





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 304964 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304964 has 76 members, 17 are drafts.

Phages represented in each track:

- Track 1 : Amanises\_1, Gravel\_1, Shen\_1, KendraB23\_1, Pelletreau\_1, Westrich\_1
- Track 2 : Niblet\_1, Chicken\_1, Zixiang\_1
- Track 3 : Brynnie\_1
- Track 4 : Orcanus\_1
- Track 5 : Galaxy\_1
- Track 6 : Eesa\_1
- Track 7 : TaylorSipht\_1
- Track 8 : Abidatro\_1
- Track 9 : Bible12\_2, Amelia\_2, HannahPhantana\_2, Pineda\_2, Melons\_2, Jerole\_2, Cote\_2, Damocles\_2, Bedetta\_2, Lunar\_2
- Track 10 : GramZayde\_1
- Track 11 : Kuleana\_1
- Track 12 : Daob\_2, PhirstandPhine\_2
- Track 13 : Cygnet\_1
- Track 14 : Zhuangyuan\_2
- Track 15 : Zhuangyuan\_1
- Track 16 : Kepler\_1
- Track 17 : Colusalem\_1, Coral\_1
- Track 18 : LittleTokyo\_1
- Track 19 : Polka\_1, OtsoOtso\_1
- Track 20 : Antrice\_1
- Track 21 : Andrew\_1
- Track 22 : AbbyDaisy\_1
- Track 23 : Elva\_30
- Track 24 : Akino08\_29
- Track 25 : Stromboli\_29
- Track 26 : BabyYoda\_29
- Track 27 : Loviatar\_30
- Track 28 : SanaSana\_31
- Track 29 : MargaretKali\_71
- Track 30 : Whytu\_21
- Track 31 : Yavru\_21
- Track 32 : Piku\_21
- Track 33 : Utopia\_21
- Track 34 : BigSherm\_2, Saintcarr\_2
- Track 35 : MillySue\_2, IsHungry\_2
- Track 36 : Ichiang\_1

- Track 37 : AllBusiness\_2
- Track 38 : Julie\_2
- Track 39 : Dirdigger\_2
- Track 40 : QuinnAvery\_2
- Track 41 : Yonex\_2, Ryan\_2
- Track 42 : ToastyOats\_3, Kihatsu\_3
- Track 43 : Elesar\_2
- Track 44 : BellaJr\_2
- Track 45 : Zucker\_1
- Track 46 : Bauer\_2
- Track 47 : EvenBluerMoon\_1
- Track 48 : JanetJ\_1
- Track 49 : Hereford\_2
- Track 50 : Morrey\_1, PrairieDogTown\_1
- Track 51 : Aoka\_1
- Track 52 : CocoCinnamon\_2

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

The start number called the most often in the published annotations is 27, it was called in 42 of the 59 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abidatro\_1, AllBusiness\_2, Amanises\_1, Amelia\_2, Andrew\_1, Antrice\_1, Aoka\_1, Bedetta\_2, Bibble12\_2, Brynnie\_1, Chicken\_1, CocoCinnamon\_2, Colusalem\_1, Coral\_1, Cote\_2, Cygnet\_1, Damocles\_2, Daob\_2, Dirdigger\_2, Eesa\_1, Elesar\_2, EvenBluerMoon\_1, Galaxy\_1, GramZayde\_1, Gravel\_1, HannahPhantana\_2, Hereford\_2, Ichiang\_1, IsHungry\_2, JanetJ\_1, Jerole\_2, Julie\_2, KendraB23\_1, Kepler\_1, Kihatsu\_3, Kuleana\_1, LittleTokyo\_1, Lunar\_2, Melons\_2, MillySue\_2, Morrey\_1, Niblet\_1, Orcanus\_1, OtsoOtso\_1, Pelletreau\_1, PhirstandPhine\_2, Pineda\_2, Polka\_1, PrairieDogTown\_1, Shen\_1, TaylorSipht\_1, ToastyOats\_3, Westrich\_1, Zhuangyuan\_1, Zhuangyuan\_2, Zixiang\_1,

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

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

- AbbyDaisy\_1, Akino08\_29, BabyYoda\_29, Bauer\_2, BellaJr\_2, BigSherm\_2, Elva\_30, Loviatar\_30, MargaretKali\_71, Piku\_21, QuinnAvery\_2, Ryan\_2, Saintcarr\_2, SanaSana\_31, Stromboli\_29, Utopia\_21, Whytu\_21, Yavru\_21, Yonex\_2, Zucker\_1,

**Summary by start number:**

Start 22:

- Found in 5 of 76 ( 6.6% ) of genes in pham
- Manual Annotations of this start: 1 of 59
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Ryan\_2 (FF), Yonex\_2 (FF),

Start 23:

- Found in 4 of 76 ( 5.3% ) of genes in pham
- Manual Annotations of this start: 2 of 59
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Utopia\_21 (FE), Whytu\_21 (FE),

Start 26:

- Found in 3 of 76 ( 3.9% ) of genes in pham
- Manual Annotations of this start: 2 of 59
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Piku\_21 (FE), Yavru\_21 (FE),

Start 27:

- Found in 56 of 76 ( 73.7% ) of genes in pham
- Manual Annotations of this start: 42 of 59
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abidatro\_1 (AS1), AllBusiness\_2 (FF), Amanises\_1 (AS1), Amelia\_2 (AS2), Andrew\_1 (AS3), Antrice\_1 (AS2), Aoka\_1 (FO), Bedetta\_2 (AS2), Bibble12\_2 (AS2), Brynnie\_1 (AS1), Chicken\_1 (AS1), CocoCinnamon\_2 (FO), Colusalem\_1 (AS2), Coral\_1 (AS2), Cote\_2 (AS2), Cygnet\_1 (AS2), Damocles\_2 (AS2), Daob\_2 (AS2), Dirtdigger\_2 (FF), Eesa\_1 (AS1), Elesar\_2 (FF), EvenBluerMoon\_1 (FO), Galaxy\_1 (AS1), GramZayde\_1 (AS2), Gravel\_1 (AS1), HannahPhantana\_2 (AS2), Hereford\_2 (FO), Ichiang\_1 (FF), IsHungry\_2 (FF), JanetJ\_1 (FO), Jerole\_2 (AS2), Julie\_2 (FF), KendraB23\_1 (AS1), Kepler\_1 (AS2), Kihatsu\_3 (FF), Kuleana\_1 (AS2), LittleTokyo\_1 (AS2), Lunar\_2 (AS2), Melons\_2 (AS2), MillySue\_2 (FF), Morrey\_1 (FO), Niblet\_1 (AS1), Orcanus\_1 (AS1), OtsoOtso\_1 (AS2), Pelletreau\_1 (AS1), PhirstandPhine\_2 (AS2), Pineda\_2 (AS2), Polka\_1 (AS2), PrairieDogTown\_1 (FO), Shen\_1 (AS1), TaylorSipht\_1 (AS1), ToastyOats\_3 (FF), Westrich\_1 (AS1), Zhuangyuan\_1 (AS2), Zhuangyuan\_2 (AS2), Zixiang\_1 (AS1),

Start 30:

- Found in 4 of 76 ( 5.3% ) of genes in pham
- Manual Annotations of this start: 3 of 59
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AbbyDaisy\_1 (AY), Bauer\_2 (FN), BellaJr\_2 (FN), Zucker\_1 (FN),

Start 31:

- Found in 10 of 76 ( 13.2% ) of genes in pham
- Manual Annotations of this start: 6 of 59
- Called 60.0% of time when present
- Phage (with cluster) where this start called: Akino08\_29 (EB), BabyYoda\_29 (EB), Elva\_30 (EB), Loviatar\_30 (EB), SanaSana\_31 (EB), Stromboli\_29 (EB),

Start 33:

- Found in 1 of 76 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 1 of 59
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MargaretKali\_71 (FB),

Start 35:

- Found in 3 of 76 ( 3.9% ) of genes in pham

- Manual Annotations of this start: 2 of 59
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BigSherm\_2 (FF), QuinnAvery\_2 (FF), Saintcarr\_2 (FF),

### **Summary by clusters:**

There are 10 clusters represented in this pham: AS3, AS2, AS1, EB, FB, FE, FF, AY, FN, FO,

Info for manual annotations of cluster AS1:

- Start number 27 was manually annotated 10 times for cluster AS1.

Info for manual annotations of cluster AS2:

- Start number 27 was manually annotated 18 times for cluster AS2.

Info for manual annotations of cluster AS3:

- Start number 27 was manually annotated 1 time for cluster AS3.

Info for manual annotations of cluster AY:

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

Info for manual annotations of cluster EB:

- Start number 31 was manually annotated 6 times for cluster EB.

Info for manual annotations of cluster FB:

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

Info for manual annotations of cluster FE:

- Start number 23 was manually annotated 2 times for cluster FE.
- Start number 26 was manually annotated 2 times for cluster FE.

Info for manual annotations of cluster FF:

- Start number 22 was manually annotated 1 time for cluster FF.
- Start number 27 was manually annotated 7 times for cluster FF.
- Start number 35 was manually annotated 2 times for cluster FF.

Info for manual annotations of cluster FN:

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

Info for manual annotations of cluster FO:

- Start number 27 was manually annotated 6 times for cluster FO.

### **Gene Information:**

Gene: AbbyDaisy\_1 Start: 69, Stop: 401, Start Num: 30

Candidate Starts for AbbyDaisy\_1:

(Start: 30 @69 has 3 MA's), (42, 126), (49, 156), (76, 273), (87, 342),

Gene: Abidatro\_1 Start: 98, Stop: 442, Start Num: 27

Candidate Starts for Abidatro\_1:

(Start: 27 @98 has 42 MA's), (36, 155), (41, 176), (54, 224), (58, 236), (65, 254), (84, 365), (87, 386), (97, 431),

Gene: Akino08\_29 Start: 23558, Stop: 23893, Start Num: 31

Candidate Starts for Akino08\_29:

(Start: 31 @23558 has 6 MA's), (36, 23588), (44, 23618), (45, 23621), (54, 23663), (81, 23786), (86, 23831), (90, 23846), (96, 23879),

Gene: AllBusiness\_2 Start: 425, Stop: 763, Start Num: 27

Candidate Starts for AllBusiness\_2:

(Start: 27 @425 has 42 MA's), (34, 464), (41, 500), (53, 548), (55, 554), (79, 656),

Gene: Amanises\_1 Start: 97, Stop: 435, Start Num: 27

Candidate Starts for Amanises\_1:

(Start: 27 @97 has 42 MA's), (51, 214), (52, 217), (73, 298), (83, 352), (97, 424),

Gene: Amelia\_2 Start: 264, Stop: 596, Start Num: 27

Candidate Starts for Amelia\_2:

(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: Andrew\_1 Start: 98, Stop: 463, Start Num: 27

Candidate Starts for Andrew\_1:

(Start: 27 @98 has 42 MA's), (28, 113), (Start: 31 @125 has 6 MA's), (36, 155), (51, 227), (60, 254), (63, 260), (83, 377),

Gene: Antrice\_1 Start: 92, Stop: 430, Start Num: 27

Candidate Starts for Antrice\_1:

(Start: 27 @92 has 42 MA's), (32, 119), (36, 146), (50, 197), (51, 209), (64, 242), (68, 260), (69, 263), (70, 278), (80, 326), (83, 344), (86, 368), (89, 380), (90, 383), (94, 407),

Gene: Aoka\_1 Start: 69, Stop: 407, Start Num: 27

Candidate Starts for Aoka\_1:

(Start: 27 @69 has 42 MA's), (63, 213), (91, 366),

Gene: BabyYoda\_29 Start: 22760, Stop: 23095, Start Num: 31

Candidate Starts for BabyYoda\_29:

(Start: 31 @22760 has 6 MA's), (36, 22790), (44, 22820), (45, 22823), (54, 22865), (81, 22988), (86, 23033), (96, 23081),

Gene: Bauer\_2 Start: 736, Stop: 1071, Start Num: 30

Candidate Starts for Bauer\_2:

(20, 664), (Start: 30 @736 has 3 MA's), (42, 793), (49, 823), (56, 853), (63, 874), (88, 1015), (93, 1036),

Gene: Bedetta\_2 Start: 264, Stop: 596, Start Num: 27

Candidate Starts for Bedetta\_2:

(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: BellaJr\_2 Start: 735, Stop: 1070, Start Num: 30

Candidate Starts for BellaJr\_2:

(2, 534), (20, 663), (Start: 30 @735 has 3 MA's), (42, 792), (49, 822), (56, 852), (63, 873), (88, 1014), (93, 1035),

Gene: Bible12\_2 Start: 264, Stop: 596, Start Num: 27

Candidate Starts for Bible12\_2:

(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: BigSherm\_2 Start: 377, Stop: 667, Start Num: 35

Candidate Starts for BigSherm\_2:

(5, 206), (Start: 22 @314 has 1 MA's), (Start: 35 @377 has 2 MA's), (36, 383), (38, 389), (59, 461), (79, 557), (81, 563), (85, 590), (87, 605), (92, 626),

Gene: Brynnie\_1 Start: 98, Stop: 439, Start Num: 27

Candidate Starts for Brynnie\_1:

(10, 26), (Start: 27 @98 has 42 MA's), (34, 137), (41, 176), (51, 215), (63, 245), (73, 299), (87, 383), (97, 428),

Gene: Chicken\_1 Start: 98, Stop: 439, Start Num: 27

Candidate Starts for Chicken\_1:

(Start: 27 @98 has 42 MA's), (50, 203), (51, 212), (63, 245), (73, 299), (78, 326), (83, 356), (97, 428),

Gene: CocoCinnamon\_2 Start: 287, Stop: 631, Start Num: 27

Candidate Starts for CocoCinnamon\_2:

(25, 281), (Start: 27 @287 has 42 MA's), (29, 308), (41, 362), (44, 371), (50, 392), (55, 416), (59, 419),

Gene: Colusalem\_1 Start: 100, Stop: 432, Start Num: 27

Candidate Starts for Colusalem\_1:

(11, 28), (19, 55), (Start: 27 @100 has 42 MA's), (38, 160), (39, 163), (41, 175), (63, 241), (65, 250), (73, 295), (79, 328), (83, 349), (87, 376), (92, 397), (96, 418), (97, 421),

Gene: Coral\_1 Start: 100, Stop: 432, Start Num: 27

Candidate Starts for Coral\_1:

(11, 28), (19, 55), (Start: 27 @100 has 42 MA's), (38, 160), (39, 163), (41, 175), (63, 241), (65, 250), (73, 295), (79, 328), (83, 349), (87, 376), (92, 397), (96, 418), (97, 421),

Gene: Cote\_2 Start: 264, Stop: 596, Start Num: 27

Candidate Starts for Cote\_2:

(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: Cygnet\_1 Start: 92, Stop: 430, Start Num: 27

Candidate Starts for Cygnet\_1:

(Start: 27 @92 has 42 MA's), (36, 146), (68, 260), (69, 263), (70, 278), (83, 344), (89, 380), (90, 383), (94, 407),

Gene: Damocles\_2 Start: 264, Stop: 596, Start Num: 27

Candidate Starts for Damocles\_2:

(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: Daob\_2 Start: 264, Stop: 596, Start Num: 27

Candidate Starts for Daob\_2:

(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: Dirdigger\_2 Start: 468, Stop: 809, Start Num: 27

Candidate Starts for Dirdigger\_2:

(1, 285), (Start: 27 @468 has 42 MA's), (28, 483), (52, 588), (59, 603), (81, 705),

Gene: Eesa\_1 Start: 97, Stop: 435, Start Num: 27

Candidate Starts for Eesa\_1:

(Start: 27 @97 has 42 MA's), (52, 217), (73, 298), (83, 352), (97, 424),

Gene: Elesar\_2 Start: 346, Stop: 690, Start Num: 27

Candidate Starts for Elesar\_2:

(Start: 27 @346 has 42 MA's), (53, 469), (74, 556), (79, 583), (82, 598), (93, 655),

Gene: Elva\_30 Start: 22711, Stop: 23049, Start Num: 31

Candidate Starts for Elva\_30:

(Start: 31 @22711 has 6 MA's), (40, 22753), (45, 22774), (46, 22777), (54, 22816), (59, 22831), (62, 22843), (81, 22942), (90, 23002), (96, 23035),

Gene: EvenBluerMoon\_1 Start: 69, Stop: 407, Start Num: 27

Candidate Starts for EvenBluerMoon\_1:

(Start: 27 @69 has 42 MA's), (63, 213),

Gene: Galaxy\_1 Start: 98, Stop: 442, Start Num: 27

Candidate Starts for Galaxy\_1:

(Start: 27 @98 has 42 MA's), (36, 155), (41, 176), (48, 197), (54, 224), (58, 236), (65, 254), (87, 386), (97, 431),

Gene: GramZayde\_1 Start: 101, Stop: 433, Start Num: 27

Candidate Starts for GramZayde\_1:

(Start: 27 @101 has 42 MA's), (38, 161), (39, 164), (41, 176), (63, 242), (65, 251), (73, 296), (79, 329), (83, 350), (87, 377), (92, 398), (96, 419), (97, 422),

Gene: Gravel\_1 Start: 97, Stop: 435, Start Num: 27

Candidate Starts for Gravel\_1:

(Start: 27 @97 has 42 MA's), (51, 214), (52, 217), (73, 298), (83, 352), (97, 424),

Gene: HannahPhantana\_2 Start: 264, Stop: 596, Start Num: 27

Candidate Starts for HannahPhantana\_2:

(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: Hereford\_2 Start: 250, Stop: 588, Start Num: 27

Candidate Starts for Hereford\_2:

(Start: 27 @250 has 42 MA's), (91, 547), (93, 553),

Gene: Ichiang\_1 Start: 90, Stop: 431, Start Num: 27

Candidate Starts for Ichiang\_1:

(18, 51), (Start: 27 @90 has 42 MA's), (28, 105), (36, 144), (47, 183), (82, 336),

Gene: IsHungry\_2 Start: 328, Stop: 672, Start Num: 27

Candidate Starts for IsHungry\_2:

(21, 310), (Start: 27 @328 has 42 MA's), (Start: 31 @355 has 6 MA's), (50, 433), (59, 460), (82, 580), (88, 616), (95, 655),

Gene: JanetJ\_1 Start: 70, Stop: 408, Start Num: 27  
Candidate Starts for JanetJ\_1:  
(13, 1), (Start: 27 @70 has 42 MA's), (91, 367), (93, 373),

Gene: Jerole\_2 Start: 264, Stop: 596, Start Num: 27  
Candidate Starts for Jerole\_2:  
(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: Julie\_2 Start: 328, Stop: 672, Start Num: 27  
Candidate Starts for Julie\_2:  
(21, 310), (Start: 27 @328 has 42 MA's), (Start: 31 @355 has 6 MA's), (50, 433), (59, 460), (63, 469), (82, 580), (88, 616),

Gene: KendraB23\_1 Start: 97, Stop: 435, Start Num: 27  
Candidate Starts for KendraB23\_1:  
(Start: 27 @97 has 42 MA's), (51, 214), (52, 217), (73, 298), (83, 352), (97, 424),

Gene: Kepler\_1 Start: 99, Stop: 431, Start Num: 27  
Candidate Starts for Kepler\_1:  
(9, 21), (Start: 27 @99 has 42 MA's), (38, 159), (41, 174), (63, 240), (65, 249), (73, 294), (79, 327), (83, 348), (87, 375), (92, 396), (96, 417), (97, 420),

Gene: Kihatsu\_3 Start: 685, Stop: 1026, Start Num: 27  
Candidate Starts for Kihatsu\_3:  
(1, 502), (Start: 27 @685 has 42 MA's), (28, 700), (47, 778), (52, 805), (59, 820),

Gene: Kuleana\_1 Start: 97, Stop: 444, Start Num: 27  
Candidate Starts for Kuleana\_1:  
(6, 1), (11, 28), (14, 40), (15, 46), (17, 55), (Start: 27 @97 has 42 MA's), (37, 157), (47, 190), (49, 202), (59, 238), (66, 259), (68, 268), (71, 289), (72, 298), (77, 313), (82, 352), (86, 382), (87, 385), (91, 403), (94, 421),

Gene: LittleTokyo\_1 Start: 92, Stop: 430, Start Num: 27  
Candidate Starts for LittleTokyo\_1:  
(Start: 27 @92 has 42 MA's), (36, 146), (50, 197), (64, 242), (69, 263), (75, 296), (83, 344), (89, 380), (94, 407),

Gene: Loviatar\_30 Start: 23573, Stop: 23908, Start Num: 31  
Candidate Starts for Loviatar\_30:  
(Start: 31 @23573 has 6 MA's), (36, 23603), (44, 23633), (45, 23636), (54, 23678), (81, 23801), (86, 23846), (90, 23861), (96, 23894),

Gene: Lunar\_2 Start: 264, Stop: 596, Start Num: 27  
Candidate Starts for Lunar\_2:  
(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: MargaretKali\_71 Start: 38297, Stop: 38623, Start Num: 33  
Candidate Starts for MargaretKali\_71:

(8, 38168), (14, 38195), (24, 38252), (Start: 33 @38297 has 1 MA's), (84, 38546),

Gene: Melons\_2 Start: 264, Stop: 596, Start Num: 27

Candidate Starts for Melons\_2:

(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: MillySue\_2 Start: 328, Stop: 672, Start Num: 27

Candidate Starts for MillySue\_2:

(21, 310), (Start: 27 @328 has 42 MA's), (Start: 31 @355 has 6 MA's), (50, 433), (59, 460), (82, 580), (88, 616), (95, 655),

Gene: Morrey\_1 Start: 71, Stop: 409, Start Num: 27

Candidate Starts for Morrey\_1:

(Start: 27 @71 has 42 MA's), (91, 368), (93, 374),

Gene: Niblet\_1 Start: 98, Stop: 439, Start Num: 27

Candidate Starts for Niblet\_1:

(Start: 27 @98 has 42 MA's), (50, 203), (51, 212), (63, 245), (73, 299), (78, 326), (83, 356), (97, 428),

Gene: Orcanus\_1 Start: 97, Stop: 435, Start Num: 27

Candidate Starts for Orcanus\_1:

(15, 46), (Start: 27 @97 has 42 MA's), (51, 214), (52, 217), (73, 298), (83, 352), (97, 424),

Gene: OtsoOtso\_1 Start: 100, Stop: 432, Start Num: 27

Candidate Starts for OtsoOtso\_1:

(11, 28), (19, 55), (Start: 27 @100 has 42 MA's), (38, 160), (41, 175), (63, 241), (65, 250), (73, 295), (79, 328), (83, 349), (87, 376), (92, 397), (96, 418), (97, 421),

Gene: Pelletreau\_1 Start: 97, Stop: 435, Start Num: 27

Candidate Starts for Pelletreau\_1:

(Start: 27 @97 has 42 MA's), (51, 214), (52, 217), (73, 298), (83, 352), (97, 424),

Gene: PhirstandPhine\_2 Start: 264, Stop: 596, Start Num: 27

Candidate Starts for PhirstandPhine\_2:

(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: Piku\_21 Start: 15071, Stop: 15454, Start Num: 26

Candidate Starts for Piku\_21:

(Start: 23 @15056 has 2 MA's), (Start: 26 @15071 has 2 MA's), (36, 15128), (59, 15215), (61, 15224),

Gene: Pineda\_2 Start: 264, Stop: 596, Start Num: 27

Candidate Starts for Pineda\_2:

(Start: 27 @264 has 42 MA's), (38, 324), (39, 327), (41, 339), (63, 405), (65, 414), (73, 459), (79, 492), (83, 513), (87, 540), (92, 561), (96, 582), (97, 585),

Gene: Polka\_1 Start: 100, Stop: 432, Start Num: 27

Candidate Starts for Polka\_1:

(11, 28), (19, 55), (Start: 27 @100 has 42 MA's), (38, 160), (41, 175), (63, 241), (65, 250), (73, 295), (79, 328), (83, 349), (87, 376), (92, 397), (96, 418), (97, 421),

Gene: PrairieDogTown\_1 Start: 71, Stop: 409, Start Num: 27

Candidate Starts for PrairieDogTown\_1:  
(Start: 27 @71 has 42 MA's), (91, 368), (93, 374),

Gene: QuinnAvery\_2 Start: 377, Stop: 667, Start Num: 35  
Candidate Starts for QuinnAvery\_2:  
(5, 206), (Start: 22 @314 has 1 MA's), (Start: 35 @377 has 2 MA's), (36, 383), (38, 389), (43, 410), (59, 461), (79, 557), (81, 563), (85, 590), (87, 605), (92, 626),

Gene: Ryan\_2 Start: 306, Stop: 668, Start Num: 22  
Candidate Starts for Ryan\_2:  
(Start: 22 @306 has 1 MA's), (36, 378), (51, 441), (82, 567), (83, 573), (87, 603), (93, 627),

Gene: Saintcarr\_2 Start: 377, Stop: 667, Start Num: 35  
Candidate Starts for Saintcarr\_2:  
(5, 206), (Start: 22 @314 has 1 MA's), (Start: 35 @377 has 2 MA's), (36, 383), (38, 389), (59, 461), (79, 557), (81, 563), (85, 590), (87, 605), (92, 626),

Gene: SanaSana\_31 Start: 23223, Stop: 23558, Start Num: 31  
Candidate Starts for SanaSana\_31:  
(Start: 31 @23223 has 6 MA's), (36, 23253), (44, 23283), (45, 23286), (54, 23328), (81, 23451), (86, 23496), (90, 23511), (96, 23544),

Gene: Shen\_1 Start: 97, Stop: 435, Start Num: 27  
Candidate Starts for Shen\_1:  
(Start: 27 @97 has 42 MA's), (51, 214), (52, 217), (73, 298), (83, 352), (97, 424),

Gene: Stromboli\_29 Start: 22757, Stop: 23092, Start Num: 31  
Candidate Starts for Stromboli\_29:  
(Start: 31 @22757 has 6 MA's), (36, 22787), (44, 22817), (45, 22820), (54, 22862), (81, 22985), (86, 23030), (90, 23045), (96, 23078),

Gene: TaylorSipht\_1 Start: 118, Stop: 459, Start Num: 27  
Candidate Starts for TaylorSipht\_1:  
(Start: 27 @118 has 42 MA's), (41, 196), (52, 238), (57, 253), (62, 262), (73, 319), (79, 355), (97, 448),

Gene: ToastyOats\_3 Start: 685, Stop: 1026, Start Num: 27  
Candidate Starts for ToastyOats\_3:  
(1, 502), (Start: 27 @685 has 42 MA's), (28, 700), (47, 778), (52, 805), (59, 820),

Gene: Utopia\_21 Start: 14585, Stop: 14977, Start Num: 23  
Candidate Starts for Utopia\_21:  
(3, 14435), (4, 14462), (7, 14498), (Start: 23 @14585 has 2 MA's), (59, 14744), (61, 14753), (79, 14852), (91, 14918),

Gene: Westrich\_1 Start: 97, Stop: 435, Start Num: 27  
Candidate Starts for Westrich\_1:  
(Start: 27 @97 has 42 MA's), (51, 214), (52, 217), (73, 298), (83, 352), (97, 424),

Gene: Whytu\_21 Start: 14626, Stop: 15018, Start Num: 23  
Candidate Starts for Whytu\_21:  
(4, 14506), (12, 14569), (18, 14590), (Start: 23 @14626 has 2 MA's), (Start: 26 @14641 has 2 MA's), (59, 14785), (61, 14794),

Gene: Yavru\_21 Start: 14451, Stop: 14828, Start Num: 26

Candidate Starts for Yavru\_21:

(Start: 23 @14436 has 2 MA's), (Start: 26 @14451 has 2 MA's), (59, 14595), (61, 14604),

Gene: Yonex\_2 Start: 306, Stop: 668, Start Num: 22

Candidate Starts for Yonex\_2:

(Start: 22 @306 has 1 MA's), (36, 378), (51, 441), (82, 567), (83, 573), (87, 603), (93, 627),

Gene: Zhuangyuan\_2 Start: 439, Stop: 780, Start Num: 27

Candidate Starts for Zhuangyuan\_2:

(16, 382), (Start: 27 @439 has 42 MA's), (28, 454), (32, 469), (38, 499), (50, 544), (81, 685), (82, 694), (92, 748),

Gene: Zhuangyuan\_1 Start: 92, Stop: 430, Start Num: 27

Candidate Starts for Zhuangyuan\_1:

(Start: 27 @92 has 42 MA's), (32, 119), (36, 146), (50, 197), (64, 242), (67, 257), (68, 260), (70, 278), (77, 305), (83, 344), (87, 371), (89, 380), (93, 395), (94, 407), (95, 413),

Gene: Zixiang\_1 Start: 98, Stop: 439, Start Num: 27

Candidate Starts for Zixiang\_1:

(Start: 27 @98 has 42 MA's), (50, 203), (51, 212), (63, 245), (73, 299), (78, 326), (83, 356), (97, 428),

Gene: Zucker\_1 Start: 39, Stop: 374, Start Num: 30

Candidate Starts for Zucker\_1:

(Start: 30 @39 has 3 MA's), (42, 96), (56, 156), (63, 177), (74, 237), (88, 318), (93, 339),