



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 157767 Report

This analysis was run 04/13/24 on database version 558.

Pham number 157767 has 95 members, 12 are drafts.

Phages represented in each track:

- Track 1 : Wilde\_54
- Track 2 : Indlovu\_80
- Track 3 : Zenteno07\_94
- Track 4 : BirdsNest\_94
- Track 5 : Hashim76\_94
- Track 6 : Compostia\_84, ChaChing\_85, Philly\_84, GlenHope\_86, Halfpint\_85
- Track 7 : OrangeOswald\_84, Ben11\_85, Kronus\_85, Audrey\_85, LestyG\_83, Phayeta\_88, Mortcellus\_85, Baloo\_84, Corofin\_85, RomaT\_85
- Track 8 : Athena\_87, Tydolla\_81, RagingRooster\_84, Phlyer\_85, Heathcliff\_85, SynergyX\_85, Akoma\_85, Yahalom\_83, SlippinJimmy\_88, Nozo\_85, Briakila\_85, Devonte\_83, Deenasa\_85, Daisy\_84, Phaedrus\_80, Kamiyu\_85, Casbah\_85, Abinghost\_85, Obutu\_87
- Track 9 : HarveySr\_84, Marley1013\_86, Morty007\_84, Neos5\_85
- Track 10 : Jackstina\_79
- Track 11 : Chandler\_85
- Track 12 : Rita1961\_86
- Track 13 : Gadjet\_85, Pipefish\_86
- Track 14 : MmasiCarm\_86
- Track 15 : Bernardo\_85
- Track 16 : Yinz\_85
- Track 17 : Gervas\_86
- Track 18 : Thonko\_53
- Track 19 : ScoobyDoobyDoo\_14
- Track 20 : Tissue\_79
- Track 21 : Hyperion\_77, Blab\_75, Mashley\_79, AluminumJesus\_75, Gazebo\_79
- Track 22 : DonaldDuck\_80, Wayne3\_80, Rudy\_76, BabyDotz\_77, Zagie\_80, Sillytadpoles\_81
- Track 23 : Viceroy\_77, Teehee\_79, Jehoshaphat\_80, Casend\_79, Phabia\_78, StrawberryJamm\_84, Lonelysoil\_76, Llemily\_80, Quammi\_77, Wheelie\_78
- Track 24 : Kyva\_82
- Track 25 : Squash\_82
- Track 26 : Namago\_81
- Track 27 : Grassboy\_83
- Track 28 : Ashton\_27
- Track 29 : Burro\_22
- Track 30 : DoTi\_22
- Track 31 : Araxxi\_22

- Track 32 : DunneganBoMo\_245
- Track 33 : Atuin\_262
- Track 34 : Sonali\_75
- Track 35 : A3Wally\_342
- Track 36 : PauloDiaboli\_342
- Track 37 : Cece\_218
- Track 38 : Predator\_62
- Track 39 : Oaker\_62
- Track 40 : Aegeus\_72, Baudelaire\_72
- Track 41 : Serenabean\_74

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

The start number called the most often in the published annotations is 31, it was called in 24 of the 83 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abinghost\_85, Akoma\_85, Athena\_87, Briakila\_85, Casbah\_85, ChaChing\_85, Compostia\_84, Daisy\_84, Deenasa\_85, Devonte\_83, Gervas\_86, GlenHope\_86, Halfpint\_85, Heathcliff\_85, Kamiyu\_85, Nozo\_85, Obutu\_87, Phaedrus\_80, Philly\_84, Phlyer\_85, RagingRooster\_84, Rita1961\_86, SlippinJimmy\_88, SynergyX\_85, Tydolla\_81, Yahalom\_83,

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

- Audrey\_85, Baloo\_84, Ben11\_85, Chandler\_85, Corofin\_85, Jackstina\_79, Kronus\_85, LestyG\_83, Mortcellus\_85, OrangeOswald\_84, Phayeta\_88, RomaT\_85,

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

- A3Wally\_342, Aegeus\_72, AluminumJesus\_75, Araxxi\_22, Ashton\_27, Atuin\_262, BabyDotz\_77, Baudelaire\_72, Bernardo\_85, BirdsNest\_94, Blab\_75, Burro\_22, Casend\_79, Cece\_218, DoTi\_22, DonaldDuck\_80, DunneganBoMo\_245, Gadget\_85, Gazebo\_79, Grassboy\_83, HarveySr\_84, Hashim76\_94, Hyperion\_77, Indlovu\_80, Jehoshaphat\_80, Kyva\_82, Llemily\_80, Lonelysoil\_76, Marley1013\_86, Mashley\_79, MmasiCarm\_86, Morty007\_84, Namago\_81, Neos5\_85, Oaker\_62, PauloDiaboli\_342, Phabia\_78, Pipefish\_86, Predator\_62, Quammi\_77, Rudy\_76, ScoobyDoobyDoo\_14, Serenabean\_74, Sillytadpoles\_81, Sonali\_75, Squash\_82, StrawberryJamm\_84, Teehee\_79, Thonko\_53, Tissue\_79, Viceroy\_77, Wayne3\_80, Wheelie\_78, Wilde\_54, Yinz\_85, Zagie\_80, Zenteno07\_94,

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

Start 16:

- Found in 1 of 95 ( 1.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Atuin\_262 (FC),

Start 18:

- Found in 1 of 95 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 83

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sonali\_75 (FG),

#### Start 23:

- Found in 1 of 95 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ScoobyDoobyDoo\_14 (C2),

#### Start 24:

- Found in 1 of 95 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Thonko\_53 (B8),

#### Start 25:

- Found in 2 of 95 ( 2.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: DunneganBoMo\_245 (FC),

#### Start 26:

- Found in 3 of 95 ( 3.2% ) of genes in pham
- Manual Annotations of this start: 2 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BirdsNest\_94 (B13), Hashim76\_94 (B13), Zenteno07\_94 (B13),

#### Start 29:

- Found in 44 of 95 ( 46.3% ) of genes in pham
- Manual Annotations of this start: 17 of 83
- Called 40.9% of time when present
- Phage (with cluster) where this start called: Audrey\_85 (B3), Baloo\_84 (B3), Ben11\_85 (B3), Chandler\_85 (B3), Corofin\_85 (B3), HarveySr\_84 (B3), Jackstina\_79 (B3), Kronus\_85 (B3), LestyG\_83 (B3), Marley1013\_86 (B3), MmasiCarm\_86 (B3), Mortcellus\_85 (B3), Morty007\_84 (B3), Neos5\_85 (B3), OrangeOswald\_84 (B3), Phayeta\_88 (B3), RomaT\_85 (B3), Yinz\_85 (B3),

#### Start 30:

- Found in 7 of 95 ( 7.4% ) of genes in pham
- Manual Annotations of this start: 7 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: A3Wally\_342 (GD1), Araxxi\_22 (EM1), Burro\_22 (EM1), Cece\_218 (GD3), DoTi\_22 (EM1), PauloDiaboli\_342 (GD1), Wilde\_54 (AP1),

#### Start 31:

- Found in 38 of 95 ( 40.0% ) of genes in pham
- Manual Annotations of this start: 24 of 83
- Called 68.4% of time when present
- Phage (with cluster) where this start called: Abinghost\_85 (B3), Akoma\_85 (B3), Athena\_87 (B3), Briakila\_85 (B3), Casbah\_85 (B3), ChaChing\_85 (B3), Compostia\_84 (B3), Daisy\_84 (B3), Deenasa\_85 (B3), Devonte\_83 (B3), Gervas\_86

(B3), GlenHope\_86 (B3), Halfpint\_85 (B3), Heathcliff\_85 (B3), Kamiyu\_85 (B3), Nozo\_85 (B3), Obutu\_87 (B3), Phaedrus\_80 (B3), Philly\_84 (B3), Phlyer\_85 (B3), RagingRooster\_84 (B3), Rita1961\_86 (B3), SlippinJimmy\_88 (B3), SynergyX\_85 (B3), Tydolla\_81 (B3), Yahalom\_83 (B3),

Start 32:

- Found in 2 of 95 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 2 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aegeus\_72 (L5), Baudelaire\_72 (L5),

Start 33:

- Found in 3 of 95 ( 3.2% ) of genes in pham
- Manual Annotations of this start: 3 of 83
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Indlovu\_80 (B11), Oaker\_62 (H1), Predator\_62 (H1),

Start 34:

- Found in 4 of 95 ( 4.2% ) of genes in pham
- Manual Annotations of this start: 3 of 83
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Ashton\_27 (EK2), Gadget\_85 (B3), Pipefish\_86 (B3),

Start 36:

- Found in 27 of 95 ( 28.4% ) of genes in pham
- Manual Annotations of this start: 17 of 83
- Called 70.4% of time when present
- Phage (with cluster) where this start called: AluminumJesus\_75 (EG), Blab\_75 (EG), Casend\_79 (EG), Gazebo\_79 (EG), Grassboy\_83 (EG), Hyperion\_77 (EG), Jehoshaphat\_80 (EG), Lemily\_80 (EG), Lonelysoil\_76 (EG), Mashley\_79 (EG), Namago\_81 (EG), Phabia\_78 (EG), Quammi\_77 (EG), Serenabean\_74 (singleton), Squash\_82 (EG), StrawberryJamm\_84 (EG), Teehee\_79 (EG), Viceroy\_77 (EG), Wheelie\_78 (EG),

Start 40:

- Found in 21 of 95 ( 22.1% ) of genes in pham
- Manual Annotations of this start: 4 of 83
- Called 38.1% of time when present
- Phage (with cluster) where this start called: BabyDotz\_77 (EG), DonaldDuck\_80 (EG), Kyva\_82 (EG), Rudy\_76 (EG), Sillytadpoles\_81 (EG), Tissue\_79 (EG), Wayne3\_80 (EG), Zagie\_80 (EG),

Start 51:

- Found in 22 of 95 ( 23.2% ) of genes in pham
- Manual Annotations of this start: 1 of 83
- Called 4.5% of time when present
- Phage (with cluster) where this start called: Bernardo\_85 (B3),

**Summary by clusters:**

There are 16 clusters represented in this pham: FG, GD1, singleton, GD3, H1, FC, EG, AP1, B11, L5, EM1, B13, B3, C2, B8, EK2,

Info for manual annotations of cluster AP1:

- Start number 30 was manually annotated 1 time for cluster AP1.

Info for manual annotations of cluster B11:

- Start number 33 was manually annotated 1 time for cluster B11.

Info for manual annotations of cluster B13:

- Start number 26 was manually annotated 2 times for cluster B13.

Info for manual annotations of cluster B3:

- Start number 29 was manually annotated 17 times for cluster B3.
- Start number 31 was manually annotated 24 times for cluster B3.
- Start number 34 was manually annotated 2 times for cluster B3.
- Start number 51 was manually annotated 1 time for cluster B3.

Info for manual annotations of cluster B8:

- Start number 24 was manually annotated 1 time for cluster B8.

Info for manual annotations of cluster C2:

- Start number 23 was manually annotated 1 time for cluster C2.

Info for manual annotations of cluster EG:

- Start number 36 was manually annotated 17 times for cluster EG.
- Start number 40 was manually annotated 4 times for cluster EG.

Info for manual annotations of cluster EK2:

- Start number 34 was manually annotated 1 time for cluster EK2.

Info for manual annotations of cluster EM1:

- Start number 30 was manually annotated 3 times for cluster EM1.

Info for manual annotations of cluster FG:

- Start number 18 was manually annotated 1 time for cluster FG.

Info for manual annotations of cluster GD1:

- Start number 30 was manually annotated 2 times for cluster GD1.

Info for manual annotations of cluster GD3:

- Start number 30 was manually annotated 1 time for cluster GD3.

Info for manual annotations of cluster H1:

- Start number 33 was manually annotated 2 times for cluster H1.

Info for manual annotations of cluster L5:

- Start number 32 was manually annotated 2 times for cluster L5.

**Gene Information:**

Gene: A3Wally\_342 Start: 176311, Stop: 176649, Start Num: 30

Candidate Starts for A3Wally\_342:

(Start: 30 @176311 has 7 MA's), (38, 176332), (41, 176344), (42, 176347), (44, 176356), (46, 176362), (49, 176389), (65, 176470), (77, 176563), (79, 176569), (84, 176620),

Gene: Abinghost\_85 Start: 62155, Stop: 61802, Start Num: 31

Candidate Starts for Abinghost\_85:

(Start: 29 @62158 has 17 MA's), (Start: 31 @62155 has 24 MA's), (35, 62140), (52, 62062), (55, 62032), (57, 62026), (63, 62005), (74, 61930), (82, 61840),

Gene: Aegeus\_72 Start: 46824, Stop: 47111, Start Num: 32

Candidate Starts for Aegeus\_72:

(Start: 32 @46824 has 2 MA's), (45, 46863), (Start: 51 @46896 has 1 MA's), (79, 47061),

Gene: Akoma\_85 Start: 62195, Stop: 61842, Start Num: 31

Candidate Starts for Akoma\_85:

(Start: 29 @62198 has 17 MA's), (Start: 31 @62195 has 24 MA's), (35, 62180), (52, 62102), (55, 62072), (57, 62066), (63, 62045), (74, 61970), (82, 61880),

Gene: AluminumJesus\_75 Start: 51316, Stop: 51035, Start Num: 36

Candidate Starts for AluminumJesus\_75:

(Start: 36 @51316 has 17 MA's), (62, 51187), (66, 51172),

Gene: Araxxi\_22 Start: 16801, Stop: 16511, Start Num: 30

Candidate Starts for Araxxi\_22:

(Start: 30 @16801 has 7 MA's), (38, 16783), (39, 16777), (54, 16687), (69, 16639), (72, 16627), (77, 16570), (80, 16552),

Gene: Ashton\_27 Start: 15701, Stop: 15408, Start Num: 34

Candidate Starts for Ashton\_27:

(8, 15821), (12, 15800), (20, 15752), (Start: 34 @15701 has 3 MA's), (64, 15563),

Gene: Athena\_87 Start: 62930, Stop: 62577, Start Num: 31

Candidate Starts for Athena\_87:

(Start: 29 @62933 has 17 MA's), (Start: 31 @62930 has 24 MA's), (35, 62915), (52, 62837), (55, 62807), (57, 62801), (63, 62780), (74, 62705), (82, 62615),

Gene: Atuin\_262 Start: 161281, Stop: 161634, Start Num: 16

Candidate Starts for Atuin\_262:

(16, 161281), (21, 161311), (25, 161329), (55, 161449), (65, 161479),

Gene: Audrey\_85 Start: 62187, Stop: 61831, Start Num: 29

Candidate Starts for Audrey\_85:

(Start: 29 @62187 has 17 MA's), (Start: 31 @62184 has 24 MA's), (35, 62169), (52, 62091), (55, 62061), (57, 62055), (63, 62034), (74, 61959), (82, 61869),

Gene: BabyDotz\_77 Start: 52957, Stop: 52679, Start Num: 40

Candidate Starts for BabyDotz\_77:

(Start: 36 @52966 has 17 MA's), (Start: 40 @52957 has 4 MA's), (45, 52939), (66, 52822), (67, 52819), (68, 52816),

Gene: Baloo\_84 Start: 62039, Stop: 61683, Start Num: 29

Candidate Starts for Baloo\_84:

(Start: 29 @62039 has 17 MA's), (Start: 31 @62036 has 24 MA's), (35, 62021), (52, 61943), (55, 61913), (57, 61907), (63, 61886), (74, 61811), (82, 61721),

Gene: Baudelaire\_72 Start: 46824, Stop: 47111, Start Num: 32

Candidate Starts for Baudelaire\_72:

(Start: 32 @46824 has 2 MA's), (45, 46863), (Start: 51 @46896 has 1 MA's), (79, 47061),

Gene: Ben11\_85 Start: 62414, Stop: 62058, Start Num: 29

Candidate Starts for Ben11\_85:

(Start: 29 @62414 has 17 MA's), (Start: 31 @62411 has 24 MA's), (35, 62396), (52, 62318), (55, 62288), (57, 62282), (63, 62261), (74, 62186), (82, 62096),

Gene: Bernardo\_85 Start: 62136, Stop: 61870, Start Num: 51

Candidate Starts for Bernardo\_85:

(6, 62325), (11, 62301), (13, 62292), (Start: 34 @62202 has 3 MA's), (41, 62181), (45, 62166), (Start: 51 @62136 has 1 MA's), (52, 62118), (72, 62019), (83, 61893),

Gene: BirdsNest\_94 Start: 66955, Stop: 66563, Start Num: 26

Candidate Starts for BirdsNest\_94:

(Start: 26 @66955 has 2 MA's), (45, 66919), (Start: 51 @66886 has 1 MA's), (61, 66820), (67, 66787), (71, 66760), (76, 66697), (79, 66682),

Gene: Blab\_75 Start: 51607, Stop: 51326, Start Num: 36

Candidate Starts for Blab\_75:

(Start: 36 @51607 has 17 MA's), (62, 51478), (66, 51463),

Gene: Briakila\_85 Start: 62382, Stop: 62029, Start Num: 31

Candidate Starts for Briakila\_85:

(Start: 29 @62385 has 17 MA's), (Start: 31 @62382 has 24 MA's), (35, 62367), (52, 62289), (55, 62259), (57, 62253), (63, 62232), (74, 62157), (82, 62067),

Gene: Burro\_22 Start: 15917, Stop: 15615, Start Num: 30

Candidate Starts for Burro\_22:

(10, 16013), (28, 15920), (Start: 30 @15917 has 7 MA's), (39, 15893), (Start: 40 @15890 has 4 MA's), (56, 15797), (65, 15767), (69, 15752), (77, 15683),

Gene: Casbah\_85 Start: 62495, Stop: 62142, Start Num: 31

Candidate Starts for Casbah\_85:

(Start: 29 @62498 has 17 MA's), (Start: 31 @62495 has 24 MA's), (35, 62480), (52, 62402), (55, 62372), (57, 62366), (63, 62345), (74, 62270), (82, 62180),

Gene: Casend\_79 Start: 52248, Stop: 51961, Start Num: 36

Candidate Starts for Casend\_79:

(Start: 36 @52248 has 17 MA's), (Start: 40 @52239 has 4 MA's), (45, 52221), (66, 52104), (67, 52101), (68, 52098),

Gene: Cece\_218 Start: 133451, Stop: 133741, Start Num: 30

Candidate Starts for Cece\_218:

(Start: 30 @133451 has 7 MA's), (53, 133550), (77, 133673), (79, 133679),

Gene: ChaChing\_85 Start: 62197, Stop: 61847, Start Num: 31

Candidate Starts for ChaChing\_85:



(Start: 29 @62200 has 17 MA's), (Start: 31 @62197 has 24 MA's), (37, 62179), (Start: 51 @62125 has 1 MA's), (52, 62107), (55, 62077), (68, 62029), (74, 61975), (82, 61885),

Gene: Chandler\_85 Start: 62974, Stop: 62618, Start Num: 29

Candidate Starts for Chandler\_85:

(Start: 29 @62974 has 17 MA's), (Start: 31 @62971 has 24 MA's), (35, 62956), (52, 62878), (55, 62848), (57, 62842), (63, 62821), (74, 62746),

Gene: Compostia\_84 Start: 62637, Stop: 62287, Start Num: 31

Candidate Starts for Compostia\_84:

(Start: 29 @62640 has 17 MA's), (Start: 31 @62637 has 24 MA's), (37, 62619), (Start: 51 @62565 has 1 MA's), (52, 62547), (55, 62517), (68, 62469), (74, 62415), (82, 62325),

Gene: Corofin\_85 Start: 62209, Stop: 61853, Start Num: 29

Candidate Starts for Corofin\_85:

(Start: 29 @62209 has 17 MA's), (Start: 31 @62206 has 24 MA's), (35, 62191), (52, 62113), (55, 62083), (57, 62077), (63, 62056), (74, 61981), (82, 61891),

Gene: Daisy\_84 Start: 61757, Stop: 61404, Start Num: 31

Candidate Starts for Daisy\_84:

(Start: 29 @61760 has 17 MA's), (Start: 31 @61757 has 24 MA's), (35, 61742), (52, 61664), (55, 61634), (57, 61628), (63, 61607), (74, 61532), (82, 61442),

Gene: Deenasa\_85 Start: 63106, Stop: 62753, Start Num: 31

Candidate Starts for Deenasa\_85:

(Start: 29 @63109 has 17 MA's), (Start: 31 @63106 has 24 MA's), (35, 63091), (52, 63013), (55, 62983), (57, 62977), (63, 62956), (74, 62881), (82, 62791),

Gene: Devonte\_83 Start: 61823, Stop: 61470, Start Num: 31

Candidate Starts for Devonte\_83:

(Start: 29 @61826 has 17 MA's), (Start: 31 @61823 has 24 MA's), (35, 61808), (52, 61730), (55, 61700), (57, 61694), (63, 61673), (74, 61598), (82, 61508),

Gene: DoTi\_22 Start: 16882, Stop: 16592, Start Num: 30

Candidate Starts for DoTi\_22:

(Start: 30 @16882 has 7 MA's), (38, 16864), (39, 16858), (54, 16768), (69, 16720), (72, 16708), (80, 16633),

Gene: DonaldDuck\_80 Start: 51591, Stop: 51313, Start Num: 40

Candidate Starts for DonaldDuck\_80:

(Start: 36 @51600 has 17 MA's), (Start: 40 @51591 has 4 MA's), (45, 51573), (66, 51456), (67, 51453), (68, 51450),

Gene: DunneganBoMo\_245 Start: 159407, Stop: 159712, Start Num: 25

Candidate Starts for DunneganBoMo\_245:

(21, 159389), (25, 159407), (55, 159527), (65, 159557),

Gene: Gadget\_85 Start: 62385, Stop: 62053, Start Num: 34

Candidate Starts for Gadget\_85:

(6, 62508), (11, 62484), (13, 62475), (Start: 34 @62385 has 3 MA's), (41, 62364), (45, 62349), (Start: 51 @62319 has 1 MA's), (52, 62301), (72, 62202), (82, 62085), (83, 62076),

Gene: Gazebo\_79 Start: 52534, Stop: 52253, Start Num: 36

Candidate Starts for Gazebo\_79:

(Start: 36 @52534 has 17 MA's), (62, 52405), (66, 52390),

Gene: Gervas\_86 Start: 62651, Stop: 62298, Start Num: 31

Candidate Starts for Gervas\_86:

(Start: 29 @62654 has 17 MA's), (Start: 31 @62651 has 24 MA's), (37, 62633), (52, 62558), (55, 62528), (57, 62522), (63, 62501), (74, 62426), (82, 62336),

Gene: GlenHope\_86 Start: 62227, Stop: 61877, Start Num: 31

Candidate Starts for GlenHope\_86:

(Start: 29 @62230 has 17 MA's), (Start: 31 @62227 has 24 MA's), (37, 62209), (Start: 51 @62155 has 1 MA's), (52, 62137), (55, 62107), (68, 62059), (74, 62005), (82, 61915),

Gene: Grassboy\_83 Start: 52649, Stop: 52362, Start Num: 36

Candidate Starts for Grassboy\_83:

(Start: 36 @52649 has 17 MA's), (Start: 40 @52640 has 4 MA's), (45, 52622), (66, 52505), (68, 52499), (75, 52433),

Gene: Halfpint\_85 Start: 61969, Stop: 61619, Start Num: 31

Candidate Starts for Halfpint\_85:

(Start: 29 @61972 has 17 MA's), (Start: 31 @61969 has 24 MA's), (37, 61951), (Start: 51 @61897 has 1 MA's), (52, 61879), (55, 61849), (68, 61801), (74, 61747), (82, 61657),

Gene: HarveySr\_84 Start: 61732, Stop: 61388, Start Num: 29

Candidate Starts for HarveySr\_84:

(17, 61780), (Start: 29 @61732 has 17 MA's), (37, 61717), (41, 61705), (Start: 51 @61666 has 1 MA's), (52, 61648), (55, 61618), (72, 61543), (78, 61474),

Gene: Hashim76\_94 Start: 66420, Stop: 66052, Start Num: 26

Candidate Starts for Hashim76\_94:

(9, 66519), (Start: 26 @66420 has 2 MA's), (Start: 51 @66351 has 1 MA's), (61, 66285), (71, 66231), (86, 66078),

Gene: Heathcliff\_85 Start: 62151, Stop: 61798, Start Num: 31

Candidate Starts for Heathcliff\_85:

(Start: 29 @62154 has 17 MA's), (Start: 31 @62151 has 24 MA's), (35, 62136), (52, 62058), (55, 62028), (57, 62022), (63, 62001), (74, 61926), (82, 61836),

Gene: Hyperion\_77 Start: 51797, Stop: 51516, Start Num: 36

Candidate Starts for Hyperion\_77:

(Start: 36 @51797 has 17 MA's), (62, 51668), (66, 51653),

Gene: Indlovu\_80 Start: 64701, Stop: 64342, Start Num: 33

Candidate Starts for Indlovu\_80:

(2, 65067), (15, 64773), (Start: 33 @64701 has 3 MA's), (Start: 51 @64632 has 1 MA's), (52, 64614), (55, 64584), (58, 64575), (68, 64539), (79, 64440), (81, 64410),

Gene: Jackstina\_79 Start: 62068, Stop: 61712, Start Num: 29

Candidate Starts for Jackstina\_79:

(Start: 29 @62068 has 17 MA's), (Start: 31 @62065 has 24 MA's), (35, 62050), (52, 61972), (55, 61942), (63, 61915), (74, 61840), (82, 61750),

Gene: Jehoshaphat\_80 Start: 52516, Stop: 52229, Start Num: 36

Candidate Starts for Jehoshaphat\_80:

(Start: 36 @52516 has 17 MA's), (Start: 40 @52507 has 4 MA's), (45, 52489), (66, 52372), (67, 52369), (68, 52366),

Gene: Kamiyu\_85 Start: 62154, Stop: 61801, Start Num: 31

Candidate Starts for Kamiyu\_85:

(Start: 29 @62157 has 17 MA's), (Start: 31 @62154 has 24 MA's), (35, 62139), (52, 62061), (55, 62031), (57, 62025), (63, 62004), (74, 61929), (82, 61839),

Gene: Kronus\_85 Start: 63241, Stop: 62885, Start Num: 29

Candidate Starts for Kronus\_85:

(Start: 29 @63241 has 17 MA's), (Start: 31 @63238 has 24 MA's), (35, 63223), (52, 63145), (55, 63115), (57, 63109), (63, 63088), (74, 63013), (82, 62923),

Gene: Kyva\_82 Start: 52664, Stop: 52386, Start Num: 40

Candidate Starts for Kyva\_82:

(Start: 36 @52673 has 17 MA's), (Start: 40 @52664 has 4 MA's), (45, 52646), (66, 52529), (68, 52523), (75, 52457),

Gene: LestyG\_83 Start: 61727, Stop: 61371, Start Num: 29

Candidate Starts for LestyG\_83:

(Start: 29 @61727 has 17 MA's), (Start: 31 @61724 has 24 MA's), (35, 61709), (52, 61631), (55, 61601), (57, 61595), (63, 61574), (74, 61499), (82, 61409),

Gene: Llemily\_80 Start: 51295, Stop: 51008, Start Num: 36

Candidate Starts for Llemily\_80:

(Start: 36 @51295 has 17 MA's), (Start: 40 @51286 has 4 MA's), (45, 51268), (66, 51151), (67, 51148), (68, 51145),

Gene: Lonelysoil\_76 Start: 51052, Stop: 50765, Start Num: 36

Candidate Starts for Lonelysoil\_76:

(Start: 36 @51052 has 17 MA's), (Start: 40 @51043 has 4 MA's), (45, 51025), (66, 50908), (67, 50905), (68, 50902),

Gene: Marley1013\_86 Start: 63081, Stop: 62737, Start Num: 29

Candidate Starts for Marley1013\_86:

(17, 63129), (Start: 29 @63081 has 17 MA's), (37, 63066), (41, 63054), (Start: 51 @63015 has 1 MA's), (52, 62997), (55, 62967), (72, 62892), (78, 62823),

Gene: Mashley\_79 Start: 52319, Stop: 52038, Start Num: 36

Candidate Starts for Mashley\_79:

(Start: 36 @52319 has 17 MA's), (62, 52190), (66, 52175),

Gene: MmasiCarm\_86 Start: 62584, Stop: 62240, Start Num: 29

Candidate Starts for MmasiCarm\_86:

(Start: 29 @62584 has 17 MA's), (37, 62569), (41, 62557), (Start: 51 @62518 has 1 MA's), (52, 62500), (55, 62470), (72, 62395), (78, 62326),

Gene: Mortcellus\_85 Start: 63322, Stop: 62966, Start Num: 29

Candidate Starts for Mortcellus\_85:

(Start: 29 @63322 has 17 MA's), (Start: 31 @63319 has 24 MA's), (35, 63304), (52, 63226), (55, 63196), (57, 63190), (63, 63169), (74, 63094), (82, 63004),

Gene: Morty007\_84 Start: 63081, Stop: 62737, Start Num: 29

Candidate Starts for Morty007\_84:

(17, 63129), (Start: 29 @63081 has 17 MA's), (37, 63066), (41, 63054), (Start: 51 @63015 has 1 MA's), (52, 62997), (55, 62967), (72, 62892), (78, 62823),

Gene: Namago\_81 Start: 52020, Stop: 51733, Start Num: 36

Candidate Starts for Namago\_81:

(Start: 36 @52020 has 17 MA's), (Start: 40 @52011 has 4 MA's), (45, 51993), (66, 51876), (67, 51873), (68, 51870),

Gene: Neos5\_85 Start: 62543, Stop: 62199, Start Num: 29

Candidate Starts for Neos5\_85:

(17, 62591), (Start: 29 @62543 has 17 MA's), (37, 62528), (41, 62516), (Start: 51 @62477 has 1 MA's), (52, 62459), (55, 62429), (72, 62354), (78, 62285),

Gene: Nozo\_85 Start: 62961, Stop: 62608, Start Num: 31

Candidate Starts for Nozo\_85:

(Start: 29 @62964 has 17 MA's), (Start: 31 @62961 has 24 MA's), (35, 62946), (52, 62868), (55, 62838), (57, 62832), (63, 62811), (74, 62736), (82, 62646),

Gene: Oaker\_62 Start: 48655, Stop: 48993, Start Num: 33

Candidate Starts for Oaker\_62:

(1, 48274), (3, 48409), (Start: 33 @48655 has 3 MA's), (39, 48673), (57, 48775), (67, 48811), (79, 48907),

Gene: Obutu\_87 Start: 62764, Stop: 62411, Start Num: 31

Candidate Starts for Obutu\_87:

(Start: 29 @62767 has 17 MA's), (Start: 31 @62764 has 24 MA's), (35, 62749), (52, 62671), (55, 62641), (57, 62635), (63, 62614), (74, 62539), (82, 62449),

Gene: OrangeOswald\_84 Start: 62199, Stop: 61843, Start Num: 29

Candidate Starts for OrangeOswald\_84:

(Start: 29 @62199 has 17 MA's), (Start: 31 @62196 has 24 MA's), (35, 62181), (52, 62103), (55, 62073), (57, 62067), (63, 62046), (74, 61971), (82, 61881),

Gene: PauloDiaboli\_342 Start: 173467, Stop: 173805, Start Num: 30

Candidate Starts for PauloDiaboli\_342:

(Start: 30 @173467 has 7 MA's), (38, 173488), (42, 173503), (44, 173512), (46, 173518), (49, 173545), (65, 173626), (77, 173719), (79, 173725), (84, 173776),

Gene: Phabia\_78 Start: 51707, Stop: 51420, Start Num: 36

Candidate Starts for Phabia\_78:

(Start: 36 @51707 has 17 MA's), (Start: 40 @51698 has 4 MA's), (45, 51680), (66, 51563), (67, 51560), (68, 51557),

Gene: Phaedrus\_80 Start: 61612, Stop: 61259, Start Num: 31

Candidate Starts for Phaedrus\_80:

(Start: 29 @61615 has 17 MA's), (Start: 31 @61612 has 24 MA's), (35, 61597), (52, 61519), (55, 61489), (57, 61483), (63, 61462), (74, 61387), (82, 61297),

Gene: Phayeta\_88 Start: 62684, Stop: 62328, Start Num: 29

Candidate Starts for Phayeta\_88:

(Start: 29 @62684 has 17 MA's), (Start: 31 @62681 has 24 MA's), (35, 62666), (52, 62588), (55, 62558), (57, 62552), (63, 62531), (74, 62456), (82, 62366),

Gene: Philly\_84 Start: 62041, Stop: 61691, Start Num: 31

Candidate Starts for Philly\_84:

(Start: 29 @62044 has 17 MA's), (Start: 31 @62041 has 24 MA's), (37, 62023), (Start: 51 @61969 has 1 MA's), (52, 61951), (55, 61921), (68, 61873), (74, 61819), (82, 61729),

Gene: Phlyer\_85 Start: 62907, Stop: 62554, Start Num: 31

Candidate Starts for Phlyer\_85:

(Start: 29 @62910 has 17 MA's), (Start: 31 @62907 has 24 MA's), (35, 62892), (52, 62814), (55, 62784), (57, 62778), (63, 62757), (74, 62682), (82, 62592),

Gene: Pipefish\_86 Start: 63131, Stop: 62799, Start Num: 34

Candidate Starts for Pipefish\_86:

(6, 63254), (11, 63230), (13, 63221), (Start: 34 @63131 has 3 MA's), (41, 63110), (45, 63095), (Start: 51 @63065 has 1 MA's), (52, 63047), (72, 62948), (82, 62831), (83, 62822),

Gene: Predator\_62 Start: 46573, Stop: 46911, Start Num: 33

Candidate Starts for Predator\_62:

(19, 46528), (Start: 33 @46573 has 3 MA's), (39, 46591), (70, 46750), (81, 46855), (85, 46888),

Gene: Quammi\_77 Start: 51407, Stop: 51120, Start Num: 36

Candidate Starts for Quammi\_77:

(Start: 36 @51407 has 17 MA's), (Start: 40 @51398 has 4 MA's), (45, 51380), (66, 51263), (67, 51260), (68, 51257),

Gene: RagingRooster\_84 Start: 61887, Stop: 61534, Start Num: 31

Candidate Starts for RagingRooster\_84:

(Start: 29 @61890 has 17 MA's), (Start: 31 @61887 has 24 MA's), (35, 61872), (52, 61794), (55, 61764), (57, 61758), (63, 61737), (74, 61662), (82, 61572),

Gene: Rita1961\_86 Start: 62538, Stop: 62188, Start Num: 31

Candidate Starts for Rita1961\_86:

(Start: 29 @62541 has 17 MA's), (Start: 31 @62538 has 24 MA's), (37, 62520), (Start: 51 @62466 has 1 MA's), (52, 62448), (55, 62418), (74, 62316), (82, 62226),

Gene: RomaT\_85 Start: 62764, Stop: 62408, Start Num: 29

Candidate Starts for RomaT\_85:

(Start: 29 @62764 has 17 MA's), (Start: 31 @62761 has 24 MA's), (35, 62746), (52, 62668), (55, 62638), (57, 62632), (63, 62611), (74, 62536), (82, 62446),

Gene: Rudy\_76 Start: 51434, Stop: 51156, Start Num: 40

Candidate Starts for Rudy\_76:

(Start: 36 @51443 has 17 MA's), (Start: 40 @51434 has 4 MA's), (45, 51416), (66, 51299), (67, 51296), (68, 51293),

Gene: ScoobyDoobyDoo\_14 Start: 4522, Stop: 4866, Start Num: 23

Candidate Starts for ScoobyDoobyDoo\_14:

(Start: 23 @4522 has 1 MA's),

Gene: Serenabean\_74 Start: 47658, Stop: 47942, Start Num: 36

Candidate Starts for Serenabean\_74:

(5, 47508), (14, 47562), (Start: 36 @47658 has 17 MA's), (44, 47685), (64, 47793),

Gene: Sillytadpoles\_81 Start: 51274, Stop: 50996, Start Num: 40

Candidate Starts for Sillytadpoles\_81:

(Start: 36 @51283 has 17 MA's), (Start: 40 @51274 has 4 MA's), (45, 51256), (66, 51139), (67, 51136), (68, 51133),

Gene: SlippinJimmy\_88 Start: 63571, Stop: 63218, Start Num: 31

Candidate Starts for SlippinJimmy\_88:

(Start: 29 @63574 has 17 MA's), (Start: 31 @63571 has 24 MA's), (35, 63556), (52, 63478), (55, 63448), (57, 63442), (63, 63421), (74, 63346), (82, 63256),

Gene: Sonali\_75 Start: 48306, Stop: 48659, Start Num: 18

Candidate Starts for Sonali\_75:

(Start: 18 @48306 has 1 MA's), (22, 48330), (27, 48348), (47, 48411),

Gene: Squash\_82 Start: 52656, Stop: 52369, Start Num: 36

Candidate Starts for Squash\_82:

(Start: 36 @52656 has 17 MA's), (45, 52629), (66, 52512), (67, 52509), (68, 52506),

Gene: StrawberryJamm\_84 Start: 51823, Stop: 51536, Start Num: 36

Candidate Starts for StrawberryJamm\_84:

(Start: 36 @51823 has 17 MA's), (Start: 40 @51814 has 4 MA's), (45, 51796), (66, 51679), (67, 51676), (68, 51673),

Gene: SynergyX\_85 Start: 62198, Stop: 61845, Start Num: 31

Candidate Starts for SynergyX\_85:

(Start: 29 @62201 has 17 MA's), (Start: 31 @62198 has 24 MA's), (35, 62183), (52, 62105), (55, 62075), (57, 62069), (63, 62048), (74, 61973), (82, 61883),

Gene: Teehee\_79 Start: 52513, Stop: 52226, Start Num: 36

Candidate Starts for Teehee\_79:

(Start: 36 @52513 has 17 MA's), (Start: 40 @52504 has 4 MA's), (45, 52486), (66, 52369), (67, 52366), (68, 52363),

Gene: Thonko\_53 Start: 44732, Stop: 44370, Start Num: 24

Candidate Starts for Thonko\_53:

(4, 44885), (Start: 24 @44732 has 1 MA's), (43, 44693), (Start: 51 @44657 has 1 MA's), (55, 44609), (58, 44600), (82, 44426), (87, 44390),

Gene: Tissue\_79 Start: 52271, Stop: 51993, Start Num: 40

Candidate Starts for Tissue\_79:

(Start: 36 @52280 has 17 MA's), (Start: 40 @52271 has 4 MA's), (45, 52253), (66, 52136), (68, 52130), (75, 52064),

Gene: Tydolla\_81 Start: 62177, Stop: 61824, Start Num: 31

Candidate Starts for Tydolla\_81:

(Start: 29 @62180 has 17 MA's), (Start: 31 @62177 has 24 MA's), (35, 62162), (52, 62084), (55, 62054), (57, 62048), (63, 62027), (74, 61952), (82, 61862),

Gene: Viceroy\_77 Start: 51416, Stop: 51129, Start Num: 36

Candidate Starts for Viceroy\_77:

(Start: 36 @51416 has 17 MA's), (Start: 40 @51407 has 4 MA's), (45, 51389), (66, 51272), (67, 51269), (68, 51266),

Gene: Wayne3\_80 Start: 52267, Stop: 51989, Start Num: 40

Candidate Starts for Wayne3\_80:

(Start: 36 @52276 has 17 MA's), (Start: 40 @52267 has 4 MA's), (45, 52249), (66, 52132), (67, 52129), (68, 52126),

Gene: Wheelie\_78 Start: 51597, Stop: 51310, Start Num: 36

Candidate Starts for Wheelie\_78:

(Start: 36 @51597 has 17 MA's), (Start: 40 @51588 has 4 MA's), (45, 51570), (66, 51453), (67, 51450), (68, 51447),

Gene: Wilde\_54 Start: 41249, Stop: 40941, Start Num: 30

Candidate Starts for Wilde\_54:

(Start: 30 @41249 has 7 MA's), (48, 41177), (50, 41174), (68, 41093), (69, 41087), (73, 41069),

Gene: Yahalom\_83 Start: 62004, Stop: 61651, Start Num: 31

Candidate Starts for Yahalom\_83:

(Start: 29 @62007 has 17 MA's), (Start: 31 @62004 has 24 MA's), (35, 61989), (52, 61911), (55, 61881), (57, 61875), (63, 61854), (74, 61779), (82, 61689),

Gene: Yinz\_85 Start: 62060, Stop: 61716, Start Num: 29

Candidate Starts for Yinz\_85:

(17, 62108), (Start: 29 @62060 has 17 MA's), (37, 62045), (41, 62033), (Start: 51 @61994 has 1 MA's), (52, 61976), (55, 61946), (72, 61871), (78, 61802), (82, 61754),

Gene: Zagie\_80 Start: 52091, Stop: 51813, Start Num: 40

Candidate Starts for Zagie\_80:

(Start: 36 @52100 has 17 MA's), (Start: 40 @52091 has 4 MA's), (45, 52073), (66, 51956), (67, 51953), (68, 51950),

Gene: Zenteno07\_94 Start: 66543, Stop: 66193, Start Num: 26

Candidate Starts for Zenteno07\_94:

(7, 66642), (Start: 26 @66543 has 2 MA's), (Start: 51 @66477 has 1 MA's), (55, 66429), (59, 66420), (60, 66414), (86, 66216),