





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 304871 Report

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

Pham number 304871 has 108 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Albright\_11, Doobus\_11, CroZenni\_11
- Track 2 : Swervy\_11, AylexOG\_12, Slay\_11, SarBear\_11
- Track 3 : Armstrong\_10, Coltrane\_10, Clayda5\_10, Rollins\_10, Vitas\_10, Brahms\_10, Bernstein\_10, Skylord\_10
- Track 4 : DirtyBubble\_11
- Track 5 : BAJuniper\_11
- Track 6 : Cashington\_11, Abigail\_11, Burritobowl\_11, DickRichards\_11, Softsoap\_11, Johnathan\_11, SansAfet\_11, LimaBean\_11, Solea\_12, Milomuff\_12
- Track 7 : MsUbiquitous\_11, CupcakePrincess\_11, Jabb\_11, TukTuk\_11
- Track 8 : FlameThrower\_11
- Track 9 : Arroyo\_12
- Track 10 : Icarian\_12
- Track 11 : Jovita\_11
- Track 12 : SirBeanington\_11
- Track 13 : Albedo\_11
- Track 14 : Akino08\_11
- Track 15 : BabyDaisy\_12, Kate33\_11, IndyLu\_11
- Track 16 : PhigPhack\_11
- Track 17 : Franklin22\_10
- Track 18 : Gack\_10
- Track 19 : Quenya\_12
- Track 20 : Lahqtemish\_11, PastaFagioli\_11
- Track 21 : CliffHanger\_12
- Track 22 : BubbaBear\_11, Kenzers\_11, Lynlen\_11
- Track 23 : Squircle\_11, Olliecat\_11
- Track 24 : Kieran\_11, Rona\_11, Kamdara\_11, Sharkboy\_11, ChiliPepper\_11, Dismas\_11
- Track 25 : Stoor\_11, SanaSana\_12
- Track 26 : Pecas\_11, Eula\_11
- Track 27 : Eden\_10
- Track 28 : Nicky22\_12
- Track 29 : Celaena\_11
- Track 30 : Buldak\_11
- Track 31 : PondAmelia\_14
- Track 32 : Didgeridoo\_12
- Track 33 : Bachaco\_11
- Track 34 : Katzastrophic\_11

- Track 35 : Phisb\_11
- Track 36 : QMacho\_12
- Track 37 : Lilo27\_11
- Track 38 : Finalfrontier\_12
- Track 39 : WalkingDead\_11
- Track 40 : Teagster\_10
- Track 41 : Avocadoman\_11
- Track 42 : BelmontSKP\_12, AnnaLie\_12
- Track 43 : Elva\_12
- Track 44 : BabyYoda\_11
- Track 45 : Bengal\_11
- Track 46 : Shayna\_10
- Track 47 : Loviatar\_11
- Track 48 : Stromboli\_11
- Track 49 : CanFranMach\_11
- Track 50 : SunnyD\_10
- Track 51 : AvGardian\_11
- Track 52 : BrayBeast\_11
- Track 53 : MargaretKali\_12
- Track 54 : Rooter\_11, Sarge\_11
- Track 55 : Kumotta\_12
- Track 56 : Pigu\_11
- Track 57 : Shoya\_10, JeanClaude\_11
- Track 58 : Alatao\_10
- Track 59 : Scotia\_13, NoSwimming\_13
- Track 60 : Hereford\_13, PrairieDogTown\_12, Morrey\_18, EvenBluerMoon\_12
- Track 61 : Aoka\_12
- Track 62 : JanetJ\_12
- Track 63 : CocoCinnamon\_15
- Track 64 : Maja\_11

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

The start number called the most often in the published annotations is 9, it was called in 46 of the 95 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abigail\_11, Akino08\_11, Albedo\_11, Albright\_11, AnnaLie\_12, Arroyo\_12, Avocadoman\_11, AylexOG\_12, BabyDaisy\_12, BabyYoda\_11, BelmontSKP\_12, Bengal\_11, BubbaBear\_11, Burritobowl\_11, CanFranMach\_11, Cashington\_11, CroZenni\_11, CupcakePrincess\_11, DickRichards\_11, Doobus\_11, Elva\_12, Eula\_11, Finalfrontier\_12, Icarian\_12, IndyLu\_11, Jabb\_11, Johnathan\_11, Jovita\_11, Kate33\_11, Kenzers\_11, Lilo27\_11, LimaBean\_11, Loviatar\_11, Lynlen\_11, Milomuff\_12, MsUbiquitous\_11, Nicky22\_12, Pecas\_11, PhigPhack\_11, Phisb\_11, PondAmelia\_14, QMacho\_12, SanaSana\_12, SansAfet\_11, SarBear\_11, SirBeanington\_11, Slay\_11, Softsoap\_11, Solea\_12, Stoor\_11, Stromboli\_11, Swervy\_11, TukTuk\_11, WalkingDead\_11,

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

- DirtyBubble\_11,

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

- Alatato\_10, Aoka\_12, Armstrong\_10, AvGardian\_11, BAjuniper\_11, Bachaco\_11, Bernstein\_10, Brahms\_10, BrayBeast\_11, Buldak\_11, Celaena\_11, ChiliPepper\_11, Clayda5\_10, CliffHanger\_12, CocoCinnamon\_15, Coltrane\_10, Didgeridoo\_12, Dismas\_11, Eden\_10, EvenBluerMoon\_12, FlameThrower\_11, Franklin22\_10, Gack\_10, Hereford\_13, JanetJ\_12, JeanClaude\_11, Kamdara\_11, Katzastrophic\_11, Kieran\_11, Kumotta\_12, Lahqtemish\_11, Maja\_11, MargaretKali\_12, Morrey\_18, NoSwimming\_13, Olliecat\_11, PastaFagioli\_11, Pigu\_11, PrairieDogTown\_12, Quenya\_12, Rollins\_10, Rona\_11, Rooter\_11, Sarge\_11, Scotia\_13, Sharkboy\_11, Shayna\_10, Shoya\_10, Skylord\_10, Squirrel\_11, SunnyD\_10, Teagster\_10, Vitas\_10,

### Summary by start number:

Start 7:

- Found in 6 of 108 ( 5.6% ) of genes in pham
- Manual Annotations of this start: 6 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Buldak\_11 (EB), Olliecat\_11 (EB), Shayna\_10 (EB), Squirrel\_11 (EB), SunnyD\_10 (EB), Teagster\_10 (EB),

Start 8:

- Found in 3 of 108 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 3 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CliffHanger\_12 (EB), Eden\_10 (EB), Franklin22\_10 (EB),

Start 9:

- Found in 55 of 108 ( 50.9% ) of genes in pham
- Manual Annotations of this start: 46 of 95
- Called 98.2% of time when present
- Phage (with cluster) where this start called: Abigail\_11 (EB), Akino08\_11 (EB), Albedo\_11 (EB), Albright\_11 (EB), AnnaLie\_12 (EB), Arroyo\_12 (EB), Avocadoman\_11 (EB), AylexOG\_12 (EB), BabyDaisy\_12 (EB), BabyYoda\_11 (EB), BelmontSKP\_12 (EB), Bengal\_11 (EB), BubbaBear\_11 (EB), Burritobowl\_11 (EB), CanFranMach\_11 (EB), Cashington\_11 (EB), CroZenni\_11 (EB), CupcakePrincess\_11 (EB), DickRichards\_11 (EB), Doobus\_11 (EB), Elva\_12 (EB), Eula\_11 (EB), Finalfrontier\_12 (EB), Icarian\_12 (EB), IndyLu\_11 (EB), Jabb\_11 (EB), Johnathan\_11 (EB), Jovita\_11 (EB), Kate33\_11 (EB), Kenzers\_11 (EB), Lilo27\_11 (EB), LimaBean\_11 (EB), Loviatar\_11 (EB), Lynlen\_11 (EB), Milomuff\_12 (EB), MsUbiquitous\_11 (EB), Nicky22\_12 (EB), Pecas\_11 (EB), PhigPhack\_11 (EB), Phisb\_11 (EB), PondAmelia\_14 (EB), QMacho\_12 (EB), SanaSana\_12 (EB), SansAfet\_11 (EB), SarBear\_11 (EB), SirBeanington\_11 (EB), Slay\_11 (EB), Softsoap\_11 (EB), Solea\_12 (EB), Stoor\_11 (EB), Stromboli\_11 (EB), Swervy\_11 (EB), TukTuk\_11 (EB), WalkingDead\_11 (EB),

Start 10:

- Found in 15 of 108 ( 13.9% ) of genes in pham
- Manual Annotations of this start: 14 of 95
- Called 100.0% of time when present

- Phage (with cluster) where this start called: AvGardian\_11 (EB), Bachaco\_11 (EB), Celaena\_11 (EB), ChiliPepper\_11 (EB), Didgeridoo\_12 (EB), Dismas\_11 (EB), FlameThrower\_11 (EB), Kamdara\_11 (EB), Katzastrophic\_11 (EB), Kieran\_11 (EB), Lahqtemish\_11 (EB), PastaFagioli\_11 (EB), Quenya\_12 (EB), Rona\_11 (EB), Sharkboy\_11 (EB),

#### Start 11:

- Found in 21 of 108 ( 19.4% ) of genes in pham
- Manual Annotations of this start: 11 of 95
- Called 52.4% of time when present
- Phage (with cluster) where this start called: Armstrong\_10 (EB), BAjuniper\_11 (EB), Bernstein\_10 (EB), Brahms\_10 (EB), Clayda5\_10 (EB), Coltrane\_10 (EB), DirtyBubble\_11 (EB), Gack\_10 (EB), Rollins\_10 (EB), Skylord\_10 (EB), Vitas\_10 (EB),

#### Start 12:

- Found in 19 of 108 ( 17.6% ) of genes in pham
- Manual Annotations of this start: 15 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alatato\_10 (FB), Aoka\_12 (FO), BrayBeast\_11 (FB), CocoCinnamon\_15 (FO), EvenBluerMoon\_12 (FO), Hereford\_13 (FO), JanetJ\_12 (FO), JeanClaude\_11 (FB), Kumotta\_12 (FB), Maja\_11 (FO), MargaretKali\_12 (FB), Morrey\_18 (FO), NoSwimming\_13 (FO), Pigu\_11 (FB), PrairieDogTown\_12 (FO), Rooter\_11 (FB), Sarge\_11 (FB), Scotia\_13 (FO), Shoya\_10 (FB),

### Summary by clusters:

There are 3 clusters represented in this pham: FB, EB, FO,

#### Info for manual annotations of cluster EB:

- Start number 7 was manually annotated 6 times for cluster EB.
- Start number 8 was manually annotated 3 times for cluster EB.
- Start number 9 was manually annotated 46 times for cluster EB.
- Start number 10 was manually annotated 14 times for cluster EB.
- Start number 11 was manually annotated 11 times for cluster EB.

#### Info for manual annotations of cluster FB:

- Start number 12 was manually annotated 6 times for cluster FB.

#### Info for manual annotations of cluster FO:

- Start number 12 was manually annotated 9 times for cluster FO.

### Gene Information:

Gene: Abigail\_11 Start: 8030, Stop: 8425, Start Num: 9

Candidate Starts for Abigail\_11:

(4, 7904), (Start: 9 @8030 has 46 MA's), (15, 8069), (20, 8096), (30, 8174), (39, 8273), (46, 8306), (56, 8399),

Gene: Akino08\_11 Start: 8216, Stop: 8611, Start Num: 9

Candidate Starts for Akino08\_11:

(4, 8090), (Start: 9 @8216 has 46 MA's), (Start: 11 @8219 has 11 MA's), (19, 8279), (49, 8510), (53, 8543), (54, 8564),

Gene: Alatato\_10 Start: 7192, Stop: 7572, Start Num: 12

Candidate Starts for Alatato\_10:

(Start: 12 @7192 has 15 MA's), (18, 7252), (21, 7270), (32, 7357), (33, 7363), (44, 7459), (46, 7465), (54, 7534),

Gene: Albedo\_11 Start: 7905, Stop: 8300, Start Num: 9

Candidate Starts for Albedo\_11:

(4, 7779), (Start: 9 @7905 has 46 MA's), (15, 7944), (30, 8049), (39, 8148), (46, 8181), (56, 8274),

Gene: Albright\_11 Start: 7911, Stop: 8306, Start Num: 9

Candidate Starts for Albright\_11:

(4, 7785), (Start: 9 @7911 has 46 MA's), (20, 7977), (30, 8055), (39, 8154), (46, 8187), (56, 8280),

Gene: AnnaLie\_12 Start: 8320, Stop: 8715, Start Num: 9

Candidate Starts for AnnaLie\_12:

(4, 8194), (Start: 9 @8320 has 46 MA's), (15, 8359), (20, 8386), (30, 8464), (39, 8563), (46, 8596), (56, 8689),

Gene: Aoka\_12 Start: 8710, Stop: 9090, Start Num: 12

Candidate Starts for Aoka\_12:

(Start: 12 @8710 has 15 MA's), (36, 8923), (37, 8935), (50, 9007), (51, 9022),

Gene: Armstrong\_10 Start: 7692, Stop: 8081, Start Num: 11

Candidate Starts for Armstrong\_10:

(Start: 11 @7692 has 11 MA's), (30, 7833), (32, 7851), (52, 8004), (53, 8013), (55, 8037), (57, 8067),

Gene: Arroyo\_12 Start: 8381, Stop: 8776, Start Num: 9

Candidate Starts for Arroyo\_12:

(4, 8255), (Start: 9 @8381 has 46 MA's), (20, 8447), (30, 8525), (39, 8624), (46, 8657), (56, 8750),

Gene: AvGardian\_11 Start: 7970, Stop: 8365, Start Num: 10

Candidate Starts for AvGardian\_11:

(Start: 10 @7970 has 14 MA's), (19, 8033), (30, 8114), (37, 8189), (39, 8213), (46, 8246), (49, 8264), (56, 8339),

Gene: Avocadoman\_11 Start: 7969, Stop: 8364, Start Num: 9

Candidate Starts for Avocadoman\_11:

(Start: 9 @7969 has 46 MA's), (15, 8008), (20, 8035), (30, 8113), (39, 8212), (46, 8245), (56, 8338),

Gene: AylexOG\_12 Start: 8256, Stop: 8651, Start Num: 9

Candidate Starts for AylexOG\_12:

(4, 8130), (Start: 9 @8256 has 46 MA's), (15, 8295), (20, 8322), (30, 8400), (46, 8532), (56, 8625),

Gene: BAjuniper\_11 Start: 7857, Stop: 8243, Start Num: 11

Candidate Starts for BAjuniper\_11:

(2, 7680), (Start: 11 @7857 has 11 MA's), (30, 7995), (31, 8010), (48, 8139), (53, 8175),

Gene: BabyDaisy\_12 Start: 8133, Stop: 8531, Start Num: 9

Candidate Starts for BabyDaisy\_12:

(Start: 9 @8133 has 46 MA's), (39, 8379), (54, 8484),

Gene: BabyYoda\_11 Start: 8162, Stop: 8557, Start Num: 9

Candidate Starts for BabyYoda\_11:

(4, 8036), (Start: 9 @8162 has 46 MA's), (Start: 11 @8165 has 11 MA's), (19, 8225), (41, 8420), (49, 8456), (53, 8489), (54, 8510),

Gene: Bachaco\_11 Start: 8051, Stop: 8449, Start Num: 10

Candidate Starts for Bachaco\_11:

(1, 7853), (2, 7877), (3, 7913), (Start: 10 @8051 has 14 MA's), (14, 8072), (46, 8330), (49, 8348), (53, 8381),

Gene: BelmontSKP\_12 Start: 8320, Stop: 8715, Start Num: 9

Candidate Starts for BelmontSKP\_12:

(4, 8194), (Start: 9 @8320 has 46 MA's), (15, 8359), (20, 8386), (30, 8464), (39, 8563), (46, 8596), (56, 8689),

Gene: Bengal\_11 Start: 7911, Stop: 8306, Start Num: 9

Candidate Starts for Bengal\_11:

(4, 7785), (Start: 9 @7911 has 46 MA's), (15, 7950), (20, 7977), (39, 8154), (46, 8187), (56, 8280),

Gene: Bernstein\_10 Start: 7752, Stop: 8141, Start Num: 11

Candidate Starts for Bernstein\_10:

(Start: 11 @7752 has 11 MA's), (30, 7893), (32, 7911), (52, 8064), (53, 8073), (55, 8097), (57, 8127),

Gene: Brahms\_10 Start: 7692, Stop: 8081, Start Num: 11

Candidate Starts for Brahms\_10:

(Start: 11 @7692 has 11 MA's), (30, 7833), (32, 7851), (52, 8004), (53, 8013), (55, 8037), (57, 8067),

Gene: BrayBeast\_11 Start: 7602, Stop: 7979, Start Num: 12

Candidate Starts for BrayBeast\_11:

(Start: 12 @7602 has 15 MA's), (18, 7659), (24, 7716), (29, 7743), (32, 7764), (33, 7770), (46, 7872), (51, 7908), (54, 7941),

Gene: BubbaBear\_11 Start: 7905, Stop: 8300, Start Num: 9

Candidate Starts for BubbaBear\_11:

(Start: 9 @7905 has 46 MA's), (15, 7944), (30, 8049), (39, 8148), (46, 8181), (56, 8274),

Gene: Buldak\_11 Start: 8189, Stop: 8584, Start Num: 7

Candidate Starts for Buldak\_11:

(Start: 7 @8189 has 6 MA's), (25, 8306), (29, 8333), (30, 8336), (38, 8414), (42, 8450), (44, 8459), (53, 8516), (55, 8540),

Gene: Burritobowl\_11 Start: 7938, Stop: 8333, Start Num: 9

Candidate Starts for Burritobowl\_11:

(4, 7812), (Start: 9 @7938 has 46 MA's), (15, 7977), (20, 8004), (30, 8082), (39, 8181), (46, 8214), (56, 8307),

Gene: CanFranMach\_11 Start: 7928, Stop: 8323, Start Num: 9

Candidate Starts for CanFranMach\_11:

(Start: 9 @7928 has 46 MA's), (20, 7994), (30, 8072), (37, 8147), (46, 8204), (56, 8297),

Gene: Cashington\_11 Start: 7928, Stop: 8323, Start Num: 9

Candidate Starts for Cashington\_11:

(4, 7802), (Start: 9 @7928 has 46 MA's), (15, 7967), (20, 7994), (30, 8072), (39, 8171), (46, 8204), (56, 8297),

Gene: Celaena\_11 Start: 7988, Stop: 8386, Start Num: 10

Candidate Starts for Celaena\_11:

(3, 7850), (5, 7952), (6, 7970), (Start: 10 @7988 has 14 MA's), (14, 8009), (46, 8267), (49, 8285), (53, 8318),

Gene: ChiliPepper\_11 Start: 8141, Stop: 8542, Start Num: 10

Candidate Starts for ChiliPepper\_11:

(Start: 10 @8141 has 14 MA's), (30, 8291), (41, 8405), (53, 8474),

Gene: Clayda5\_10 Start: 7692, Stop: 8081, Start Num: 11

Candidate Starts for Clayda5\_10:

(Start: 11 @7692 has 11 MA's), (30, 7833), (32, 7851), (52, 8004), (53, 8013), (55, 8037), (57, 8067),

Gene: CliffHanger\_12 Start: 7883, Stop: 8278, Start Num: 8

Candidate Starts for CliffHanger\_12:

(Start: 8 @7883 has 3 MA's), (28, 8015), (37, 8105), (44, 8153), (49, 8177), (55, 8234),

Gene: CocoCinnamon\_15 Start: 8936, Stop: 9316, Start Num: 12

Candidate Starts for CocoCinnamon\_15:

(Start: 12 @8936 has 15 MA's), (32, 9101), (33, 9107), (44, 9203), (46, 9209), (51, 9245), (54, 9278),

Gene: Coltrane\_10 Start: 7692, Stop: 8081, Start Num: 11

Candidate Starts for Coltrane\_10:

(Start: 11 @7692 has 11 MA's), (30, 7833), (32, 7851), (52, 8004), (53, 8013), (55, 8037), (57, 8067),

Gene: CroZenni\_11 Start: 7911, Stop: 8306, Start Num: 9

Candidate Starts for CroZenni\_11:

(4, 7785), (Start: 9 @7911 has 46 MA's), (20, 7977), (30, 8055), (39, 8154), (46, 8187), (56, 8280),

Gene: CupcakePrincess\_11 Start: 7951, Stop: 8346, Start Num: 9

Candidate Starts for CupcakePrincess\_11:

(4, 7825), (Start: 9 @7951 has 46 MA's), (15, 7990), (20, 8017), (30, 8095), (46, 8227), (56, 8320),

Gene: DickRichards\_11 Start: 8405, Stop: 8800, Start Num: 9

Candidate Starts for DickRichards\_11:

(4, 8279), (Start: 9 @8405 has 46 MA's), (15, 8444), (20, 8471), (30, 8549), (39, 8648), (46, 8681), (56, 8774),

Gene: Didgeridoo\_12 Start: 8135, Stop: 8533, Start Num: 10

Candidate Starts for Didgeridoo\_12:

(Start: 10 @8135 has 14 MA's), (39, 8381), (54, 8486),

Gene: DirtyBubble\_11 Start: 8173, Stop: 8565, Start Num: 11

Candidate Starts for DirtyBubble\_11:

(4, 8044), (Start: 9 @8170 has 46 MA's), (Start: 11 @8173 has 11 MA's), (19, 8233), (41, 8428), (49, 8464), (53, 8497), (54, 8518),

Gene: Dismas\_11 Start: 8141, Stop: 8542, Start Num: 10

Candidate Starts for Dismas\_11:

(Start: 10 @8141 has 14 MA's), (30, 8291), (41, 8405), (53, 8474),

Gene: Doobus\_11 Start: 8142, Stop: 8537, Start Num: 9

Candidate Starts for Doobus\_11:

(4, 8016), (Start: 9 @8142 has 46 MA's), (20, 8208), (30, 8286), (39, 8385), (46, 8418), (56, 8511),

Gene: Eden\_10 Start: 7777, Stop: 8181, Start Num: 8

Candidate Starts for Eden\_10:

(Start: 8 @7777 has 3 MA's), (Start: 11 @7783 has 11 MA's), (30, 7933), (32, 7951), (38, 8011), (43, 8047), (53, 8113),

Gene: Elva\_12 Start: 8225, Stop: 8620, Start Num: 9

Candidate Starts for Elva\_12:

(4, 8099), (Start: 9 @8225 has 46 MA's), (30, 8369), (41, 8483), (49, 8519), (53, 8552), (54, 8573),

Gene: Eula\_11 Start: 7912, Stop: 8307, Start Num: 9

Candidate Starts for Eula\_11:

(Start: 9 @7912 has 46 MA's), (15, 7951), (20, 7978), (26, 8029), (30, 8056), (46, 8188), (56, 8281),

Gene: EvenBluerMoon\_12 Start: 8744, Stop: 9133, Start Num: 12

Candidate Starts for EvenBluerMoon\_12:

(Start: 12 @8744 has 15 MA's), (29, 8891), (36, 8957), (37, 8969),

Gene: Finalfrontier\_12 Start: 8424, Stop: 8819, Start Num: 9

Candidate Starts for Finalfrontier\_12:

(Start: 9 @8424 has 46 MA's), (15, 8463), (20, 8490), (30, 8568), (46, 8700), (56, 8793),

Gene: FlameThrower\_11 Start: 7876, Stop: 8274, Start Num: 10

Candidate Starts for FlameThrower\_11:

(1, 7678), (Start: 10 @7876 has 14 MA's), (14, 7897), (46, 8155), (49, 8173), (53, 8206),

Gene: Franklin22\_10 Start: 7758, Stop: 8153, Start Num: 8

Candidate Starts for Franklin22\_10:

(Start: 8 @7758 has 3 MA's), (Start: 11 @7764 has 11 MA's), (30, 7905), (32, 7923), (53, 8085),

Gene: Gack\_10 Start: 7830, Stop: 8219, Start Num: 11

Candidate Starts for Gack\_10:

(Start: 11 @7830 has 11 MA's), (22, 7917), (30, 7971), (31, 7986), (40, 8076), (49, 8118), (53, 8151),

Gene: Hereford\_13 Start: 8889, Stop: 9278, Start Num: 12

Candidate Starts for Hereford\_13:

(Start: 12 @8889 has 15 MA's), (29, 9036), (36, 9102), (37, 9114),

Gene: Icarian\_12 Start: 8152, Stop: 8547, Start Num: 9

Candidate Starts for Icarian\_12:

(Start: 9 @8152 has 46 MA's), (19, 8215), (27, 8272), (53, 8479), (54, 8500),

Gene: IndyLu\_11 Start: 7957, Stop: 8355, Start Num: 9

Candidate Starts for IndyLu\_11:

(Start: 9 @7957 has 46 MA's), (39, 8203), (54, 8308),

Gene: Jabb\_11 Start: 7951, Stop: 8346, Start Num: 9

Candidate Starts for Jabb\_11:

(4, 7825), (Start: 9 @7951 has 46 MA's), (15, 7990), (20, 8017), (30, 8095), (46, 8227), (56, 8320),

Gene: JanetJ\_12 Start: 8526, Stop: 8915, Start Num: 12

Candidate Starts for JanetJ\_12:

(Start: 12 @8526 has 15 MA's), (32, 8694), (36, 8739), (37, 8751), (50, 8823), (54, 8871),

Gene: JeanClaude\_11 Start: 7509, Stop: 7886, Start Num: 12

Candidate Starts for JeanClaude\_11:

(Start: 12 @7509 has 15 MA's), (24, 7623), (29, 7650), (32, 7671), (46, 7779), (51, 7815), (54, 7848),

Gene: Johnathan\_11 Start: 7911, Stop: 8306, Start Num: 9

Candidate Starts for Johnathan\_11:

(4, 7785), (Start: 9 @7911 has 46 MA's), (15, 7950), (20, 7977), (30, 8055), (39, 8154), (46, 8187), (56, 8280),

Gene: Jovita\_11 Start: 8013, Stop: 8408, Start Num: 9

Candidate Starts for Jovita\_11:

(Start: 9 @8013 has 46 MA's), (15, 8052), (20, 8079), (30, 8157), (46, 8289), (56, 8382),

Gene: Kamdara\_11 Start: 8140, Stop: 8541, Start Num: 10

Candidate Starts for Kamdara\_11:

(Start: 10 @8140 has 14 MA's), (30, 8290), (41, 8404), (53, 8473),

Gene: Kate33\_11 Start: 7956, Stop: 8354, Start Num: 9

Candidate Starts for Kate33\_11:

(Start: 9 @7956 has 46 MA's), (39, 8202), (54, 8307),

Gene: Katzastrophic\_11 Start: 8051, Stop: 8449, Start Num: 10

Candidate Starts for Katzastrophic\_11:

(3, 7913), (Start: 10 @8051 has 14 MA's), (14, 8072), (46, 8330), (49, 8348), (53, 8381),

Gene: Kenzers\_11 Start: 7928, Stop: 8323, Start Num: 9

Candidate Starts for Kenzers\_11:

(Start: 9 @7928 has 46 MA's), (15, 7967), (30, 8072), (39, 8171), (46, 8204), (56, 8297),

Gene: Kieran\_11 Start: 8144, Stop: 8545, Start Num: 10

Candidate Starts for Kieran\_11:

(Start: 10 @8144 has 14 MA's), (30, 8294), (41, 8408), (53, 8477),

Gene: Kumotta\_12 Start: 8443, Stop: 8820, Start Num: 12

Candidate Starts for Kumotta\_12:

(Start: 12 @8443 has 15 MA's), (29, 8584), (32, 8605), (33, 8611), (36, 8650), (44, 8707), (46, 8713), (51, 8749), (54, 8782),

Gene: Lahqtemish\_11 Start: 8003, Stop: 8401, Start Num: 10

Candidate Starts for Lahqtemish\_11:

(Start: 10 @8003 has 14 MA's), (15, 8042), (39, 8249), (54, 8354),

Gene: Lilo27\_11 Start: 7888, Stop: 8283, Start Num: 9

Candidate Starts for Lilo27\_11:

(Start: 9 @7888 has 46 MA's), (15, 7927), (20, 7954), (30, 8032), (39, 8131), (46, 8164), (56, 8257),

Gene: LimaBean\_11 Start: 7911, Stop: 8306, Start Num: 9

Candidate Starts for LimaBean\_11:

(4, 7785), (Start: 9 @7911 has 46 MA's), (15, 7950), (20, 7977), (30, 8055), (39, 8154), (46, 8187), (56, 8280),

Gene: Loviatar\_11 Start: 8231, Stop: 8626, Start Num: 9

Candidate Starts for Loviatar\_11:

(4, 8105), (Start: 9 @8231 has 46 MA's), (Start: 11 @8234 has 11 MA's), (19, 8294), (41, 8489), (49, 8525), (53, 8558), (54, 8579),

Gene: Lynlen\_11 Start: 7928, Stop: 8323, Start Num: 9

Candidate Starts for Lynlen\_11:

(Start: 9 @7928 has 46 MA's), (15, 7967), (30, 8072), (39, 8171), (46, 8204), (56, 8297),

Gene: Maja\_11 Start: 8064, Stop: 8444, Start Num: 12

Candidate Starts for Maja\_11:

(Start: 12 @8064 has 15 MA's), (17, 8112), (21, 8142), (29, 8208), (32, 8229), (33, 8235), (46, 8337), (51, 8373), (54, 8406),

Gene: MargaretKali\_12 Start: 8078, Stop: 8455, Start Num: 12

Candidate Starts for MargaretKali\_12:

(Start: 12 @8078 has 15 MA's), (18, 8135), (29, 8219), (32, 8240), (33, 8246), (36, 8285), (44, 8342), (46, 8348), (51, 8384), (54, 8417),

Gene: Milomuff\_12 Start: 8297, Stop: 8692, Start Num: 9

Candidate Starts for Milomuff\_12:

(4, 8171), (Start: 9 @8297 has 46 MA's), (15, 8336), (20, 8363), (30, 8441), (39, 8540), (46, 8573), (56, 8666),

Gene: Morrey\_18 Start: 8746, Stop: 9135, Start Num: 12

Candidate Starts for Morrey\_18:

(Start: 12 @8746 has 15 MA's), (29, 8893), (36, 8959), (37, 8971),

Gene: MsUbiquitous\_11 Start: 7951, Stop: 8346, Start Num: 9

Candidate Starts for MsUbiquitous\_11:

(4, 7825), (Start: 9 @7951 has 46 MA's), (15, 7990), (20, 8017), (30, 8095), (46, 8227), (56, 8320),

Gene: Nicky22\_12 Start: 8359, Stop: 8754, Start Num: 9

Candidate Starts for Nicky22\_12:

(Start: 9 @8359 has 46 MA's), (15, 8398), (23, 8455), (30, 8503), (46, 8635), (56, 8728),

Gene: NoSwimming\_13 Start: 9693, Stop: 10082, Start Num: 12

Candidate Starts for NoSwimming\_13:

(Start: 12 @9693 has 15 MA's), (16, 9726), (32, 9861), (34, 9879), (50, 9990), (51, 10005),

Gene: Olliecat\_11 Start: 8144, Stop: 8536, Start Num: 7

Candidate Starts for Olliecat\_11:

(Start: 7 @8144 has 6 MA's), (13, 8159), (20, 8210), (25, 8258), (28, 8273), (35, 8339), (42, 8402), (44, 8411), (49, 8435), (55, 8492),

Gene: PastaFagioli\_11 Start: 7991, Stop: 8389, Start Num: 10

Candidate Starts for PastaFagioli\_11:

(Start: 10 @7991 has 14 MA's), (15, 8030), (39, 8237), (54, 8342),

Gene: Pecas\_11 Start: 7912, Stop: 8307, Start Num: 9  
Candidate Starts for Pecas\_11:  
(Start: 9 @7912 has 46 MA's), (15, 7951), (20, 7978), (26, 8029), (30, 8056), (46, 8188), (56, 8281),

Gene: PhigPhack\_11 Start: 7940, Stop: 8335, Start Num: 9  
Candidate Starts for PhigPhack\_11:  
(Start: 9 @7940 has 46 MA's), (20, 8006), (30, 8084), (39, 8183), (46, 8216), (56, 8309),

Gene: Phisb\_11 Start: 7905, Stop: 8300, Start Num: 9  
Candidate Starts for Phisb\_11:  
(Start: 9 @7905 has 46 MA's), (15, 7944), (20, 7971), (30, 8049), (39, 8148), (46, 8181), (56, 8274),

Gene: Pigu\_11 Start: 7154, Stop: 7531, Start Num: 12  
Candidate Starts for Pigu\_11:  
(Start: 12 @7154 has 15 MA's), (18, 7211), (21, 7229), (29, 7295), (32, 7316), (33, 7322), (46, 7424),  
(51, 7460), (54, 7493),

Gene: PondAmelia\_14 Start: 8160, Stop: 8555, Start Num: 9  
Candidate Starts for PondAmelia\_14:  
(4, 8034), (Start: 9 @8160 has 46 MA's), (Start: 11 @8163 has 11 MA's), (19, 8223), (20, 8226), (49, 8454), (53, 8487), (54, 8508),

Gene: PrairieDogTown\_12 Start: 8746, Stop: 9135, Start Num: 12  
Candidate Starts for PrairieDogTown\_12:  
(Start: 12 @8746 has 15 MA's), (29, 8893), (36, 8959), (37, 8971),

Gene: QMacho\_12 Start: 8395, Stop: 8790, Start Num: 9  
Candidate Starts for QMacho\_12:  
(Start: 9 @8395 has 46 MA's), (15, 8434), (20, 8461), (26, 8512), (30, 8539), (39, 8638), (46, 8671),  
(56, 8764),

Gene: Quenya\_12 Start: 8046, Stop: 8447, Start Num: 10  
Candidate Starts for Quenya\_12:  
(Start: 10 @8046 has 14 MA's), (30, 8196), (45, 8325), (46, 8328), (49, 8346), (53, 8379),

Gene: Rollins\_10 Start: 7752, Stop: 8141, Start Num: 11  
Candidate Starts for Rollins\_10:  
(Start: 11 @7752 has 11 MA's), (30, 7893), (32, 7911), (52, 8064), (53, 8073), (55, 8097), (57, 8127),

Gene: Rona\_11 Start: 8141, Stop: 8542, Start Num: 10  
Candidate Starts for Rona\_11:  
(Start: 10 @8141 has 14 MA's), (30, 8291), (41, 8405), (53, 8474),

Gene: Rooter\_11 Start: 7146, Stop: 7523, Start Num: 12  
Candidate Starts for Rooter\_11:  
(Start: 12 @7146 has 15 MA's), (24, 7260), (29, 7287), (32, 7308), (44, 7410), (46, 7416), (51, 7452),  
(54, 7485),

Gene: SanaSana\_12 Start: 8160, Stop: 8555, Start Num: 9  
Candidate Starts for SanaSana\_12:  
(4, 8034), (Start: 9 @8160 has 46 MA's), (Start: 11 @8163 has 11 MA's), (19, 8223), (49, 8454), (53, 8487), (54, 8508),

Gene: SansAfet\_11 Start: 7922, Stop: 8317, Start Num: 9

Candidate Starts for SansAfet\_11:

(4, 7796), (Start: 9 @7922 has 46 MA's), (15, 7961), (20, 7988), (30, 8066), (39, 8165), (46, 8198), (56, 8291),

Gene: SarBear\_11 Start: 7888, Stop: 8283, Start Num: 9

Candidate Starts for SarBear\_11:

(4, 7762), (Start: 9 @7888 has 46 MA's), (15, 7927), (20, 7954), (30, 8032), (46, 8164), (56, 8257),

Gene: Sarge\_11 Start: 7513, Stop: 7890, Start Num: 12

Candidate Starts for Sarge\_11:

(Start: 12 @7513 has 15 MA's), (24, 7627), (29, 7654), (32, 7675), (44, 7777), (46, 7783), (51, 7819), (54, 7852),

Gene: Scotia\_13 Start: 9699, Stop: 10088, Start Num: 12

Candidate Starts for Scotia\_13:

(Start: 12 @9699 has 15 MA's), (16, 9732), (32, 9867), (34, 9885), (50, 9996), (51, 10011),

Gene: Sharkboy\_11 Start: 8140, Stop: 8541, Start Num: 10

Candidate Starts for Sharkboy\_11:

(Start: 10 @8140 has 14 MA's), (30, 8290), (41, 8404), (53, 8473),

Gene: Shayna\_10 Start: 7746, Stop: 8147, Start Num: 7

Candidate Starts for Shayna\_10:

(Start: 7 @7746 has 6 MA's), (27, 7875), (32, 7917), (36, 7962), (47, 8037), (53, 8079), (55, 8103),

Gene: Shoya\_10 Start: 7149, Stop: 7526, Start Num: 12

Candidate Starts for Shoya\_10:

(Start: 12 @7149 has 15 MA's), (24, 7263), (29, 7290), (32, 7311), (46, 7419), (51, 7455), (54, 7488),

Gene: SirBeanington\_11 Start: 7914, Stop: 8309, Start Num: 9

Candidate Starts for SirBeanington\_11:

(4, 7788), (Start: 9 @7914 has 46 MA's), (15, 7953), (20, 7980), (30, 8058), (39, 8157), (46, 8190), (56, 8283),

Gene: Skylord\_10 Start: 7692, Stop: 8081, Start Num: 11

Candidate Starts for Skylord\_10:

(Start: 11 @7692 has 11 MA's), (30, 7833), (32, 7851), (52, 8004), (53, 8013), (55, 8037), (57, 8067),

Gene: Slay\_11 Start: 8364, Stop: 8759, Start Num: 9

Candidate Starts for Slay\_11:

(4, 8238), (Start: 9 @8364 has 46 MA's), (15, 8403), (20, 8430), (30, 8508), (46, 8640), (56, 8733),

Gene: Softsoap\_11 Start: 7911, Stop: 8306, Start Num: 9

Candidate Starts for Softsoap\_11:

(4, 7785), (Start: 9 @7911 has 46 MA's), (15, 7950), (20, 7977), (30, 8055), (39, 8154), (46, 8187), (56, 8280),

Gene: Solea\_12 Start: 8297, Stop: 8692, Start Num: 9

Candidate Starts for Solea\_12:

(4, 8171), (Start: 9 @8297 has 46 MA's), (15, 8336), (20, 8363), (30, 8441), (39, 8540), (46, 8573), (56, 8666),

Gene: Squirrel\_11 Start: 8143, Stop: 8535, Start Num: 7

Candidate Starts for Squirrel\_11:

(Start: 7 @8143 has 6 MA's), (13, 8158), (20, 8209), (25, 8257), (28, 8272), (35, 8338), (42, 8401), (44, 8410), (49, 8434), (55, 8491),

Gene: Stoor\_11 Start: 8157, Stop: 8552, Start Num: 9

Candidate Starts for Stoor\_11:

(4, 8031), (Start: 9 @8157 has 46 MA's), (Start: 11 @8160 has 11 MA's), (19, 8220), (49, 8451), (53, 8484), (54, 8505),

Gene: Stromboli\_11 Start: 8161, Stop: 8556, Start Num: 9

Candidate Starts for Stromboli\_11:

(Start: 9 @8161 has 46 MA's), (Start: 11 @8164 has 11 MA's), (19, 8224), (41, 8419), (49, 8455), (53, 8488), (54, 8509),

Gene: SunnyD\_10 Start: 7746, Stop: 8147, Start Num: 7

Candidate Starts for SunnyD\_10:

(Start: 7 @7746 has 6 MA's), (27, 7875), (32, 7917), (47, 8037), (53, 8079), (55, 8103),

Gene: Swervy\_11 Start: 7888, Stop: 8283, Start Num: 9

Candidate Starts for Swervy\_11:

(4, 7762), (Start: 9 @7888 has 46 MA's), (15, 7927), (20, 7954), (30, 8032), (46, 8164), (56, 8257),

Gene: Teagster\_10 Start: 7746, Stop: 8147, Start Num: 7

Candidate Starts for Teagster\_10:

(Start: 7 @7746 has 6 MA's), (27, 7875), (32, 7917), (47, 8037), (53, 8079), (55, 8103),

Gene: TukTuk\_11 Start: 7948, Stop: 8343, Start Num: 9

Candidate Starts for TukTuk\_11:

(4, 7822), (Start: 9 @7948 has 46 MA's), (15, 7987), (20, 8014), (30, 8092), (46, 8224), (56, 8317),

Gene: Vitas\_10 Start: 7692, Stop: 8081, Start Num: 11

Candidate Starts for Vitas\_10:

(Start: 11 @7692 has 11 MA's), (30, 7833), (32, 7851), (52, 8004), (53, 8013), (55, 8037), (57, 8067),

Gene: WalkingDead\_11 Start: 8148, Stop: 8543, Start Num: 9

Candidate Starts for WalkingDead\_11:

(Start: 9 @8148 has 46 MA's), (Start: 11 @8151 has 11 MA's), (19, 8211), (20, 8214), (49, 8442), (53, 8475), (54, 8496),