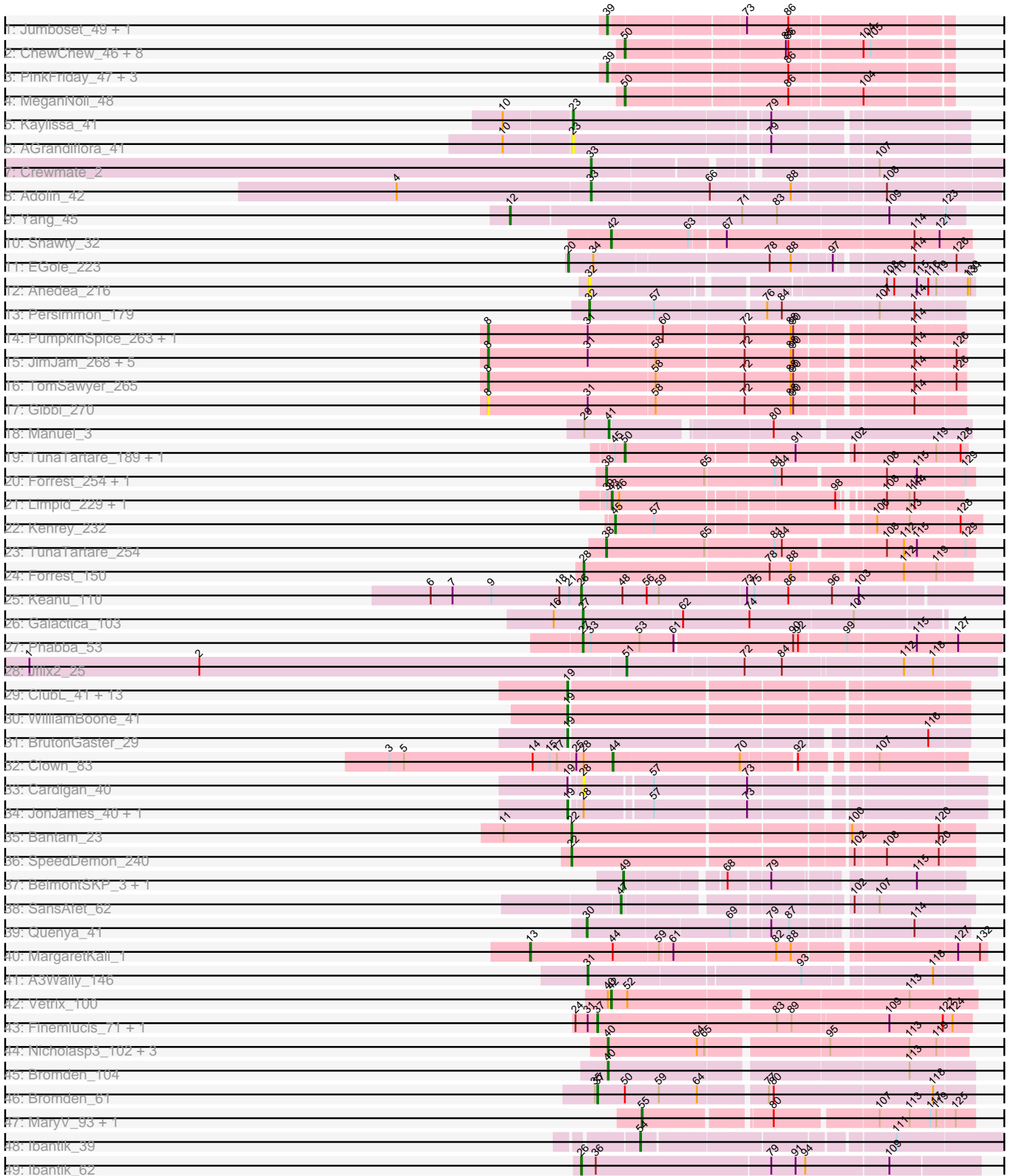


Pham 156283



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 156283 Report

This analysis was run 04/12/24 on database version 558.

Pham number 156283 has 90 members, 10 are drafts.

Phages represented in each track:

- Track 1 : Jumboset\_49, Pterodactyl\_46
- Track 2 : ChewChew\_46, CristinaYang\_46, Wawa\_48, BigMack\_46, AppleCider\_48, Suppi\_48, Canowicakte\_48, Bodacious\_46, Nancia\_46
- Track 3 : PinkFriday\_47, Glenn\_49, Kittykat\_49, Wayne\_49
- Track 4 : MeganNoll\_48
- Track 5 : Kaylissa\_41
- Track 6 : AGrandiflora\_41
- Track 7 : Crewmate\_2
- Track 8 : Adolin\_42
- Track 9 : Yang\_45
- Track 10 : Shawty\_32
- Track 11 : EGole\_223
- Track 12 : Anedea\_216
- Track 13 : Persimmon\_179
- Track 14 : PumpkinSpice\_263, Wipeout\_252
- Track 15 : JimJam\_268, Starbow\_257, KentuckyRacer\_273, CeilingFan\_274, Spelly\_265, Spilled\_268
- Track 16 : TomSawyer\_265
- Track 17 : Gibbi\_270
- Track 18 : Manuel\_3
- Track 19 : TunaTartare\_189, Sham\_181
- Track 20 : Forrest\_254, Jada\_255
- Track 21 : Limpid\_229, Annadreamy\_222
- Track 22 : Kenrey\_232
- Track 23 : TunaTartare\_254
- Track 24 : Forrest\_150
- Track 25 : Keanu\_110
- Track 26 : Galactica\_103
- Track 27 : Phabba\_53
- Track 28 : Jflix2\_25
- Track 29 : ClubL\_41, Toniann\_41, Dusty\_39, Miskis\_43, Lozinak\_41, Engineer\_42, Abscondus\_40, Bachita\_43, Norvs\_42, Cucurbita\_43, Smoothie\_42, Aphelion\_41, Culver\_41, PhinkBoden\_41
- Track 30 : WilliamBoone\_41
- Track 31 : BrutonGaster\_29
- Track 32 : Clown\_83
- Track 33 : Cardigan\_40

- Track 34 : JonJames\_40, Yvonnetastic\_38
- Track 35 : Bantam\_23
- Track 36 : SpeedDemon\_240
- Track 37 : BelmontSKP\_3, AnnaLie\_3
- Track 38 : SansAfet\_62
- Track 39 : Quenya\_41
- Track 40 : MargaretKali\_1
- Track 41 : A3Wally\_146
- Track 42 : Vetrix\_100
- Track 43 : Finemlucis\_71, Gabriela\_68
- Track 44 : Nicholasp3\_102, Gardann\_101, Rumpelstiltskin\_98, Kahlid\_101
- Track 45 : Bromden\_104
- Track 46 : Bromden\_61
- Track 47 : MaryV\_93, Wildcat\_93
- Track 48 : Ibantik\_39
- Track 49 : Ibantik\_62

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

The start number called the most often in the published annotations is 19, it was called in 15 of the 80 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abscondus\_40, Aphelion\_41, Bachita\_43, BrutonGaster\_29, ClubL\_41, Cucurbita\_43, Culver\_41, Dusty\_39, Engineer\_42, JonJames\_40, Lozinak\_41, Miskis\_43, Norvs\_42, PhinkBoden\_41, Smoothie\_42, Toniann\_41, WilliamBoone\_41, Yvonnetastic\_38,

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

- Cardigan\_40,

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

- A3Wally\_146, AGrandiflora\_41, Adolin\_42, Anedea\_216, AnnaLie\_3, Annadreamy\_222, AppleCider\_48, Bantam\_23, BelmontSKP\_3, BigMack\_46, Bodacious\_46, Bromden\_104, Bromden\_61, Canowicakte\_48, CeilingFan\_274, ChewChew\_46, Clown\_83, Crewmate\_2, CristinaYang\_46, EGole\_223, Finemlucis\_71, Forrest\_150, Forrest\_254, Gabriela\_68, Galactica\_103, Gardann\_101, Gibbi\_270, Glenn\_49, Ibantik\_39, Ibantik\_62, Jada\_255, Jflix2\_25, JimJam\_268, Jumboset\_49, Kahlid\_101, Kaylissa\_41, Keanu\_110, Kenrey\_232, KentuckyRacer\_273, Kittykat\_49, Limpid\_229, Manuel\_3, MargaretKali\_1, MaryV\_93, MeganNoll\_48, Nancia\_46, Nicholasp3\_102, Persimmon\_179, Phabba\_53, PinkFriday\_47, Pterodactyl\_46, PumpkinSpice\_263, Quenya\_41, Rumpelstiltskin\_98, SansAfet\_62, Sham\_181, Shawty\_32, SpeedDemon\_240, Spelly\_265, Spilled\_268, Starbow\_257, Suppi\_48, TomSawyer\_265, TunaTartare\_189, TunaTartare\_254, Vetrix\_100, Wawa\_48, Wayne\_49, Wildcat\_93, Wipeout\_252, Yang\_45,

**Summary by start number:**

Start 8:

- Found in 10 of 90 ( 11.1% ) of genes in pham

- Manual Annotations of this start: 7 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CeilingFan\_274 (BE2), Gibbi\_270 (BE2), JimJam\_268 (BE2), KentuckyRacer\_273 (BE2), PumpkinSpice\_263 (BE2), Spelly\_265 (BE2), Spilled\_268 (BE2), Starbow\_257 (BE2), TomSawyer\_265 (BE2), Wipeout\_252 (BE2),

#### Start 12:

- Found in 1 of 90 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Yang\_45 (AZ1),

#### Start 13:

- Found in 1 of 90 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MargaretKali\_1 (FB),

#### Start 19:

- Found in 19 of 90 ( 21.1% ) of genes in pham
- Manual Annotations of this start: 15 of 80
- Called 94.7% of time when present
- Phage (with cluster) where this start called: Abscondus\_40 (CQ), Aphelion\_41 (CQ1), Bachita\_43 (CQ1), BrutonGaster\_29 (CQ2), ClubL\_41 (CQ1), Cucurbita\_43 (CQ1), Culver\_41 (CQ1), Dusty\_39 (CQ), Engineer\_42 (CQ1), JonJames\_40 (DD), Lozinak\_41 (CQ1), Miskis\_43 (CQ), Norvs\_42 (CQ), PhinkBoden\_41 (CQ1), Smoothie\_42 (CQ1), Toniann\_41 (CQ1), WilliamBoone\_41 (CQ1), Yvonnetastic\_38 (DD),

#### Start 20:

- Found in 1 of 90 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EGole\_223 (BE1),

#### Start 22:

- Found in 2 of 90 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 2 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bantam\_23 (DL), SpeedDemon\_240 (DL),

#### Start 23:

- Found in 2 of 90 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AGrandiflora\_41 (AZ1), Kaylissa\_41 (AZ1),

#### Start 26:

- Found in 2 of 90 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 2 of 80

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ibantik\_62 (singleton), Keanu\_110 (BQ),

Start 27:

- Found in 2 of 90 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 2 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Galactica\_103 (BQ), Phabba\_53 (C2),

Start 28:

- Found in 5 of 90 ( 5.6% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Cardigan\_40 (DD), Forrest\_150 (BK1),

Start 30:

- Found in 1 of 90 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Quenya\_41 (EB),

Start 31:

- Found in 12 of 90 ( 13.3% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 8.3% of time when present
- Phage (with cluster) where this start called: A3Wally\_146 (GD1),

Start 32:

- Found in 2 of 90 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Anedea\_216 (BE1), Persimmon\_179 (BE1),

Start 33:

- Found in 3 of 90 ( 3.3% ) of genes in pham
- Manual Annotations of this start: 2 of 80
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Adolin\_42 (AZ1), Crewmate\_2 (AZ1),

Start 37:

- Found in 3 of 90 ( 3.3% ) of genes in pham
- Manual Annotations of this start: 3 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bromden\_61 (L4), Finemlucis\_71 (L2), Gabriela\_68 (L2),

Start 38:

- Found in 3 of 90 ( 3.3% ) of genes in pham
- Manual Annotations of this start: 3 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Forrest\_254 (BK1), Jada\_255 (BK1), TunaTartare\_254 (BK1),

Start 39:

- Found in 8 of 90 ( 8.9% ) of genes in pham
- Manual Annotations of this start: 5 of 80
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Glenn\_49 (AK), Jumboset\_49 (AK), Kittykat\_49 (AK), PinkFriday\_47 (AK), Pterodactyl\_46 (AK), Wayne\_49 (AK),

Start 40:

- Found in 6 of 90 ( 6.7% ) of genes in pham
- Manual Annotations of this start: 5 of 80
- Called 83.3% of time when present
- Phage (with cluster) where this start called: Bromden\_104 (L4), Gardann\_101 (L2), Kahlid\_101 (L2), Nicholasp3\_102 (L2), Rumpelstiltskin\_98 (L2),

Start 41:

- Found in 1 of 90 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Manuel\_3 (BF),

Start 42:

- Found in 2 of 90 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 2 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Shawty\_32 (BB1), Vetrix\_100 (L2),

Start 43:

- Found in 2 of 90 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 2 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Annadreamy\_222 (BK1), Limpid\_229 (BK1),

Start 44:

- Found in 2 of 90 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Clown\_83 (DC2),

Start 45:

- Found in 3 of 90 ( 3.3% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Kenrey\_232 (BK1),

Start 47:

- Found in 1 of 90 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SansAfet\_62 (EB),

Start 49:

- Found in 2 of 90 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 2 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AnnaLie\_3 (EB), BelmontSKP\_3 (EB),

Start 50:

- Found in 13 of 90 ( 14.4% ) of genes in pham
- Manual Annotations of this start: 12 of 80
- Called 92.3% of time when present
- Phage (with cluster) where this start called: AppleCider\_48 (AK), BigMack\_46 (AK), Bodacious\_46 (AK), Canowicakte\_48 (AK), ChewChew\_46 (AK), CristinaYang\_46 (AK), MeganNoll\_48 (AK), Nancia\_46 (AK), Sham\_181 (BK1), Suppi\_48 (AK), TunaTartare\_189 (BK1), Wawa\_48 (AK),

Start 51:

- Found in 1 of 90 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JfliX2\_25 (CF),

Start 54:

- Found in 1 of 90 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ibantik\_39 (singleton),

Start 55:

- Found in 2 of 90 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 2 of 80
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MaryV\_93 (V), Wildcat\_93 (V),

### **Summary by clusters:**

There are 23 clusters represented in this pham: GD1, BF, DD, DL, FB, BQ, CQ, CQ2, CQ1, BB1, AK, CF, EB, L4, L2, BK1, V, singleton, DC2, C2, BE2, AZ1, BE1,

Info for manual annotations of cluster AK:

- Start number 39 was manually annotated 5 times for cluster AK.
- Start number 50 was manually annotated 10 times for cluster AK.

Info for manual annotations of cluster AZ1:

- Start number 12 was manually annotated 1 time for cluster AZ1.
- Start number 23 was manually annotated 1 time for cluster AZ1.
- Start number 33 was manually annotated 2 times for cluster AZ1.

Info for manual annotations of cluster BB1:

- Start number 42 was manually annotated 1 time for cluster BB1.

Info for manual annotations of cluster BE1:

- Start number 20 was manually annotated 1 time for cluster BE1.
- Start number 32 was manually annotated 1 time for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 8 was manually annotated 7 times for cluster BE2.

Info for manual annotations of cluster BF:

- Start number 41 was manually annotated 1 time for cluster BF.

Info for manual annotations of cluster BK1:

- Start number 28 was manually annotated 1 time for cluster BK1.
- Start number 38 was manually annotated 3 times for cluster BK1.
- Start number 43 was manually annotated 2 times for cluster BK1.
- Start number 45 was manually annotated 1 time for cluster BK1.
- Start number 50 was manually annotated 2 times for cluster BK1.

Info for manual annotations of cluster BQ:

- Start number 26 was manually annotated 1 time for cluster BQ.
- Start number 27 was manually annotated 1 time for cluster BQ.

Info for manual annotations of cluster C2:

- Start number 27 was manually annotated 1 time for cluster C2.

Info for manual annotations of cluster CF:

- Start number 51 was manually annotated 1 time for cluster CF.

Info for manual annotations of cluster CQ:

- Start number 19 was manually annotated 1 time for cluster CQ.

Info for manual annotations of cluster CQ1:

- Start number 19 was manually annotated 11 times for cluster CQ1.

Info for manual annotations of cluster CQ2:

- Start number 19 was manually annotated 1 time for cluster CQ2.

Info for manual annotations of cluster DC2:

- Start number 44 was manually annotated 1 time for cluster DC2.

Info for manual annotations of cluster DD:

- Start number 19 was manually annotated 2 times for cluster DD.

Info for manual annotations of cluster DL:

- Start number 22 was manually annotated 2 times for cluster DL.

Info for manual annotations of cluster EB:

- Start number 30 was manually annotated 1 time for cluster EB.
- Start number 47 was manually annotated 1 time for cluster EB.
- Start number 49 was manually annotated 2 times for cluster EB.

Info for manual annotations of cluster FB:

- Start number 13 was manually annotated 1 time for cluster FB.

Info for manual annotations of cluster GD1:

- Start number 31 was manually annotated 1 time for cluster GD1.

Info for manual annotations of cluster L2:



- Start number 37 was manually annotated 2 times for cluster L2.
- Start number 40 was manually annotated 4 times for cluster L2.
- Start number 42 was manually annotated 1 time for cluster L2.

Info for manual annotations of cluster L4:

- Start number 37 was manually annotated 1 time for cluster L4.
- Start number 40 was manually annotated 1 time for cluster L4.

Info for manual annotations of cluster V:

- Start number 55 was manually annotated 2 times for cluster V.

### **Gene Information:**

Gene: A3Wally\_146 Start: 90094, Stop: 90525, Start Num: 31

Candidate Starts for A3Wally\_146:

(Start: 31 @90094 has 1 MA's), (93, 90337), (118, 90481),

Gene: AGrandiflora\_41 Start: 29625, Stop: 30068, Start Num: 23

Candidate Starts for AGrandiflora\_41:

(10, 29544), (Start: 23 @29625 has 1 MA's), (79, 29847),

Gene: Abscondus\_40 Start: 17135, Stop: 17593, Start Num: 19

Candidate Starts for Abscondus\_40:

(Start: 19 @17135 has 15 MA's),

Gene: Adolin\_42 Start: 29874, Stop: 30347, Start Num: 33

Candidate Starts for Adolin\_42:

(4, 29637), (Start: 33 @29874 has 2 MA's), (66, 30018), (88, 30111), (108, 30219),

Gene: Anedea\_216 Start: 106294, Stop: 106719, Start Num: 32

Candidate Starts for Anedea\_216:

(Start: 32 @106294 has 1 MA's), (108, 106618), (110, 106627), (115, 106654), (116, 106666), (119, 106675), (130, 106711), (131, 106714),

Gene: AnnaLie\_3 Start: 681, Stop: 1031, Start Num: 49

Candidate Starts for AnnaLie\_3:

(Start: 49 @681 has 2 MA's), (68, 786), (79, 828), (115, 978),

Gene: Annadreamy\_222 Start: 109759, Stop: 110133, Start Num: 43

Candidate Starts for Annadreamy\_222:

(Start: 39 @109753 has 5 MA's), (Start: 43 @109759 has 2 MA's), (46, 109768), (98, 110005), (108, 110047), (113, 110074), (114, 110080),

Gene: Aphelion\_41 Start: 17404, Stop: 17862, Start Num: 19

Candidate Starts for Aphelion\_41:

(Start: 19 @17404 has 15 MA's),

Gene: AppleCider\_48 Start: 35943, Stop: 36317, Start Num: 50

Candidate Starts for AppleCider\_48:

(Start: 50 @35943 has 12 MA's), (85, 36129), (86, 36132), (104, 36216), (105, 36225),

Gene: Bachita\_43 Start: 17837, Stop: 18295, Start Num: 19

Candidate Starts for Bachita\_43:

(Start: 19 @17837 has 15 MA's),

Gene: Bantam\_23 Start: 14778, Stop: 15239, Start Num: 22

Candidate Starts for Bantam\_23:

(11, 14694), (Start: 22 @14778 has 2 MA's), (100, 15099), (120, 15198),

Gene: BelmontSKP\_3 Start: 681, Stop: 1031, Start Num: 49

Candidate Starts for BelmontSKP\_3:

(Start: 49 @681 has 2 MA's), (68, 786), (79, 828), (115, 978),

Gene: BigMack\_46 Start: 34816, Stop: 35190, Start Num: 50

Candidate Starts for BigMack\_46:

(Start: 50 @34816 has 12 MA's), (85, 35002), (86, 35005), (104, 35089), (105, 35098),

Gene: Bodacious\_46 Start: 34773, Stop: 35147, Start Num: 50

Candidate Starts for Bodacious\_46:

(Start: 50 @34773 has 12 MA's), (85, 34959), (86, 34962), (104, 35046), (105, 35055),

Gene: Bromden\_104 Start: 63270, Stop: 63686, Start Num: 40

Candidate Starts for Bromden\_104:

(Start: 40 @63270 has 5 MA's), (113, 63612),

Gene: Bromden\_61 Start: 43963, Stop: 44400, Start Num: 37

Candidate Starts for Bromden\_61:

(35, 43960), (Start: 37 @43963 has 3 MA's), (Start: 50 @43996 has 12 MA's), (59, 44038), (64, 44083), (77, 44158), (80, 44164), (118, 44353),

Gene: BrutonGaster\_29 Start: 14029, Stop: 14475, Start Num: 19

Candidate Starts for BrutonGaster\_29:

(Start: 19 @14029 has 15 MA's), (116, 14428),

Gene: Canowicakte\_48 Start: 35978, Stop: 36352, Start Num: 50

Candidate Starts for Canowicakte\_48:

(Start: 50 @35978 has 12 MA's), (85, 36164), (86, 36167), (104, 36251), (105, 36260),

Gene: Cardigan\_40 Start: 19035, Stop: 19475, Start Num: 28

Candidate Starts for Cardigan\_40:

(Start: 19 @19023 has 15 MA's), (Start: 28 @19035 has 1 MA's), (57, 19110), (73, 19218),

Gene: CeilingFan\_274 Start: 120156, Stop: 119614, Start Num: 8

Candidate Starts for CeilingFan\_274:

(Start: 8 @120156 has 7 MA's), (Start: 31 @120033 has 1 MA's), (58, 119955), (72, 119853), (88, 119802), (90, 119799), (114, 119670), (126, 119625),

Gene: ChewChew\_46 Start: 34904, Stop: 35278, Start Num: 50

Candidate Starts for ChewChew\_46:

(Start: 50 @34904 has 12 MA's), (85, 35090), (86, 35093), (104, 35177), (105, 35186),

Gene: Clown\_83 Start: 53992, Stop: 54378, Start Num: 44

Candidate Starts for Clown\_83:

(3, 53719), (5, 53737), (14, 53896), (15, 53917), (17, 53926), (25, 53947), (Start: 28 @53956 has 1 MA's), (Start: 44 @53992 has 1 MA's), (70, 54142), (92, 54202), (107, 54277),

Gene: ClubL\_41 Start: 17326, Stop: 17784, Start Num: 19  
Candidate Starts for ClubL\_41:  
(Start: 19 @17326 has 15 MA's),

Gene: Crewmate\_2 Start: 546, Stop: 995, Start Num: 33  
Candidate Starts for Crewmate\_2:  
(Start: 33 @546 has 2 MA's), (107, 846),

Gene: CristinaYang\_46 Start: 34900, Stop: 35274, Start Num: 50  
Candidate Starts for CristinaYang\_46:  
(Start: 50 @34900 has 12 MA's), (85, 35086), (86, 35089), (104, 35173), (105, 35182),

Gene: Cucurbita\_43 Start: 18696, Stop: 19154, Start Num: 19  
Candidate Starts for Cucurbita\_43:  
(Start: 19 @18696 has 15 MA's),

Gene: Culver\_41 Start: 17135, Stop: 17593, Start Num: 19  
Candidate Starts for Culver\_41:  
(Start: 19 @17135 has 15 MA's),

Gene: Dusty\_39 Start: 17135, Stop: 17593, Start Num: 19  
Candidate Starts for Dusty\_39:  
(Start: 19 @17135 has 15 MA's),

Gene: EGole\_223 Start: 113552, Stop: 114001, Start Num: 20  
Candidate Starts for EGole\_223:  
(Start: 20 @113552 has 1 MA's), (34, 113582), (78, 113783), (88, 113807), (97, 113852), (114, 113936), (126, 113981),

Gene: Engineer\_42 Start: 17352, Stop: 17810, Start Num: 19  
Candidate Starts for Engineer\_42:  
(Start: 19 @17352 has 15 MA's),

Gene: Finemlucis\_71 Start: 49120, Stop: 49566, Start Num: 37  
Candidate Starts for Finemlucis\_71:  
(24, 49093), (Start: 31 @49108 has 1 MA's), (Start: 37 @49120 has 3 MA's), (83, 49336), (89, 49354), (109, 49468), (122, 49531), (124, 49543),

Gene: Forrest\_254 Start: 120939, Stop: 121364, Start Num: 38  
Candidate Starts for Forrest\_254:  
(Start: 38 @120939 has 3 MA's), (65, 121056), (81, 121137), (84, 121146), (108, 121263), (115, 121299), (129, 121353),

Gene: Forrest\_150 Start: 82816, Stop: 83256, Start Num: 28  
Candidate Starts for Forrest\_150:  
(Start: 28 @82816 has 1 MA's), (78, 83032), (88, 83056), (112, 83179), (119, 83215),

Gene: Gabriela\_68 Start: 47246, Stop: 47692, Start Num: 37  
Candidate Starts for Gabriela\_68:

(24, 47219), (Start: 31 @47234 has 1 MA's), (Start: 37 @47246 has 3 MA's), (83, 47462), (89, 47480), (109, 47594), (122, 47657), (124, 47669),

Gene: Galactica\_103 Start: 72510, Stop: 72941, Start Num: 27

Candidate Starts for Galactica\_103:

(16, 72474), (Start: 27 @72510 has 2 MA's), (62, 72630), (74, 72711), (101, 72837),

Gene: Gardann\_101 Start: 61924, Stop: 62331, Start Num: 40

Candidate Starts for Gardann\_101:

(Start: 40 @61924 has 5 MA's), (64, 62029), (65, 62038), (95, 62173), (113, 62266), (119, 62296),

Gene: Gibbi\_270 Start: 119649, Stop: 119107, Start Num: 8

Candidate Starts for Gibbi\_270:

(Start: 8 @119649 has 7 MA's), (Start: 31 @119526 has 1 MA's), (58, 119448), (72, 119346), (88, 119295), (90, 119292), (114, 119163),

Gene: Glenn\_49 Start: 36170, Stop: 36574, Start Num: 39

Candidate Starts for Glenn\_49:

(Start: 39 @36170 has 5 MA's), (86, 36380),

Gene: Ibantik\_39 Start: 18281, Stop: 17859, Start Num: 54

Candidate Starts for Ibantik\_39:

(Start: 54 @18281 has 1 MA's), (111, 17999),

Gene: Ibantik\_62 Start: 26677, Stop: 27156, Start Num: 26

Candidate Starts for Ibantik\_62:

(Start: 26 @26677 has 2 MA's), (36, 26695), (79, 26908), (91, 26938), (94, 26950), (109, 27049),

Gene: Jada\_255 Start: 120179, Stop: 120604, Start Num: 38

Candidate Starts for Jada\_255:

(Start: 38 @120179 has 3 MA's), (65, 120296), (81, 120377), (84, 120386), (108, 120503), (115, 120539), (129, 120593),

Gene: Jflix2\_25 Start: 25439, Stop: 25867, Start Num: 51

Candidate Starts for Jflix2\_25:

(1, 24707), (2, 24917), (Start: 51 @25439 has 1 MA's), (72, 25574), (84, 25619), (112, 25760), (118, 25793),

Gene: JimJam\_268 Start: 121085, Stop: 120543, Start Num: 8

Candidate Starts for JimJam\_268:

(Start: 8 @121085 has 7 MA's), (Start: 31 @120962 has 1 MA's), (58, 120884), (72, 120782), (88, 120731), (90, 120728), (114, 120599), (126, 120554),

Gene: JonJames\_40 Start: 21238, Stop: 21690, Start Num: 19

Candidate Starts for JonJames\_40:

(Start: 19 @21238 has 15 MA's), (Start: 28 @21250 has 1 MA's), (57, 21325), (73, 21433),

Gene: Jumboset\_49 Start: 36068, Stop: 36457, Start Num: 39

Candidate Starts for Jumboset\_49:

(Start: 39 @36068 has 5 MA's), (73, 36221), (86, 36272),

Gene: Kahlid\_101 Start: 61842, Stop: 62249, Start Num: 40

Candidate Starts for Kahlid\_101:

(Start: 40 @61842 has 5 MA's), (64, 61947), (65, 61956), (95, 62091), (113, 62184), (119, 62214),

Gene: Kaylissa\_41 Start: 29646, Stop: 30089, Start Num: 23

Candidate Starts for Kaylissa\_41:

(10, 29565), (Start: 23 @29646 has 1 MA's), (79, 29868),

Gene: Keanu\_110 Start: 78255, Stop: 78767, Start Num: 26

Candidate Starts for Keanu\_110:

(6, 78069), (7, 78096), (9, 78144), (18, 78228), (21, 78240), (Start: 26 @78255 has 2 MA's), (48, 78306), (56, 78336), (59, 78351), (73, 78456), (75, 78465), (86, 78507), (96, 78561), (103, 78594),

Gene: Kenrey\_232 Start: 111193, Stop: 111606, Start Num: 45

Candidate Starts for Kenrey\_232:

(Start: 45 @111193 has 1 MA's), (57, 111241), (106, 111484), (113, 111523), (128, 111580),

Gene: KentuckyRacer\_273 Start: 121000, Stop: 120458, Start Num: 8

Candidate Starts for KentuckyRacer\_273:

(Start: 8 @121000 has 7 MA's), (Start: 31 @120877 has 1 MA's), (58, 120799), (72, 120697), (88, 120646), (90, 120643), (114, 120514), (126, 120469),

Gene: Kittykat\_49 Start: 35170, Stop: 35559, Start Num: 39

Candidate Starts for Kittykat\_49:

(Start: 39 @35170 has 5 MA's), (86, 35374),

Gene: Limpid\_229 Start: 115072, Stop: 115446, Start Num: 43

Candidate Starts for Limpid\_229:

(Start: 39 @115066 has 5 MA's), (Start: 43 @115072 has 2 MA's), (46, 115081), (98, 115318), (108, 115360), (113, 115387), (114, 115393),

Gene: Lozinak\_41 Start: 17407, Stop: 17865, Start Num: 19

Candidate Starts for Lozinak\_41:

(Start: 19 @17407 has 15 MA's),

Gene: Manuel\_3 Start: 3413, Stop: 3811, Start Num: 41

Candidate Starts for Manuel\_3:

(29, 3383), (Start: 41 @3413 has 1 MA's), (80, 3590),

Gene: MargaretKali\_1 Start: 50, Stop: 577, Start Num: 13

Candidate Starts for MargaretKali\_1:

(Start: 13 @50 has 1 MA's), (Start: 44 @152 has 1 MA's), (59, 206), (61, 221), (82, 341), (88, 359), (127, 542), (132, 569),

Gene: MaryV\_93 Start: 56140, Stop: 56508, Start Num: 55

Candidate Starts for MaryV\_93:

(Start: 55 @56140 has 2 MA's), (80, 56281), (107, 56398), (113, 56434), (117, 56458), (119, 56464), (125, 56485),

Gene: MeganNoll\_48 Start: 36135, Stop: 36509, Start Num: 50

Candidate Starts for MeganNoll\_48:

(Start: 50 @36135 has 12 MA's), (86, 36324), (104, 36408),

Gene: Miskis\_43 Start: 17170, Stop: 17628, Start Num: 19

Candidate Starts for Miskis\_43:

(Start: 19 @17170 has 15 MA's),

Gene: Nancia\_46 Start: 34773, Stop: 35147, Start Num: 50

Candidate Starts for Nancia\_46:

(Start: 50 @34773 has 12 MA's), (85, 34959), (86, 34962), (104, 35046), (105, 35055),

Gene: Nicholasp3\_102 Start: 61924, Stop: 62331, Start Num: 40

Candidate Starts for Nicholasp3\_102:

(Start: 40 @61924 has 5 MA's), (64, 62029), (65, 62038), (95, 62173), (113, 62266), (119, 62296),

Gene: Norvs\_42 Start: 17409, Stop: 17867, Start Num: 19

Candidate Starts for Norvs\_42:

(Start: 19 @17409 has 15 MA's),

Gene: Persimmon\_179 Start: 94749, Stop: 95180, Start Num: 32

Candidate Starts for Persimmon\_179:

(Start: 32 @94749 has 1 MA's), (57, 94827), (76, 94953), (84, 94971), (107, 95082), (114, 95124),

Gene: Phabba\_53 Start: 19044, Stop: 18553, Start Num: 27

Candidate Starts for Phabba\_53:

(Start: 27 @19044 has 2 MA's), (Start: 33 @19035 has 2 MA's), (53, 18975), (61, 18933), (90, 18795), (92, 18789), (99, 18732), (115, 18651), (127, 18606),

Gene: PhinkBoden\_41 Start: 17790, Stop: 18248, Start Num: 19

Candidate Starts for PhinkBoden\_41:

(Start: 19 @17790 has 15 MA's),

Gene: PinkFriday\_47 Start: 35018, Stop: 35407, Start Num: 39

Candidate Starts for PinkFriday\_47:

(Start: 39 @35018 has 5 MA's), (86, 35222),

Gene: Pterodactyl\_46 Start: 34733, Stop: 35122, Start Num: 39

Candidate Starts for Pterodactyl\_46:

(Start: 39 @34733 has 5 MA's), (73, 34886), (86, 34937),

Gene: PumpkinSpice\_263 Start: 119441, Stop: 118899, Start Num: 8

Candidate Starts for PumpkinSpice\_263:

(Start: 8 @119441 has 7 MA's), (Start: 31 @119318 has 1 MA's), (60, 119231), (72, 119138), (88, 119087), (90, 119084), (114, 118955),

Gene: Quenya\_41 Start: 29700, Stop: 30113, Start Num: 30

Candidate Starts for Quenya\_41:

(Start: 30 @29700 has 1 MA's), (69, 29865), (79, 29907), (87, 29928), (114, 30051),

Gene: Rumpelstiltskin\_98 Start: 61717, Stop: 62124, Start Num: 40

Candidate Starts for Rumpelstiltskin\_98:

(Start: 40 @61717 has 5 MA's), (64, 61822), (65, 61831), (95, 61966), (113, 62059), (119, 62089),

Gene: SansAfet\_62 Start: 38774, Stop: 39154, Start Num: 47

Candidate Starts for SansAfet\_62:

(Start: 47 @38774 has 1 MA's), (102, 39017), (107, 39044),

Gene: Sham\_181 Start: 98652, Stop: 99035, Start Num: 50

Candidate Starts for Sham\_181:

(Start: 45 @98640 has 1 MA's), (Start: 50 @98652 has 12 MA's), (91, 98844), (102, 98907), (119, 99000), (128, 99027),

Gene: Shawty\_32 Start: 26307, Stop: 26723, Start Num: 42

Candidate Starts for Shawty\_32:

(Start: 42 @26307 has 2 MA's), (63, 26400), (67, 26439), (114, 26661), (121, 26688),

Gene: Smoothie\_42 Start: 17407, Stop: 17865, Start Num: 19

Candidate Starts for Smoothie\_42:

(Start: 19 @17407 has 15 MA's),

Gene: SpeedDemon\_240 Start: 15094, Stop: 15555, Start Num: 22

Candidate Starts for SpeedDemon\_240:

(Start: 22 @15094 has 2 MA's), (102, 15418), (108, 15454), (120, 15514),

Gene: Spelly\_265 Start: 118353, Stop: 117811, Start Num: 8

Candidate Starts for Spelly\_265:

(Start: 8 @118353 has 7 MA's), (Start: 31 @118230 has 1 MA's), (58, 118152), (72, 118050), (88, 117999), (90, 117996), (114, 117867), (126, 117822),

Gene: Spilled\_268 Start: 120017, Stop: 119475, Start Num: 8

Candidate Starts for Spilled\_268:

(Start: 8 @120017 has 7 MA's), (Start: 31 @119894 has 1 MA's), (58, 119816), (72, 119714), (88, 119663), (90, 119660), (114, 119531), (126, 119486),

Gene: Starbow\_257 Start: 118397, Stop: 117855, Start Num: 8

Candidate Starts for Starbow\_257:

(Start: 8 @118397 has 7 MA's), (Start: 31 @118274 has 1 MA's), (58, 118196), (72, 118094), (88, 118043), (90, 118040), (114, 117911), (126, 117866),

Gene: Suppi\_48 Start: 35978, Stop: 36352, Start Num: 50

Candidate Starts for Suppi\_48:

(Start: 50 @35978 has 12 MA's), (85, 36164), (86, 36167), (104, 36251), (105, 36260),

Gene: TomSawyer\_265 Start: 121328, Stop: 120786, Start Num: 8

Candidate Starts for TomSawyer\_265:

(Start: 8 @121328 has 7 MA's), (58, 121127), (72, 121025), (88, 120974), (90, 120971), (114, 120842), (126, 120797),

Gene: Toniann\_41 Start: 17352, Stop: 17810, Start Num: 19

Candidate Starts for Toniann\_41:

(Start: 19 @17352 has 15 MA's),

Gene: TunaTartare\_189 Start: 100701, Stop: 101084, Start Num: 50

Candidate Starts for TunaTartare\_189:

(Start: 45 @100689 has 1 MA's), (Start: 50 @100701 has 12 MA's), (91, 100893), (102, 100956), (119, 101049), (128, 101076),

Gene: TunaTartare\_254 Start: 124119, Stop: 124544, Start Num: 38

Candidate Starts for TunaTartare\_254:

(Start: 38 @124119 has 3 MA's), (65, 124236), (81, 124317), (84, 124326), (108, 124443), (112, 124464), (115, 124479), (129, 124533),

Gene: Vetric\_100 Start: 61960, Stop: 62376, Start Num: 42

Candidate Starts for Vetric\_100:

(Start: 40 @61957 has 5 MA's), (Start: 42 @61960 has 2 MA's), (52, 61978), (113, 62299),

Gene: Wawa\_48 Start: 35937, Stop: 36311, Start Num: 50

Candidate Starts for Wawa\_48:

(Start: 50 @35937 has 12 MA's), (85, 36123), (86, 36126), (104, 36210), (105, 36219),

Gene: Wayne\_49 Start: 36024, Stop: 36443, Start Num: 39

Candidate Starts for Wayne\_49:

(Start: 39 @36024 has 5 MA's), (86, 36234),

Gene: Wildcat\_93 Start: 56150, Stop: 56518, Start Num: 55

Candidate Starts for Wildcat\_93:

(Start: 55 @56150 has 2 MA's), (80, 56291), (107, 56408), (113, 56444), (117, 56468), (119, 56474), (125, 56495),

Gene: WilliamBoone\_41 Start: 16716, Stop: 17174, Start Num: 19

Candidate Starts for WilliamBoone\_41:

(Start: 19 @16716 has 15 MA's),

Gene: Wipeout\_252 Start: 120280, Stop: 119738, Start Num: 8

Candidate Starts for Wipeout\_252:

(Start: 8 @120280 has 7 MA's), (Start: 31 @120157 has 1 MA's), (60, 120070), (72, 119977), (88, 119926), (90, 119923), (114, 119794),

Gene: Yang\_45 Start: 32671, Stop: 33198, Start Num: 12

Candidate Starts for Yang\_45:

(Start: 12 @32671 has 1 MA's), (71, 32941), (83, 32983), (109, 33112), (123, 33175),

Gene: Yvonnetastic\_38 Start: 18787, Stop: 19239, Start Num: 19

Candidate Starts for Yvonnetastic\_38:

(Start: 19 @18787 has 15 MA's), (Start: 28 @18799 has 1 MA's), (57, 18874), (73, 18982),