), (58, 37198), (62, 37210), (Start: 87 @37249 has 15 MA's), (93, 37264), (102, 37309), (110, 37369), (112, 37381), (150, 37606), (159, 37657), (164, 37681), (181, 37735), (196, 37801), (200, 37822), (209, 37873), (212, 37900), (217, 37930), (238, 38032),

Gene: Cardigan\_102 Start: 59943, Stop: 60962, Start Num: 68

Candidate Starts for Cardigan\_102:

(Start: 68 @59943 has 2 MA's), (92, 59997), (93, 60000), (121, 60195), (135, 60288), (136, 60309), (137, 60312), (186, 60513), (188, 60522), (193, 60543), (211, 60639), (215, 60672), (222, 60702), (228, 60744), (232, 60759), (238, 60783), (240, 60801), (248, 60837), (256, 60873),

Gene: CarolAnn\_59 Start: 42430, Stop: 43359, Start Num: 86

Candidate Starts for CarolAnn\_59:

(34, 42268), (43, 42316), (47, 42349), (Start: 86 @42430 has 30 MA's), (93, 42445), (101, 42487), (102, 42490), (108, 42523), (110, 42550), (112, 42562), (150, 42787), (159, 42838), (164, 42862), (181, 42916), (184, 42934), (196, 42982), (200, 43003), (209, 43054), (212, 43081), (238, 43213),

Gene: CheeseSpider\_64 Start: 38516, Stop: 39445, Start Num: 86

Candidate Starts for CheeseSpider\_64:

(18, 38249), (21, 38264), (25, 38285), (28, 38303), (38, 38357), (Start: 86 @38516 has 30 MA's), (93, 38531), (102, 38576), (108, 38609), (110, 38636), (112, 38648), (131, 38783), (150, 38873), (159, 38924), (164, 38948), (165, 38951), (181, 39002), (196, 39068), (200, 39089), (209, 39140), (238,

39299), (247, 39344),

Gene: Chipper1996\_460 Start: 36472, Stop: 37425, Start Num: 77

Candidate Starts for Chipper1996\_460:

(Start: 77 @36472 has 19 MA's), (107, 36583), (110, 36616), (112, 36628), (124, 36721), (128, 36739), (131, 36751), (133, 36757), (139, 36802), (145, 36823), (147, 36835), (159, 36895), (161, 36901), (167, 36931), (176, 36970), (181, 36982), (193, 37039), (201, 37072), (216, 37180), (230, 37252), (238, 37285), (248, 37336), (262, 37399), (265, 37408),

Gene: Chocolat\_46 Start: 36464, Stop: 37417, Start Num: 77

Candidate Starts for Chocolat\_46:

(Start: 77 @36464 has 19 MA's), (107, 36575), (110, 36608), (112, 36620), (124, 36713), (128, 36731), (131, 36743), (133, 36749), (139, 36794), (145, 36815), (147, 36827), (159, 36887), (167, 36923), (176, 36962), (181, 36974), (193, 37031), (201, 37064), (208, 37106), (216, 37172), (218, 37178), (230, 37244), (238, 37277), (248, 37328), (265, 37400),

Gene: Chubster\_46 Start: 36384, Stop: 37337, Start Num: 77

Candidate Starts for Chubster\_46:

(Start: 77 @36384 has 19 MA's), (107, 36495), (110, 36528), (112, 36540), (124, 36633), (128, 36651), (131, 36663), (133, 36669), (139, 36714), (145, 36735), (147, 36747), (159, 36807), (161, 36813), (167, 36843), (176, 36882), (181, 36894), (193, 36951), (201, 36984), (208, 37026), (216, 37092), (218, 37098), (230, 37164), (238, 37197), (248, 37248), (265, 37320),

Gene: ClubL\_87 Start: 53329, Stop: 54372, Start Num: 63

Candidate Starts for ClubL\_87:

(Start: 63 @53329 has 7 MA's), (Start: 65 @53332 has 8 MA's), (107, 53479), (110, 53512), (117, 53563), (129, 53662), (135, 53683), (137, 53707), (164, 53836), (167, 53848), (201, 53974), (211, 54037), (216, 54076), (229, 54145), (232, 54157), (242, 54205), (248, 54238), (263, 54307), (272, 54355),

Gene: Colossa\_37 Start: 29366, Stop: 30301, Start Num: 84

Candidate Starts for Colossa\_37:

(19, 29090), (36, 29186), (64, 29321), (Start: 75 @29351 has 2 MA's), (84, 29366), (103, 29462), (112, 29519), (126, 29633), (159, 29786), (163, 29804), (167, 29822), (170, 29828), (179, 29852), (181, 29858), (187, 29891), (188, 29894), (216, 30056), (241, 30182), (252, 30230),

Gene: Colucci\_46 Start: 36185, Stop: 37138, Start Num: 77

Candidate Starts for Colucci\_46:

(Start: 77 @36185 has 19 MA's), (100, 36260), (107, 36296), (110, 36329), (112, 36341), (124, 36434), (131, 36464), (133, 36470), (139, 36515), (145, 36536), (167, 36644), (176, 36683), (181, 36695), (193, 36752), (201, 36785), (216, 36893), (238, 36998), (248, 37049), (262, 37112), (265, 37121),

Gene: Conboy\_46 Start: 36612, Stop: 37565, Start Num: 77

Candidate Starts for Conboy\_46:

(Start: 77 @36612 has 19 MA's), (107, 36723), (110, 36756), (112, 36768), (124, 36861), (128, 36879), (131, 36891), (133, 36897), (139, 36942), (145, 36963), (147, 36975), (159, 37035), (167, 37071), (176, 37110), (181, 37122), (193, 37179), (201, 37212), (208, 37254), (216, 37320), (218, 37326), (230, 37392), (238, 37425), (248, 37476), (265, 37548),

Gene: Cracklewink\_63 Start: 44011, Stop: 44940, Start Num: 94

Candidate Starts for Cracklewink\_63:

(91, 44005), (Start: 94 @44011 has 5 MA's), (96, 44017), (104, 44071), (110, 44116), (112, 44128), (113, 44140), (120, 44173), (133, 44260), (138, 44296), (148, 44338), (149, 44341), (162, 44413),

(167, 44434), (169, 44437), (183, 44497), (192, 44536), (209, 44617), (211, 44635), (219, 44686), (227, 44734), (234, 44767), (238, 44779), (249, 44833), (257, 44866), (269, 44920),

Gene: Cucurbita\_89 Start: 55149, Stop: 56192, Start Num: 63

Candidate Starts for Cucurbita\_89:

(Start: 63 @55149 has 7 MA's), (Start: 65 @55152 has 8 MA's), (107, 55299), (110, 55332), (117, 55383), (129, 55482), (135, 55503), (137, 55527), (164, 55656), (167, 55668), (179, 55698), (201, 55794), (203, 55803), (211, 55857), (216, 55896), (229, 55965), (242, 56025), (248, 56058), (250, 56076), (272, 56175),

Gene: Culver\_89 Start: 53256, Stop: 54293, Start Num: 65

Candidate Starts for Culver\_89:

(Start: 63 @53253 has 7 MA's), (Start: 65 @53256 has 8 MA's), (83, 53298), (108, 53409), (110, 53436), (117, 53487), (129, 53586), (135, 53607), (137, 53631), (164, 53760), (167, 53772), (188, 53844), (201, 53898), (211, 53961), (229, 54069), (239, 54120), (242, 54129), (248, 54159), (268, 54246), (272, 54276),

Gene: Daegal\_57 Start: 39484, Stop: 40455, Start Num: 72

Candidate Starts for Daegal\_57:

(6, 39091), (9, 39121), (14, 39214), (21, 39298), (Start: 33 @39364 has 10 MA's), (37, 39373), (Start: 51 @39442 has 1 MA's), (Start: 72 @39484 has 11 MA's), (108, 39595), (110, 39622), (112, 39634), (122, 39691), (127, 39742), (150, 39853), (158, 39901), (174, 39982), (188, 40048), (192, 40066), (193, 40069), (203, 40111), (221, 40219), (222, 40225), (234, 40294), (238, 40306), (244, 40339), (251, 40378),

Gene: Daredevil\_85 Start: 59811, Stop: 58786, Start Num: 71

Candidate Starts for Daredevil\_85:

(Start: 71 @59811 has 5 MA's), (78, 59796), (92, 59769), (117, 59598), (130, 59496), (136, 59454), (140, 59433), (164, 59316), (170, 59298), (171, 59295), (175, 59280), (179, 59274), (181, 59268), (201, 59178), (211, 59115), (212, 59106), (214, 59088), (224, 59034), (232, 58995),

Gene: DatBoi\_91 Start: 63297, Stop: 62272, Start Num: 71

Candidate Starts for DatBoi\_91:

(35, 63447), (49, 63360), (Start: 71 @63297 has 5 MA's), (106, 63171), (116, 63081), (117, 63078), (119, 63063), (130, 62973), (136, 62931), (140, 62910), (165, 62790), (170, 62775), (171, 62772), (172, 62766), (181, 62745), (186, 62718), (195, 62682), (201, 62655), (209, 62610), (213, 62571), (223, 62520), (232, 62472), (234, 62460), (247, 62394),

Gene: DeepSoil15\_55 Start: 38900, Stop: 39871, Start Num: 72

Candidate Starts for DeepSoil15\_55:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Delian\_61 Start: 37247, Stop: 38176, Start Num: 87

Candidate Starts for Delian\_61:

(1, 36473), (20, 36998), (39, 37097), (58, 37196), (62, 37208), (Start: 87 @37247 has 15 MA's), (93, 37262), (102, 37307), (110, 37367), (112, 37379), (150, 37604), (159, 37655), (164, 37679), (181, 37733), (196, 37799), (200, 37820), (209, 37871), (212, 37898), (217, 37928), (238, 38030),

Gene: Dewey\_52 Start: 38780, Stop: 39871, Start Num: 33

Candidate Starts for Dewey\_52:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: DrYang\_47 Start: 38532, Stop: 39488, Start Num: 77

Candidate Starts for DrYang\_47:

(Start: 77 @38532 has 19 MA's), (100, 38607), (107, 38643), (110, 38676), (112, 38688), (124, 38781), (127, 38796), (131, 38811), (133, 38817), (139, 38862), (145, 38883), (147, 38895), (164, 38979), (167, 38991), (176, 39030), (201, 39132), (203, 39141), (212, 39213), (216, 39240), (228, 39306), (233, 39330), (234, 39333), (236, 39339), (238, 39345), (247, 39384), (253, 39423), (265, 39468),

Gene: Dusty\_85 Start: 52844, Stop: 53884, Start Num: 65

Candidate Starts for Dusty\_85:

(Start: 63 @52841 has 7 MA's), (Start: 65 @52844 has 8 MA's), (107, 52991), (110, 53024), (117, 53075), (129, 53174), (135, 53195), (137, 53219), (164, 53348), (167, 53360), (201, 53486), (211, 53549), (216, 53588), (229, 53657), (232, 53669), (242, 53717), (248, 53750), (250, 53768), (272, 53867),

Gene: EdgarPoe\_46 Start: 36612, Stop: 37565, Start Num: 77

Candidate Starts for EdgarPoe\_46:

(Start: 77 @36612 has 19 MA's), (107, 36723), (110, 36756), (112, 36768), (124, 36861), (128, 36879), (131, 36891), (133, 36897), (139, 36942), (145, 36963), (147, 36975), (159, 37035), (167, 37071), (176, 37110), (181, 37122), (193, 37179), (201, 37212), (208, 37254), (216, 37320), (218, 37326), (230, 37392), (238, 37425), (248, 37476), (265, 37548),

Gene: Ein37\_55 Start: 38900, Stop: 39871, Start Num: 72

Candidate Starts for Ein37\_55:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Engineer\_89 Start: 54615, Stop: 55658, Start Num: 63

Candidate Starts for Engineer\_89:

(Start: 63 @54615 has 7 MA's), (Start: 65 @54618 has 8 MA's), (107, 54765), (110, 54798), (117, 54849), (129, 54948), (135, 54969), (137, 54993), (164, 55122), (167, 55134), (179, 55164), (201, 55260), (203, 55269), (211, 55323), (216, 55362), (229, 55431), (242, 55491), (248, 55524), (250, 55542), (272, 55641),

Gene: Evanesce\_54 Start: 38900, Stop: 39871, Start Num: 72

Candidate Starts for Evanesce\_54:

(21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Eviarto\_59 Start: 41266, Stop: 42195, Start Num: 86

Candidate Starts for Eviarto\_59:

(24, 41032), (25, 41038), (28, 41056), (38, 41110), (42, 41134), (54, 41206), (57, 41209), (58, 41212), (Start: 86 @41266 has 30 MA's), (93, 41281), (101, 41323), (102, 41326), (110, 41386), (112, 41398), (150, 41623), (159, 41674), (164, 41698), (181, 41752), (184, 41770), (196, 41818), (200, 41839), (209, 41890), (211, 41908), (212, 41917), (238, 42049),

Gene: Fairfaxidum\_59 Start: 39599, Stop: 40528, Start Num: 86

Candidate Starts for Fairfaxidum\_59:

(18, 39335), (30, 39395), (38, 39440), (42, 39464), (60, 39545), (Start: 86 @39599 has 30 MA's), (93, 39614), (101, 39656), (102, 39659), (110, 39719), (112, 39731), (127, 39851), (150, 39956), (181, 40085), (196, 40151), (200, 40172), (209, 40223), (211, 40241), (217, 40280), (234, 40370), (238, 40382), (251, 40460),

Gene: Faiyaz\_66 Start: 45550, Stop: 46464, Start Num: 94

Candidate Starts for Faiyaz\_66:

(Start: 94 @45550 has 5 MA's), (108, 45628), (112, 45667), (113, 45679), (149, 45880), (162, 45952), (167, 45973), (170, 45979), (180, 46012), (181, 46015), (192, 46069), (209, 46150), (211, 46168), (238, 46309), (242, 46333), (271, 46456),

Gene: Fenry\_56 Start: 38757, Stop: 39686, Start Num: 86

Candidate Starts for Fenry\_56:

(Start: 86 @38757 has 30 MA's), (93, 38772), (102, 38817), (110, 38877), (112, 38889), (150, 39114), (159, 39165), (164, 39189), (181, 39243), (196, 39309), (200, 39330), (209, 39381), (211, 39399), (238, 39540),

Gene: Forge\_52 Start: 38780, Stop: 39871, Start Num: 33

Candidate Starts for Forge\_52:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Gambino\_61 Start: 39736, Stop: 40665, Start Num: 87

Candidate Starts for Gambino\_61:

(Start: 87 @39736 has 15 MA's), (93, 39751), (102, 39796), (110, 39856), (112, 39868), (131, 40003), (150, 40093), (159, 40144), (164, 40168), (165, 40171), (181, 40222), (196, 40288), (200, 40309), (209, 40360), (211, 40378), (238, 40519), (247, 40564), (254, 40603), (264, 40642),

Gene: Gancho\_54 Start: 38623, Stop: 39594, Start Num: 72

Candidate Starts for Gancho\_54:

(6, 38230), (9, 38260), (14, 38353), (21, 38437), (Start: 33 @38503 has 10 MA's), (37, 38512), (Start: 51 @38581 has 1 MA's), (Start: 72 @38623 has 11 MA's), (108, 38734), (110, 38761), (112, 38773), (122, 38830), (127, 38881), (150, 38992), (158, 39040), (174, 39121), (188, 39187), (192, 39205), (193, 39208), (203, 39250), (222, 39364), (234, 39433), (238, 39445), (244, 39478), (251, 39517), (254, 39523),

Gene: Geeche\_86 Start: 53681, Stop: 54721, Start Num: 65

Candidate Starts for Geeche\_86:

(Start: 63 @53678 has 7 MA's), (Start: 65 @53681 has 8 MA's), (107, 53828), (110, 53861), (117, 53912), (129, 54011), (135, 54032), (137, 54056), (164, 54185), (167, 54197), (201, 54323), (211, 54386), (216, 54425), (229, 54494), (242, 54554), (248, 54587), (250, 54605), (272, 54704),

Gene: Giles\_52 Start: 38780, Stop: 39871, Start Num: 33

Candidate Starts for Giles\_52:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Gravaillia\_53 Start: 38794, Stop: 39885, Start Num: 33

Candidate Starts for Gravaillia\_53:

(6, 38521), (8, 38542), (9, 38551), (14, 38644), (21, 38728), (Start: 33 @38794 has 10 MA's), (37, 38803), (Start: 51 @38872 has 1 MA's), (Start: 72 @38914 has 11 MA's), (108, 39025), (110, 39052), (112, 39064), (122, 39121), (127, 39172), (150, 39283), (158, 39331), (174, 39412), (181, 39442), (188, 39478), (192, 39496), (193, 39499), (203, 39541), (216, 39631), (221, 39649), (222, 39655), (234, 39724), (238, 39736), (244, 39769), (251, 39808),

Gene: Guacamole\_55 Start: 37476, Stop: 38405, Start Num: 87

Candidate Starts for Guacamole\_55:

(57, 37422), (58, 37425), (62, 37437), (Start: 87 @37476 has 15 MA's), (93, 37491), (101, 37533), (102, 37536), (108, 37569), (110, 37596), (112, 37608), (150, 37833), (159, 37884), (164, 37908), (181, 37962), (196, 38028), (200, 38049), (209, 38100), (212, 38127), (217, 38157), (238, 38259),

Gene: HH92\_54 Start: 38900, Stop: 39871, Start Num: 72

Candidate Starts for HH92\_54:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Hadrien\_54 Start: 38780, Stop: 39871, Start Num: 33

Candidate Starts for Hadrien\_54:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Hail\_52 Start: 38780, Stop: 39871, Start Num: 33

Candidate Starts for Hail\_52:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Hilltopfarm\_65 Start: 45250, Stop: 46164, Start Num: 94

Candidate Starts for Hilltopfarm\_65:

(Start: 94 @45250 has 5 MA's), (108, 45328), (112, 45367), (113, 45379), (149, 45580), (162, 45652), (167, 45673), (170, 45679), (180, 45712), (181, 45715), (192, 45769), (209, 45850), (211, 45868), (238, 46009), (242, 46033), (271, 46156),

Gene: Hitter\_58 Start: 37052, Stop: 37981, Start Num: 87

Candidate Starts for Hitter\_58:

(58, 37001), (62, 37013), (Start: 87 @37052 has 15 MA's), (93, 37067), (101, 37109), (102, 37112), (110, 37172), (112, 37184), (150, 37409), (159, 37460), (164, 37484), (181, 37538), (196, 37604), (200, 37625), (209, 37676), (212, 37703), (217, 37733), (238, 37835),

Gene: HumptyDumpty\_46 Start: 36470, Stop: 37423, Start Num: 77

Candidate Starts for HumptyDumpty\_46:

(Start: 77 @36470 has 19 MA's), (107, 36581), (110, 36614), (112, 36626), (124, 36719), (128, 36737), (131, 36749), (133, 36755), (139, 36800), (145, 36821), (147, 36833), (159, 36893), (161, 36899), (167, 36929), (176, 36968), (181, 36980), (193, 37037), (201, 37070), (216, 37178), (230, 37250),

(238, 37283), (248, 37334), (262, 37397), (265, 37406),

Gene: JaNo\_46 Start: 36470, Stop: 37423, Start Num: 77

Candidate Starts for JaNo\_46:

(Start: 77 @36470 has 19 MA's), (107, 36581), (110, 36614), (112, 36626), (124, 36719), (128, 36737), (131, 36749), (133, 36755), (139, 36800), (145, 36821), (147, 36833), (159, 36893), (161, 36899), (167, 36929), (176, 36968), (181, 36980), (193, 37037), (201, 37070), (216, 37178), (230, 37250), (238, 37283), (248, 37334), (262, 37397), (265, 37406),

Gene: Jalammah\_61 Start: 40055, Stop: 40984, Start Num: 87

Candidate Starts for Jalammah\_61:

(57, 40001), (58, 40004), (62, 40016), (Start: 87 @40055 has 15 MA's), (93, 40070), (101, 40112), (102, 40115), (108, 40148), (110, 40175), (112, 40187), (131, 40322), (150, 40412), (164, 40487), (181, 40541), (196, 40607), (200, 40628), (209, 40679), (212, 40706), (217, 40736), (238, 40838),

Gene: JasperJr\_55 Start: 37476, Stop: 38405, Start Num: 87

Candidate Starts for JasperJr\_55:

(57, 37422), (58, 37425), (62, 37437), (Start: 87 @37476 has 15 MA's), (93, 37491), (101, 37533), (102, 37536), (108, 37569), (110, 37596), (112, 37608), (150, 37833), (159, 37884), (164, 37908), (181, 37962), (196, 38028), (200, 38049), (209, 38100), (212, 38127), (217, 38157), (238, 38259),

Gene: JayCookie\_46 Start: 36606, Stop: 37559, Start Num: 77

Candidate Starts for JayCookie\_46:

(Start: 77 @36606 has 19 MA's), (107, 36717), (110, 36750), (112, 36762), (124, 36855), (128, 36873), (131, 36885), (133, 36891), (139, 36936), (145, 36957), (147, 36969), (159, 37029), (161, 37035), (167, 37065), (176, 37104), (181, 37116), (193, 37173), (201, 37206), (216, 37314), (230, 37386), (238, 37419), (248, 37470), (262, 37533), (265, 37542),

Gene: JonJames\_100 Start: 60136, Stop: 61155, Start Num: 68

Candidate Starts for JonJames\_100:

(Start: 68 @60136 has 2 MA's), (92, 60190), (93, 60193), (121, 60388), (122, 60391), (135, 60481), (136, 60502), (137, 60505), (186, 60706), (188, 60715), (193, 60736), (211, 60832), (215, 60865), (222, 60895), (228, 60937), (232, 60952), (238, 60976), (240, 60994), (248, 61030), (256, 61066),

Gene: JuJu\_64 Start: 41181, Stop: 42110, Start Num: 86

Candidate Starts for JuJu\_64:

(31, 40989), (38, 41031), (42, 41055), (54, 41127), (Start: 86 @41181 has 30 MA's), (93, 41196), (101, 41238), (102, 41241), (108, 41274), (110, 41301), (112, 41313), (150, 41538), (159, 41589), (164, 41613), (181, 41667), (184, 41685), (196, 41733), (200, 41754), (209, 41805), (212, 41832), (238, 41964),

Gene: JustASigh\_52 Start: 36846, Stop: 37820, Start Num: 75

Candidate Starts for JustASigh\_52:

(Start: 75 @36846 has 2 MA's), (Start: 86 @36867 has 30 MA's), (112, 37020), (113, 37032), (131, 37143), (137, 37185), (143, 37209), (156, 37272), (164, 37323), (167, 37335), (211, 37530), (217, 37572), (238, 37674), (241, 37695),

Gene: KBurrousTX\_46 Start: 37722, Stop: 38675, Start Num: 77

Candidate Starts for KBurrousTX\_46:

(Start: 77 @37722 has 19 MA's), (100, 37797), (107, 37833), (110, 37866), (112, 37878), (124, 37971), (127, 37986), (128, 37989), (131, 38001), (133, 38007), (139, 38052), (145, 38073), (147, 38085), (159, 38145), (167, 38181), (181, 38232), (193, 38289), (201, 38322), (203, 38331), (216, 38430), (233, 38520), (238, 38535), (248, 38586), (265, 38658),

Gene: Kabreeze\_46 Start: 36470, Stop: 37423, Start Num: 77

Candidate Starts for Kabreeze\_46:

(Start: 77 @36470 has 19 MA's), (107, 36581), (110, 36614), (112, 36626), (124, 36719), (128, 36737), (131, 36749), (133, 36755), (139, 36800), (145, 36821), (147, 36833), (159, 36893), (161, 36899), (167, 36929), (176, 36968), (181, 36980), (193, 37037), (201, 37070), (216, 37178), (230, 37250), (238, 37283), (248, 37334), (262, 37397), (265, 37406),

Gene: KappaFarmDelta\_59 Start: 37409, Stop: 38338, Start Num: 86

Candidate Starts for KappaFarmDelta\_59:

(Start: 86 @37409 has 30 MA's), (93, 37424), (101, 37466), (102, 37469), (110, 37529), (112, 37541), (150, 37766), (159, 37817), (164, 37841), (181, 37895), (196, 37961), (200, 37982), (209, 38033), (212, 38060), (217, 38090), (238, 38192),

Gene: Kinbote\_54 Start: 38780, Stop: 39871, Start Num: 33

Candidate Starts for Kinbote\_54:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: LilHazelnut\_55 Start: 38900, Stop: 39871, Start Num: 72

Candidate Starts for LilHazelnut\_55:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Linus\_46 Start: 36603, Stop: 37556, Start Num: 77

Candidate Starts for Linus\_46:

(Start: 77 @36603 has 19 MA's), (107, 36714), (110, 36747), (112, 36759), (124, 36852), (128, 36870), (131, 36882), (133, 36888), (139, 36933), (145, 36954), (147, 36966), (159, 37026), (167, 37062), (176, 37101), (181, 37113), (193, 37170), (201, 37203), (208, 37245), (216, 37311), (218, 37317), (230, 37383), (238, 37416), (248, 37467), (265, 37539),

Gene: Lozinak\_88 Start: 54455, Stop: 55495, Start Num: 65

Candidate Starts for Lozinak\_88:

(Start: 63 @54452 has 7 MA's), (Start: 65 @54455 has 8 MA's), (107, 54602), (110, 54635), (117, 54686), (129, 54785), (135, 54806), (137, 54830), (164, 54959), (167, 54971), (201, 55097), (211, 55160), (216, 55199), (229, 55268), (232, 55280), (242, 55328), (248, 55361), (263, 55430), (272, 55478),

Gene: Luke\_54 Start: 38735, Stop: 39826, Start Num: 33

Candidate Starts for Luke\_54:

(6, 38462), (9, 38492), (14, 38585), (21, 38669), (Start: 33 @38735 has 10 MA's), (37, 38744), (Start: 51 @38813 has 1 MA's), (Start: 72 @38855 has 11 MA's), (108, 38966), (110, 38993), (112, 39005), (122, 39062), (127, 39113), (150, 39224), (158, 39272), (174, 39353), (188, 39419), (192, 39437), (193, 39440), (203, 39482), (222, 39596), (234, 39665), (238, 39677), (244, 39710), (251, 39749),

Gene: Luna22\_52 Start: 38764, Stop: 39855, Start Num: 33

Candidate Starts for Luna22\_52:

(6, 38491), (9, 38521), (14, 38614), (21, 38698), (Start: 33 @38764 has 10 MA's), (37, 38773), (Start: 51 @38842 has 1 MA's), (Start: 72 @38884 has 11 MA's), (108, 38995), (110, 39022), (112, 39034),

(122, 39091), (127, 39142), (150, 39253), (158, 39301), (174, 39382), (188, 39448), (192, 39466), (193, 39469), (203, 39511), (222, 39625), (234, 39694), (238, 39706), (244, 39739), (251, 39778),

Gene: Lymara\_46 Start: 36430, Stop: 37383, Start Num: 77

Candidate Starts for Lymara\_46:

(74, 36424), (Start: 77 @36430 has 19 MA's), (100, 36505), (102, 36514), (107, 36541), (110, 36574), (112, 36586), (124, 36679), (131, 36709), (133, 36715), (139, 36760), (145, 36781), (157, 36835), (159, 36853), (161, 36859), (167, 36889), (176, 36928), (181, 36940), (193, 36997), (201, 37030), (208, 37072), (212, 37111), (216, 37138), (230, 37210), (238, 37243), (248, 37294), (265, 37366),

Gene: Lysidious\_59 Start: 39422, Stop: 40312, Start Num: 95

Candidate Starts for Lysidious\_59:

(5, 38894), (30, 39173), (46, 39272), (74, 39371), (81, 39383), (Start: 95 @39422 has 2 MA's), (100, 39458), (112, 39539), (131, 39662), (164, 39827), (167, 39839), (180, 39878), (181, 39881), (182, 39884), (237, 40175), (238, 40178), (264, 40289), (266, 40298),

Gene: Malachai\_56 Start: 39249, Stop: 40178, Start Num: 86

Candidate Starts for Malachai\_56:

(31, 39057), (38, 39099), (42, 39123), (54, 39195), (Start: 86 @39249 has 30 MA's), (93, 39264), (101, 39306), (102, 39309), (110, 39369), (112, 39381), (150, 39606), (159, 39657), (164, 39681), (181, 39735), (196, 39801), (200, 39822), (209, 39873), (212, 39900), (217, 39930), (238, 40032),

Gene: Melba\_56 Start: 37292, Stop: 38221, Start Num: 86

Candidate Starts for Melba\_56:

(Start: 86 @37292 has 30 MA's), (93, 37307), (102, 37352), (108, 37385), (110, 37412), (112, 37424), (150, 37649), (164, 37724), (181, 37778), (196, 37844), (200, 37865), (209, 37916), (212, 37943), (217, 37973), (238, 38075),

Gene: Mellie\_56 Start: 37432, Stop: 38322, Start Num: 95

Candidate Starts for Mellie\_56:

(2, 36670), (30, 37183), (46, 37282), (74, 37381), (81, 37393), (Start: 95 @37432 has 2 MA's), (100, 37468), (112, 37549), (131, 37672), (164, 37837), (167, 37849), (180, 37888), (218, 38089), (234, 38176), (237, 38185), (238, 38188), (254, 38266), (264, 38299), (266, 38308),

Gene: MintFen\_58 Start: 37863, Stop: 38792, Start Num: 87

Candidate Starts for MintFen\_58:

(1, 37089), (20, 37614), (39, 37713), (58, 37812), (62, 37824), (Start: 87 @37863 has 15 MA's), (93, 37878), (102, 37923), (110, 37983), (112, 37995), (150, 38220), (159, 38271), (164, 38295), (181, 38349), (196, 38415), (200, 38436), (209, 38487), (212, 38514), (217, 38544), (238, 38646),

Gene: Miskis\_80 Start: 52360, Stop: 53400, Start Num: 65

Candidate Starts for Miskis\_80:

(Start: 63 @52357 has 7 MA's), (Start: 65 @52360 has 8 MA's), (107, 52507), (110, 52540), (117, 52591), (129, 52690), (135, 52711), (137, 52735), (164, 52864), (167, 52876), (201, 53002), (211, 53065), (216, 53104), (229, 53173), (232, 53185), (242, 53233), (248, 53266), (263, 53335), (272, 53383),

Gene: MissRona\_59 Start: 39737, Stop: 40666, Start Num: 87

Candidate Starts for MissRona\_59:

(Start: 87 @39737 has 15 MA's), (93, 39752), (102, 39797), (110, 39857), (112, 39869), (131, 40004), (150, 40094), (159, 40145), (164, 40169), (165, 40172), (181, 40223), (196, 40289), (200, 40310), (209, 40361), (211, 40379), (238, 40520), (247, 40565), (254, 40604), (264, 40643),

Gene: ModicumRichard\_39 Start: 32352, Stop: 33365, Start Num: 73

Candidate Starts for ModicumRichard\_39:

(Start: 73 @32352 has 5 MA's), (98, 32415), (105, 32472), (107, 32478), (112, 32523), (123, 32595), (143, 32715), (149, 32742), (167, 32835), (170, 32841), (175, 32856), (179, 32865), (181, 32871), (216, 33069), (218, 33075), (225, 33111), (241, 33195), (258, 33267), (270, 33321),

Gene: Mollymur\_95 Start: 64969, Stop: 63935, Start Num: 70

Candidate Starts for Mollymur\_95:

(69, 64975), (Start: 70 @64969 has 1 MA's), (106, 64843), (115, 64768), (116, 64753), (117, 64750), (125, 64663), (130, 64645), (136, 64603), (164, 64465), (171, 64444), (179, 64423), (181, 64417), (201, 64327), (209, 64282), (211, 64264), (214, 64237), (221, 64207), (224, 64183), (232, 64144), (234, 64132),

Gene: Mordred\_46 Start: 36470, Stop: 37423, Start Num: 77

Candidate Starts for Mordred\_46:

(Start: 77 @36470 has 19 MA's), (107, 36581), (110, 36614), (112, 36626), (124, 36719), (128, 36737), (131, 36749), (133, 36755), (139, 36800), (145, 36821), (147, 36833), (159, 36893), (161, 36899), (167, 36929), (176, 36968), (181, 36980), (193, 37037), (201, 37070), (216, 37178), (230, 37250), (238, 37283), (248, 37334), (262, 37397), (265, 37406),

Gene: Morgana\_39 Start: 32303, Stop: 33316, Start Num: 73

Candidate Starts for Morgana\_39:

(7, 31865), (10, 31892), (11, 31895), (13, 31931), (27, 32096), (36, 32144), (67, 32285), (Start: 73 @32303 has 5 MA's), (105, 32423), (107, 32429), (112, 32474), (143, 32666), (167, 32786), (170, 32792), (175, 32807), (181, 32822), (216, 33020), (218, 33026), (225, 33062), (235, 33116), (241, 33146), (258, 33218), (268, 33260), (270, 33272),

Gene: MoyaNatalis\_46 Start: 36463, Stop: 37416, Start Num: 77

Candidate Starts for MoyaNatalis\_46:

(Start: 77 @36463 has 19 MA's), (107, 36574), (110, 36607), (112, 36619), (124, 36712), (128, 36730), (131, 36742), (133, 36748), (139, 36793), (145, 36814), (147, 36826), (159, 36886), (161, 36892), (167, 36922), (176, 36961), (181, 36973), (193, 37030), (201, 37063), (208, 37105), (216, 37171), (218, 37177), (230, 37243), (238, 37276), (248, 37327), (265, 37399),

Gene: Murp\_58 Start: 40682, Stop: 41611, Start Num: 86

Candidate Starts for Murp\_58:

(47, 40601), (Start: 86 @40682 has 30 MA's), (93, 40697), (101, 40739), (102, 40742), (108, 40775), (110, 40802), (112, 40814), (150, 41039), (159, 41090), (181, 41168), (196, 41234), (200, 41255), (209, 41306), (212, 41333), (217, 41363), (238, 41465),

Gene: Norvs\_88 Start: 53861, Stop: 54904, Start Num: 63

Candidate Starts for Norvs\_88:

(Start: 63 @53861 has 7 MA's), (Start: 65 @53864 has 8 MA's), (107, 54011), (110, 54044), (117, 54095), (129, 54194), (135, 54215), (137, 54239), (164, 54368), (167, 54380), (201, 54506), (211, 54569), (216, 54608), (229, 54677), (232, 54689), (242, 54737), (248, 54770), (263, 54839), (272, 54887),

Gene: NovoPizza\_55 Start: 39554, Stop: 40510, Start Num: 80

Candidate Starts for NovoPizza\_55:

(23, 39314), (37, 39386), (40, 39398), (Start: 51 @39482 has 1 MA's), (Start: 80 @39554 has 1 MA's), (110, 39686), (112, 39698), (122, 39755), (127, 39806), (142, 39884), (148, 39908), (150, 39917), (164, 40004), (177, 40061), (180, 40073), (186, 40103), (192, 40130), (206, 40187), (215, 40262), (238, 40373), (251, 40445),

Gene: Nymphadora\_59 Start: 41290, Stop: 42219, Start Num: 86

Candidate Starts for Nymphadora\_59:

(24, 41056), (25, 41062), (28, 41080), (38, 41134), (42, 41158), (54, 41230), (57, 41233), (58, 41236), (Start: 86 @41290 has 30 MA's), (93, 41305), (101, 41347), (102, 41350), (110, 41410), (112, 41422), (150, 41647), (159, 41698), (164, 41722), (181, 41776), (184, 41794), (196, 41842), (200, 41863), (209, 41914), (211, 41932), (212, 41941), (238, 42073),

Gene: OBUpride\_55 Start: 38914, Stop: 39885, Start Num: 72

Candidate Starts for OBUpride\_55:

(6, 38521), (8, 38542), (9, 38551), (14, 38644), (21, 38728), (Start: 33 @38794 has 10 MA's), (37, 38803), (Start: 51 @38872 has 1 MA's), (Start: 72 @38914 has 11 MA's), (108, 39025), (110, 39052), (112, 39064), (122, 39121), (127, 39172), (150, 39283), (158, 39331), (174, 39412), (181, 39442), (188, 39478), (192, 39496), (193, 39499), (203, 39541), (216, 39631), (221, 39649), (222, 39655), (234, 39724), (238, 39736), (244, 39769), (251, 39808),

Gene: ObLaDi\_39 Start: 32337, Stop: 33350, Start Num: 73

Candidate Starts for ObLaDi\_39:

(48, 32259), (Start: 63 @32310 has 7 MA's), (Start: 73 @32337 has 5 MA's), (88, 32364), (105, 32457), (107, 32463), (112, 32508), (143, 32700), (167, 32820), (170, 32826), (175, 32841), (179, 32850), (181, 32856), (218, 33060), (225, 33096), (241, 33180), (258, 33252), (268, 33294), (270, 33306),

Gene: Obliviate\_54 Start: 35860, Stop: 36789, Start Num: 86

Candidate Starts for Obliviate\_54:

(Start: 86 @35860 has 30 MA's), (93, 35875), (101, 35917), (102, 35920), (110, 35980), (112, 35992), (150, 36217), (159, 36268), (164, 36292), (181, 36346), (196, 36412), (200, 36433), (209, 36484), (212, 36511), (217, 36541), (238, 36643),

Gene: OneUp\_78 Start: 51739, Stop: 52776, Start Num: 66

Candidate Starts for OneUp\_78:

(Start: 66 @51739 has 2 MA's), (117, 51964), (164, 52234), (167, 52246), (197, 52351), (201, 52372), (213, 52456), (248, 52636), (256, 52672), (260, 52696), (272, 52753),

Gene: PCoral7\_58 Start: 39007, Stop: 39936, Start Num: 86

Candidate Starts for PCoral7\_58:

(30, 38803), (38, 38848), (42, 38872), (60, 38953), (Start: 86 @39007 has 30 MA's), (93, 39022), (101, 39064), (102, 39067), (107, 39094), (110, 39127), (112, 39139), (150, 39364), (159, 39415), (164, 39439), (181, 39493), (196, 39559), (200, 39580), (209, 39631), (211, 39649), (238, 39790), (251, 39868),

Gene: PFR1\_35 Start: 26634, Stop: 27539, Start Num: 97

Candidate Starts for PFR1\_35:

(Start: 71 @26565 has 5 MA's), (85, 26595), (97, 26634), (106, 26697), (107, 26700), (114, 26757), (159, 27015), (171, 27060), (181, 27087), (189, 27129), (198, 27168), (210, 27243), (212, 27255), (221, 27300), (223, 27315), (226, 27330), (230, 27354), (238, 27387),

Gene: PFR2\_37 Start: 28203, Stop: 29108, Start Num: 97

Candidate Starts for PFR2\_37:

(Start: 71 @28134 has 5 MA's), (85, 28164), (97, 28203), (106, 28266), (107, 28269), (114, 28326), (159, 28584), (171, 28629), (181, 28656), (189, 28698), (198, 28737), (210, 28812), (212, 28824), (221, 28869), (223, 28884), (226, 28899), (230, 28923), (238, 28956),

Gene: Petra\_55 Start: 36512, Stop: 37441, Start Num: 86

Candidate Starts for Petra\_55:

(Start: 86 @36512 has 30 MA's), (93, 36527), (101, 36569), (102, 36572), (108, 36605), (110, 36632), (112, 36644), (150, 36869), (164, 36944), (181, 36998), (196, 37064), (200, 37085), (209, 37136), (212, 37163), (217, 37193), (238, 37295),

Gene: PhinkBoden\_87 Start: 54243, Stop: 55286, Start Num: 63

Candidate Starts for PhinkBoden\_87:

(Start: 63 @54243 has 7 MA's), (Start: 65 @54246 has 8 MA's), (107, 54393), (110, 54426), (117, 54477), (129, 54576), (135, 54597), (137, 54621), (164, 54750), (167, 54762), (179, 54792), (201, 54888), (203, 54897), (211, 54951), (216, 54990), (229, 55059), (242, 55119), (248, 55152), (250, 55170), (272, 55269),

Gene: PhrostedPhlake\_59 Start: 37294, Stop: 38223, Start Num: 86

Candidate Starts for PhrostedPhlake\_59:

(Start: 86 @37294 has 30 MA's), (93, 37309), (102, 37354), (108, 37387), (110, 37414), (112, 37426), (131, 37561), (150, 37651), (159, 37702), (164, 37726), (165, 37729), (181, 37780), (196, 37846), (200, 37867), (209, 37918), (211, 37936), (238, 38077), (247, 38122), (264, 38200),

Gene: Pipp\_60 Start: 38559, Stop: 39488, Start Num: 87

Candidate Starts for Pipp\_60:

(58, 38508), (62, 38520), (Start: 87 @38559 has 15 MA's), (93, 38574), (102, 38619), (110, 38679), (112, 38691), (131, 38826), (150, 38916), (159, 38967), (164, 38991), (181, 39045), (192, 39099), (196, 39111), (200, 39132), (209, 39183), (212, 39210), (217, 39240), (238, 39342),

Gene: PrincePatrick\_57 Start: 37356, Stop: 38285, Start Num: 86

Candidate Starts for PrincePatrick\_57:

(30, 37152), (38, 37197), (42, 37221), (60, 37302), (Start: 86 @37356 has 30 MA's), (93, 37371), (101, 37413), (102, 37416), (107, 37443), (110, 37476), (112, 37488), (127, 37608), (150, 37713), (164, 37788), (181, 37842), (196, 37908), (200, 37929), (204, 37944), (209, 37980), (211, 37998), (212, 38007), (220, 38049), (229, 38103), (234, 38127), (238, 38139),

Gene: PrincessTrina\_46 Start: 36606, Stop: 37559, Start Num: 77

Candidate Starts for PrincessTrina\_46:

(Start: 77 @36606 has 19 MA's), (107, 36717), (110, 36750), (112, 36762), (124, 36855), (128, 36873), (131, 36885), (133, 36891), (139, 36936), (145, 36957), (147, 36969), (159, 37029), (167, 37065), (176, 37104), (181, 37116), (193, 37173), (201, 37206), (208, 37248), (216, 37314), (218, 37320), (230, 37386), (238, 37419), (248, 37470), (265, 37542),

Gene: REQ3\_09 Start: 3808, Stop: 4743, Start Num: 90

Candidate Starts for REQ3\_09:

(90, 3808), (104, 3889), (118, 3982), (154, 4180), (163, 4219), (165, 4228), (167, 4237), (170, 4243), (186, 4312), (194, 4345), (195, 4348), (202, 4381), (216, 4480),

Gene: Rem711\_53 Start: 36671, Stop: 37591, Start Num: 76

Candidate Starts for Rem711\_53:

(Start: 76 @36671 has 1 MA's), (89, 36689), (100, 36740), (101, 36746), (112, 36821), (137, 36986), (149, 37034), (151, 37046), (166, 37136), (168, 37139), (185, 37217), (234, 37475), (238, 37487), (246, 37523),

Gene: RosiePosie\_46 Start: 36473, Stop: 37426, Start Num: 77

Candidate Starts for RosiePosie\_46:

(Start: 77 @36473 has 19 MA's), (107, 36584), (110, 36617), (112, 36629), (124, 36722), (128, 36740), (131, 36752), (133, 36758), (139, 36803), (145, 36824), (147, 36836), (159, 36896), (161, 36902),

(167, 36932), (176, 36971), (181, 36983), (193, 37040), (201, 37073), (216, 37181), (230, 37253), (238, 37286), (248, 37337), (262, 37400), (265, 37409),

Gene: Samba\_57 Start: 40085, Stop: 41014, Start Num: 87

Candidate Starts for Samba\_57:

(58, 40034), (62, 40046), (Start: 87 @40085 has 15 MA's), (93, 40100), (101, 40142), (102, 40145), (110, 40205), (112, 40217), (150, 40442), (159, 40493), (164, 40517), (181, 40571), (196, 40637), (200, 40658), (209, 40709), (212, 40736), (217, 40766), (238, 40868),

Gene: Scavito\_46 Start: 36471, Stop: 37424, Start Num: 77

Candidate Starts for Scavito\_46:

(Start: 77 @36471 has 19 MA's), (107, 36582), (110, 36615), (112, 36627), (124, 36720), (128, 36738), (131, 36750), (133, 36756), (139, 36801), (145, 36822), (147, 36834), (159, 36894), (161, 36900), (167, 36930), (176, 36969), (181, 36981), (193, 37038), (201, 37071), (216, 37179), (230, 37251), (238, 37284), (248, 37335), (262, 37398), (265, 37407),

Gene: Smoothie\_89 Start: 54452, Stop: 55495, Start Num: 63

Candidate Starts for Smoothie\_89:

(Start: 63 @54452 has 7 MA's), (Start: 65 @54455 has 8 MA's), (107, 54602), (110, 54635), (117, 54686), (129, 54785), (135, 54806), (137, 54830), (164, 54959), (167, 54971), (201, 55097), (211, 55160), (216, 55199), (229, 55268), (232, 55280), (242, 55328), (248, 55361), (263, 55430), (272, 55478),

Gene: SpeedDemon\_960 Start: 66064, Stop: 65045, Start Num: 71

Candidate Starts for SpeedDemon\_960:

(Start: 71 @66064 has 5 MA's), (92, 66022), (107, 65935), (117, 65851), (130, 65746), (136, 65704), (140, 65683), (153, 65629), (165, 65563), (170, 65548), (171, 65545), (172, 65539), (181, 65518), (186, 65491), (195, 65455), (201, 65428), (209, 65383), (213, 65344), (223, 65293), (224, 65284), (232, 65245), (234, 65233), (247, 65167),

Gene: TimTam\_59 Start: 41290, Stop: 42219, Start Num: 86

Candidate Starts for TimTam\_59:

(24, 41056), (25, 41062), (28, 41080), (38, 41134), (42, 41158), (54, 41230), (57, 41233), (58, 41236), (Start: 86 @41290 has 30 MA's), (93, 41305), (101, 41347), (102, 41350), (110, 41410), (112, 41422), (150, 41647), (159, 41698), (164, 41722), (181, 41776), (184, 41794), (196, 41842), (200, 41863), (209, 41914), (211, 41932), (212, 41941), (238, 42073),

Gene: Toast\_58 Start: 39007, Stop: 39936, Start Num: 86

Candidate Starts for Toast\_58:

(30, 38803), (38, 38848), (42, 38872), (60, 38953), (Start: 86 @39007 has 30 MA's), (93, 39022), (101, 39064), (102, 39067), (107, 39094), (110, 39127), (112, 39139), (150, 39364), (159, 39415), (164, 39439), (181, 39493), (196, 39559), (200, 39580), (209, 39631), (211, 39649), (238, 39790), (251, 39868),

Gene: Toniann\_88 Start: 53807, Stop: 54847, Start Num: 65

Candidate Starts for Toniann\_88:

(Start: 63 @53804 has 7 MA's), (Start: 65 @53807 has 8 MA's), (107, 53954), (110, 53987), (117, 54038), (129, 54137), (135, 54158), (137, 54182), (164, 54311), (167, 54323), (201, 54449), (211, 54512), (216, 54551), (229, 54620), (232, 54632), (242, 54680), (248, 54713), (263, 54782), (272, 54830),

Gene: Tophat\_46 Start: 36472, Stop: 37425, Start Num: 77

Candidate Starts for Tophat\_46:

(Start: 77 @36472 has 19 MA's), (107, 36583), (110, 36616), (112, 36628), (124, 36721), (128, 36739), (131, 36751), (133, 36757), (139, 36802), (145, 36823), (147, 36835), (159, 36895), (161, 36901), (167, 36931), (176, 36970), (181, 36982), (193, 37039), (201, 37072), (216, 37180), (230, 37252), (238, 37285), (248, 37336), (262, 37399), (265, 37408),

Gene: Towmatter\_84 Start: 59893, Stop: 58868, Start Num: 71

Candidate Starts for Towmatter\_84:

(Start: 71 @59893 has 5 MA's), (78, 59878), (92, 59851), (117, 59680), (130, 59578), (136, 59536), (140, 59515), (164, 59398), (170, 59380), (171, 59377), (175, 59362), (179, 59356), (181, 59350), (201, 59260), (211, 59197), (212, 59188), (214, 59170), (224, 59116), (232, 59077),

Gene: Typha\_65 Start: 45547, Stop: 46461, Start Num: 94

Candidate Starts for Typha\_65:

(29, 45319), (41, 45385), (44, 45412), (53, 45466), (Start: 94 @45547 has 5 MA's), (110, 45652), (112, 45664), (113, 45676), (149, 45877), (162, 45949), (167, 45970), (170, 45976), (180, 46009), (181, 46012), (192, 46066), (209, 46147), (211, 46165), (238, 46306), (242, 46330),

Gene: Ubuntu\_55 Start: 38858, Stop: 39871, Start Num: 51

Candidate Starts for Ubuntu\_55:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: UmaThurman\_55 Start: 38004, Stop: 38933, Start Num: 86

Candidate Starts for UmaThurman\_55:

(15, 37677), (24, 37776), (26, 37794), (31, 37812), (38, 37854), (42, 37878), (52, 37941), (54, 37950), (Start: 86 @38004 has 30 MA's), (93, 38019), (101, 38061), (102, 38064), (108, 38097), (110, 38124), (112, 38136), (150, 38361), (159, 38412), (164, 38436), (181, 38490), (184, 38508), (192, 38544), (196, 38556), (200, 38577), (209, 38628), (212, 38655), (238, 38787),

Gene: Utz\_50 Start: 37832, Stop: 38761, Start Num: 86

Candidate Starts for Utz\_50:

(Start: 86 @37832 has 30 MA's), (93, 37847), (102, 37892), (108, 37925), (110, 37952), (112, 37964), (150, 38189), (164, 38264), (181, 38318), (184, 38336), (192, 38372), (196, 38384), (200, 38405), (207, 38444), (209, 38456), (212, 38483), (217, 38513), (238, 38615),

Gene: VanLee\_36 Start: 29374, Stop: 30321, Start Num: 75

Candidate Starts for VanLee\_36:

(Start: 75 @29374 has 2 MA's), (84, 29389), (99, 29437), (103, 29485), (110, 29530), (112, 29542), (143, 29725), (163, 29827), (167, 29845), (170, 29851), (179, 29875), (181, 29881), (187, 29914), (199, 29962), (216, 30079), (241, 30205), (252, 30253),

Gene: Vasanti\_54 Start: 35775, Stop: 36704, Start Num: 86

Candidate Starts for Vasanti\_54:

(18, 35514), (21, 35529), (24, 35544), (25, 35550), (28, 35568), (38, 35622), (42, 35646), (53, 35712), (56, 35718), (Start: 86 @35775 has 30 MA's), (93, 35790), (101, 35832), (102, 35835), (108, 35868), (110, 35895), (112, 35907), (150, 36132), (164, 36207), (181, 36261), (192, 36315), (196, 36327), (209, 36399), (211, 36417), (212, 36426), (238, 36558),

Gene: Walrus\_56 Start: 37367, Stop: 38296, Start Num: 87

Candidate Starts for Walrus\_56:

(58, 37316), (62, 37328), (Start: 87 @37367 has 15 MA's), (93, 37382), (102, 37427), (110, 37487), (112, 37499), (131, 37634), (150, 37724), (159, 37775), (164, 37799), (181, 37853), (192, 37907), (196, 37919), (200, 37940), (209, 37991), (212, 38018), (217, 38048), (238, 38150),

Gene: Webster2\_55 Start: 38900, Stop: 39871, Start Num: 72

Candidate Starts for Webster2\_55:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Weirido19\_53 Start: 37220, Stop: 38188, Start Num: 75

Candidate Starts for Weirido19\_53:

(12, 36836), (16, 36932), (17, 36953), (22, 36989), (29, 37019), (32, 37043), (Start: 33 @37052 has 10 MA's), (50, 37148), (Start: 75 @37220 has 2 MA's), (109, 37352), (112, 37391), (131, 37514), (144, 37583), (151, 37616), (164, 37694), (167, 37706), (181, 37748), (182, 37751), (211, 37901), (212, 37910), (231, 38018), (238, 38045), (243, 38075),

Gene: William\_60 Start: 39682, Stop: 40611, Start Num: 86

Candidate Starts for William\_60:

(60, 39628), (Start: 86 @39682 has 30 MA's), (93, 39697), (101, 39739), (102, 39742), (108, 39775), (110, 39802), (112, 39814), (150, 40039), (164, 40114), (181, 40168), (196, 40234), (200, 40255), (209, 40306), (211, 40324), (217, 40363), (234, 40453), (238, 40465), (251, 40543),

Gene: WilliamBoone\_87 Start: 52559, Stop: 53599, Start Num: 65

Candidate Starts for WilliamBoone\_87:

(Start: 63 @52556 has 7 MA's), (Start: 65 @52559 has 8 MA's), (83, 52601), (108, 52712), (110, 52739), (117, 52790), (129, 52889), (135, 52910), (137, 52934), (167, 53075), (188, 53147), (196, 53177), (201, 53201), (211, 53264), (216, 53303), (218, 53309), (229, 53372), (232, 53384), (242, 53432), (248, 53465), (250, 53483), (272, 53582),

Gene: Wishmaker\_52 Start: 38780, Stop: 39871, Start Num: 33

Candidate Starts for Wishmaker\_52:

(6, 38507), (9, 38537), (14, 38630), (21, 38714), (Start: 33 @38780 has 10 MA's), (37, 38789), (Start: 51 @38858 has 1 MA's), (Start: 72 @38900 has 11 MA's), (108, 39011), (110, 39038), (112, 39050), (122, 39107), (127, 39158), (150, 39269), (158, 39317), (174, 39398), (188, 39464), (192, 39482), (193, 39485), (203, 39527), (222, 39641), (234, 39710), (238, 39722), (244, 39755), (251, 39794),

Gene: Wisp\_57 Start: 38275, Stop: 39204, Start Num: 86

Candidate Starts for Wisp\_57:

(54, 38212), (Start: 86 @38275 has 30 MA's), (93, 38290), (101, 38332), (102, 38335), (108, 38368), (110, 38395), (112, 38407), (150, 38632), (159, 38683), (164, 38707), (181, 38761), (196, 38827), (200, 38848), (209, 38899), (212, 38926), (217, 38956), (238, 39058),

Gene: Wocket\_58 Start: 37849, Stop: 38778, Start Num: 87

Candidate Starts for Wocket\_58:

(58, 37798), (62, 37810), (Start: 87 @37849 has 15 MA's), (93, 37864), (101, 37906), (102, 37909), (108, 37942), (110, 37969), (112, 37981), (150, 38206), (164, 38281), (181, 38335), (196, 38401), (200, 38422), (212, 38500), (217, 38530), (238, 38632),

Gene: Yvonnetastic\_98 Start: 57678, Stop: 58697, Start Num: 68

Candidate Starts for Yvonnetastic\_98:

(Start: 68 @57678 has 2 MA's), (92, 57732), (93, 57735), (105, 57813), (121, 57930), (135, 58023), (136, 58044), (137, 58047), (186, 58248), (188, 58257), (193, 58278), (211, 58374), (215, 58407), (222, 58437), (228, 58479), (232, 58494), (238, 58518), (240, 58536), (248, 58572), (256, 58608),

Gene: Zarbodnamra\_57 Start: 37271, Stop: 38200, Start Num: 86

Candidate Starts for Zarbodnamra\_57:

(58, 37220), (61, 37232), (Start: 86 @37271 has 30 MA's), (93, 37286), (101, 37328), (102, 37331), (108, 37364), (110, 37391), (112, 37403), (150, 37628), (159, 37679), (164, 37703), (181, 37757), (184, 37775), (192, 37811), (196, 37823), (200, 37844), (209, 37895), (212, 37922), (238, 38054),

Gene: ZiggyZoo\_58 Start: 39325, Stop: 40254, Start Num: 86

Candidate Starts for ZiggyZoo\_58:

(31, 39133), (38, 39175), (42, 39199), (54, 39271), (Start: 86 @39325 has 30 MA's), (93, 39340), (101, 39382), (102, 39385), (110, 39445), (112, 39457), (150, 39682), (159, 39733), (164, 39757), (181, 39811), (192, 39865), (196, 39877), (200, 39898), (209, 39949), (212, 39976), (238, 40108),

Gene: Zilla\_57 Start: 37027, Stop: 37956, Start Num: 86

Candidate Starts for Zilla\_57:

(58, 36976), (61, 36988), (Start: 86 @37027 has 30 MA's), (93, 37042), (101, 37084), (102, 37087), (110, 37147), (112, 37159), (150, 37384), (159, 37435), (164, 37459), (181, 37513), (184, 37531), (196, 37579), (200, 37600), (209, 37651), (212, 37678), (217, 37708), (238, 37810),