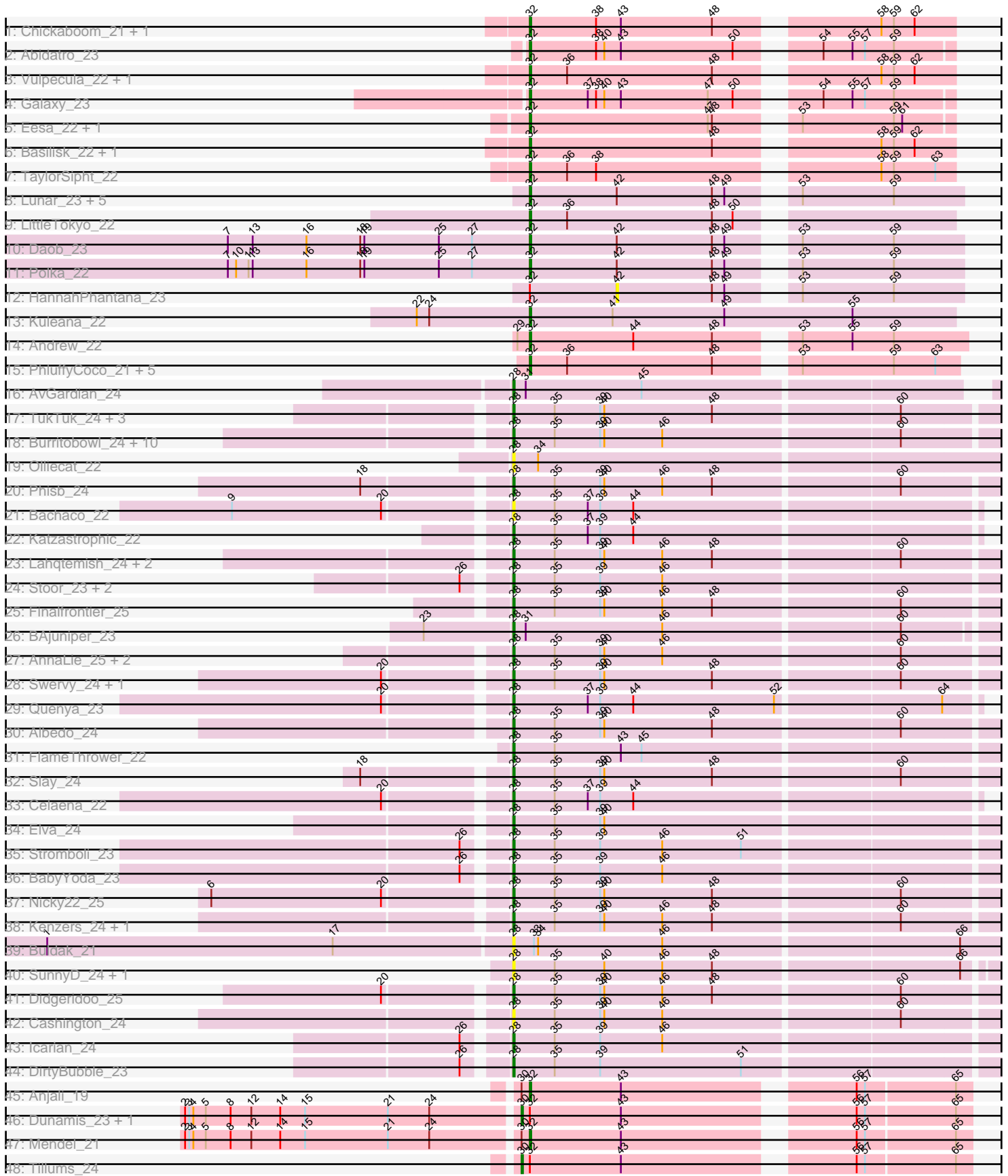


Pham 171379



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 171379 Report

This analysis was run 07/10/24 on database version 566.

Pham number 171379 has 85 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Chickaboom\_21, Brynnie\_22
- Track 2 : Abidatro\_23
- Track 3 : Vulpecula\_22, Jamun\_22
- Track 4 : Galaxy\_23
- Track 5 : Eesa\_22, Orcanus\_22
- Track 6 : Basilisk\_22, Ruchi\_22
- Track 7 : TaylorSipht\_22
- Track 8 : Lunar\_23, Kepler\_22, Cote\_23, Melons\_23, Coral\_22, Amelia\_23
- Track 9 : LittleTokyo\_22
- Track 10 : Daob\_23
- Track 11 : Polka\_22
- Track 12 : HannahPhantana\_23
- Track 13 : Kuleana\_22
- Track 14 : Andrew\_22
- Track 15 : PhluffyCoco\_21, Leona\_21, Renna12\_22, Juno112\_21, KHumphrey\_21, RedFox\_21
- Track 16 : AvGardian\_24
- Track 17 : TukTuk\_24, Jovita\_24, QMacho\_25, Eula\_24
- Track 18 : Burritobowl\_24, DickRichards\_24, Johnathan\_24, LimaBean\_24, Doobus\_24, CroZenni\_24, Avacadoman\_24, Albright\_24, Arroyo\_25, BubbaBear\_24, Abigail\_24
- Track 19 : Olliecat\_22
- Track 20 : Phisb\_24
- Track 21 : Bachaco\_22
- Track 22 : Katzastrophic\_22
- Track 23 : Lahqtemish\_24, IndyLu\_24, BabyDaisy\_25
- Track 24 : Stoor\_23, Loviatar\_40, SanaSana\_24
- Track 25 : Finalfrontier\_25
- Track 26 : BAjuniper\_23
- Track 27 : AnnaLie\_25, BelmontSKP\_25, SansAfet\_24
- Track 28 : Swervy\_24, SarBear\_24
- Track 29 : Quenya\_23
- Track 30 : Albedo\_24
- Track 31 : FlameThrower\_22
- Track 32 : Slay\_24
- Track 33 : Celaena\_22
- Track 34 : Elva\_24

- Track 35 : Stromboli\_23
- Track 36 : BabyYoda\_23
- Track 37 : Nicky22\_25
- Track 38 : Kenzers\_24, Lynlen\_24
- Track 39 : Buldak\_21
- Track 40 : SunnyD\_24, Shayna\_22
- Track 41 : Didgeridoo\_25
- Track 42 : Cashington\_24
- Track 43 : Icarian\_24
- Track 44 : DirtyBubble\_23
- Track 45 : Anjali\_19
- Track 46 : Dunamis\_23, Swim\_24
- Track 47 : Mendel\_21
- Track 48 : Tillums\_24

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

The start number called the most often in the published annotations is 28, it was called in 44 of the 72 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abigail\_24, Albedo\_24, Albright\_24, AnnaLie\_25, Arroyo\_25, AvGardian\_24, Avocadoman\_24, BAjuniper\_23, BabyDaisy\_25, BabyYoda\_23, Bachaco\_22, BelmontSKP\_25, BubbaBear\_24, Buldak\_21, Burritobowl\_24, Cashington\_24, Celaena\_22, CroZenni\_24, DickRichards\_24, Didgeridoo\_25, DirtyBubble\_23, Doobus\_24, Elva\_24, Eula\_24, Finalfrontier\_25, FlameThrower\_22, Icarian\_24, IndyLu\_24, Johnathan\_24, Jovita\_24, Katzastrophic\_22, Kenzers\_24, Lahqtemish\_24, LimaBean\_24, Loviatar\_40, Lynlen\_24, Nicky22\_25, Olliecat\_22, Phisb\_24, QMacho\_25, Quenya\_23, SanaSana\_24, SansAfet\_24, SarBear\_24, Shayna\_22, Slay\_24, Stoor\_23, Stromboli\_23, SunnyD\_24, Swervy\_24, TukTuk\_24,

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

- 

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

- Abidatro\_23, Amelia\_23, Andrew\_22, Anjali\_19, Basilisk\_22, Brynnie\_22, Chickaboom\_21, Coral\_22, Cote\_23, Daob\_23, Dunamis\_23, Eesa\_22, Galaxy\_23, HannahPhantana\_23, Jamun\_22, Juno112\_21, KHumphrey\_21, Kepler\_22, Kuleana\_22, Leona\_21, LittleTokyo\_22, Lunar\_23, Melons\_23, Mendel\_21, Orcanus\_22, PhluffyCoco\_21, Polka\_22, RedFox\_21, Renna12\_22, Ruchi\_22, Swim\_24, TaylorSipt\_22, Tillums\_24, Vulpecula\_22,

**Summary by start number:**

Start 28:

- Found in 51 of 85 ( 60.0% ) of genes in pham
- Manual Annotations of this start: 44 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abigail\_24 (EB), Albedo\_24 (EB), Albright\_24 (EB), AnnaLie\_25 (EB), Arroyo\_25 (EB), AvGardian\_24 (EB),

Avacadoman\_24 (EB), BAjuniper\_23 (EB), BabyDaisy\_25 (EB), BabyYoda\_23 (EB), Bachaco\_22 (EB), BelmontSKP\_25 (EB), BubbaBear\_24 (EB), Buldak\_21 (EB), Burritobowl\_24 (EB), Cashington\_24 (EB), Celaena\_22 (EB), CroZenni\_24 (EB), DickRichards\_24 (EB), Didgeridoo\_25 (EB), DirtyBubble\_23 (EB), Doobus\_24 (EB), Elva\_24 (EB), Eula\_24 (EB), Finalfrontier\_25 (EB), FlameThrower\_22 (EB), Icarian\_24 (EB), IndyLu\_24 (EB), Johnathan\_24 (EB), Jovita\_24 (EB), Katzastrophic\_22 (EB), Kenzers\_24 (EB), Lahqtemish\_24 (EB), LimaBean\_24 (EB), Loviatar\_40 (EB), Lynlen\_24 (EB), Nicky22\_25 (EB), Olliecat\_22 (EB), Phisb\_24 (EB), QMacho\_25 (EB), Quenya\_23 (EB), SanaSana\_24 (EB), SansAfet\_24 (EB), SarBear\_24 (EB), Shayna\_22 (EB), Slay\_24 (EB), Stoor\_23 (EB), Stromboli\_23 (EB), SunnyD\_24 (EB), Swervy\_24 (EB), TukTuk\_24 (EB),

Start 30:

- Found in 5 of 85 ( 5.9% ) of genes in pham
- Manual Annotations of this start: 2 of 72
- Called 60.0% of time when present
- Phage (with cluster) where this start called: Dunamis\_23 (FD), Swim\_24 (FD), Tillums\_24 (FD),

Start 32:

- Found in 34 of 85 ( 40.0% ) of genes in pham
- Manual Annotations of this start: 26 of 72
- Called 88.2% of time when present
- Phage (with cluster) where this start called: Abidatro\_23 (AS1), Amelia\_23 (AS2), Andrew\_22 (AS3), Anjali\_19 (FD), Basilisk\_22 (AS1), Brynnie\_22 (AS1), Chickaboom\_21 (AS1), Coral\_22 (AS2), Cote\_23 (AS2), Daob\_23 (AS2), Eesa\_22 (AS1), Galaxy\_23 (AS1), Jamun\_22 (AS1), Juno112\_21 (AS3), KHumphrey\_21 (AS3), Kepler\_22 (AS2), Kuleana\_22 (AS2), Leona\_21 (AS3), LittleTokyo\_22 (AS2), Lunar\_23 (AS2), Melons\_23 (AS2), Mendel\_21 (FD), Orcanus\_22 (AS1), PhluffyCoco\_21 (AS3), Polka\_22 (AS2), RedFox\_21 (AS3), Renna12\_22 (AS3), Ruchi\_22 (AS1), TaylorSipht\_22 (AS1), Vulpecula\_22 (AS1),

Start 42:

- Found in 9 of 85 ( 10.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 11.1% of time when present
- Phage (with cluster) where this start called: HannahPhantana\_23 (AS2),

### Summary by clusters:

There are 5 clusters represented in this pham: AS3, AS2, AS1, FD, EB,

Info for manual annotations of cluster AS1:

- Start number 32 was manually annotated 10 times for cluster AS1.

Info for manual annotations of cluster AS2:

- Start number 32 was manually annotated 10 times for cluster AS2.

Info for manual annotations of cluster AS3:

- Start number 32 was manually annotated 4 times for cluster AS3.

Info for manual annotations of cluster EB:

- Start number 28 was manually annotated 44 times for cluster EB.

Info for manual annotations of cluster FD:

- Start number 30 was manually annotated 2 times for cluster FD.
- Start number 32 was manually annotated 2 times for cluster FD.

**Gene Information:**

Gene: Abidatro\_23 Start: 17715, Stop: 17999, Start Num: 32

Candidate Starts for Abidatro\_23:

(Start: 32 @17715 has 26 MA's), (38, 17763), (40, 17769), (43, 17781), (50, 17862), (54, 17907), (55, 17928), (57, 17937), (59, 17958),

Gene: Abigail\_24 Start: 19414, Stop: 19755, Start Num: 28

Candidate Starts for Abigail\_24:

(Start: 28 @19414 has 44 MA's), (35, 19444), (39, 19477), (40, 19480), (46, 19522), (60, 19687),

Gene: Albedo\_24 Start: 19291, Stop: 19632, Start Num: 28

Candidate Starts for Albedo\_24:

(Start: 28 @19291 has 44 MA's), (35, 19321), (39, 19354), (40, 19357), (48, 19435), (60, 19564),

Gene: Albright\_24 Start: 19172, Stop: 19513, Start Num: 28

Candidate Starts for Albright\_24:

(Start: 28 @19172 has 44 MA's), (35, 19202), (39, 19235), (40, 19238), (46, 19280), (60, 19445),

Gene: Amelia\_23 Start: 16639, Stop: 16932, Start Num: 32

Candidate Starts for Amelia\_23:

(Start: 32 @16639 has 26 MA's), (42, 16702), (48, 16771), (49, 16780), (53, 16816), (59, 16882),

Gene: Andrew\_22 Start: 16648, Stop: 16944, Start Num: 32

Candidate Starts for Andrew\_22:

(29, 16639), (Start: 32 @16648 has 26 MA's), (44, 16723), (48, 16780), (53, 16825), (55, 16861), (59, 16891),

Gene: Anjali\_19 Start: 15340, Stop: 15636, Start Num: 32

Candidate Starts for Anjali\_19:

(Start: 30 @15334 has 2 MA's), (Start: 32 @15340 has 26 MA's), (43, 15406), (56, 15556), (57, 15562), (65, 15625),

Gene: AnnaLie\_25 Start: 19601, Stop: 19942, Start Num: 28

Candidate Starts for AnnaLie\_25:

(Start: 28 @19601 has 44 MA's), (35, 19631), (39, 19664), (40, 19667), (46, 19709), (60, 19874),

Gene: Arroyo\_25 Start: 19801, Stop: 20142, Start Num: 28

Candidate Starts for Arroyo\_25:

(Start: 28 @19801 has 44 MA's), (35, 19831), (39, 19864), (40, 19867), (46, 19909), (60, 20074),

Gene: AvGardian\_24 Start: 19525, Stop: 19851, Start Num: 28

Candidate Starts for AvGardian\_24:

(Start: 28 @19525 has 44 MA's), (31, 19534), (45, 19618),

Gene: Avocadoman\_24 Start: 19356, Stop: 19697, Start Num: 28

Candidate Starts for Avocadoman\_24:

(Start: 28 @19356 has 44 MA's), (35, 19386), (39, 19419), (40, 19422), (46, 19464), (60, 19629),

Gene: BAjuniper\_23 Start: 20001, Stop: 20339, Start Num: 28

Candidate Starts for BAjuniper\_23:

(23, 19938), (Start: 28 @20001 has 44 MA's), (31, 20010), (46, 20109), (60, 20274),

Gene: BabyDaisy\_25 Start: 19417, Stop: 19758, Start Num: 28

Candidate Starts for BabyDaisy\_25:

(Start: 28 @19417 has 44 MA's), (35, 19447), (39, 19480), (40, 19483), (46, 19525), (48, 19561), (60, 19690),

Gene: BabyYoda\_23 Start: 19985, Stop: 20326, Start Num: 28

Candidate Starts for BabyYoda\_23:

(26, 19958), (Start: 28 @19985 has 44 MA's), (35, 20015), (39, 20048), (46, 20093),

Gene: Bachaco\_22 Start: 20044, Stop: 20370, Start Num: 28

Candidate Starts for Bachaco\_22:

(9, 19855), (20, 19963), (Start: 28 @20044 has 44 MA's), (35, 20074), (37, 20098), (39, 20107), (44, 20131),

Gene: Basilisk\_22 Start: 17928, Stop: 18215, Start Num: 32

Candidate Starts for Basilisk\_22:

(Start: 32 @17928 has 26 MA's), (48, 18060), (58, 18162), (59, 18171), (62, 18186),

Gene: BelmontSKP\_25 Start: 19601, Stop: 19942, Start Num: 28

Candidate Starts for BelmontSKP\_25:

(Start: 28 @19601 has 44 MA's), (35, 19631), (39, 19664), (40, 19667), (46, 19709), (60, 19874),

Gene: Brynnie\_22 Start: 17740, Stop: 18027, Start Num: 32

Candidate Starts for Brynnie\_22:

(Start: 32 @17740 has 26 MA's), (38, 17788), (43, 17806), (48, 17872), (58, 17974), (59, 17983), (62, 17998),

Gene: BubbaBear\_24 Start: 19291, Stop: 19632, Start Num: 28

Candidate Starts for BubbaBear\_24:

(Start: 28 @19291 has 44 MA's), (35, 19321), (39, 19354), (40, 19357), (46, 19399), (60, 19564),

Gene: Buldak\_21 Start: 17968, Stop: 18315, Start Num: 28

Candidate Starts for Buldak\_21:

(1, 17635), (17, 17842), (Start: 28 @17968 has 44 MA's), (33, 17983), (34, 17986), (46, 18076), (66, 18283),

Gene: Burritobowl\_24 Start: 19357, Stop: 19698, Start Num: 28

Candidate Starts for Burritobowl\_24:

(Start: 28 @19357 has 44 MA's), (35, 19387), (39, 19420), (40, 19423), (46, 19465), (60, 19630),

Gene: Cashington\_24 Start: 19206, Stop: 19547, Start Num: 28

Candidate Starts for Cashington\_24:

(Start: 28 @19206 has 44 MA's), (35, 19236), (39, 19269), (40, 19272), (46, 19314), (60, 19479),

Gene: Celaena\_22 Start: 19992, Stop: 20318, Start Num: 28

Candidate Starts for Celaena\_22:

(20, 19911), (Start: 28 @19992 has 44 MA's), (35, 20022), (37, 20046), (39, 20055), (44, 20079),

Gene: Chickaboom\_21 Start: 16666, Stop: 16953, Start Num: 32

Candidate Starts for Chickaboom\_21:

(Start: 32 @16666 has 26 MA's), (38, 16714), (43, 16732), (48, 16798), (58, 16900), (59, 16909), (62, 16924),

Gene: Coral\_22 Start: 16478, Stop: 16771, Start Num: 32

Candidate Starts for Coral\_22:

(Start: 32 @16478 has 26 MA's), (42, 16541), (48, 16610), (49, 16619), (53, 16655), (59, 16721),

Gene: Cote\_23 Start: 16639, Stop: 16932, Start Num: 32

Candidate Starts for Cote\_23:

(Start: 32 @16639 has 26 MA's), (42, 16702), (48, 16771), (49, 16780), (53, 16816), (59, 16882),

Gene: CroZenni\_24 Start: 19195, Stop: 19536, Start Num: 28

Candidate Starts for CroZenni\_24:

(Start: 28 @19195 has 44 MA's), (35, 19225), (39, 19258), (40, 19261), (46, 19303), (60, 19468),

Gene: Daob\_23 Start: 16644, Stop: 16937, Start Num: 32

Candidate Starts for Daob\_23:

(7, 16425), (13, 16443), (16, 16482), (18, 16521), (19, 16524), (25, 16578), (27, 16602), (Start: 32 @16644 has 26 MA's), (42, 16707), (48, 16776), (49, 16785), (53, 16821), (59, 16887),

Gene: DickRichards\_24 Start: 19687, Stop: 20028, Start Num: 28

Candidate Starts for DickRichards\_24:

(Start: 28 @19687 has 44 MA's), (35, 19717), (39, 19750), (40, 19753), (46, 19795), (60, 19960),

Gene: Didgeridoo\_25 Start: 19419, Stop: 19760, Start Num: 28

Candidate Starts for Didgeridoo\_25:

(20, 19338), (Start: 28 @19419 has 44 MA's), (35, 19449), (39, 19482), (40, 19485), (46, 19527), (48, 19563), (60, 19692),

Gene: DirtyBubble\_23 Start: 19943, Stop: 20284, Start Num: 28

Candidate Starts for DirtyBubble\_23:

(26, 19916), (Start: 28 @19943 has 44 MA's), (35, 19973), (39, 20006), (51, 20108),

Gene: Doobus\_24 Start: 19523, Stop: 19864, Start Num: 28

Candidate Starts for Doobus\_24:

(Start: 28 @19523 has 44 MA's), (35, 19553), (39, 19586), (40, 19589), (46, 19631), (60, 19796),

Gene: Dunamis\_23 Start: 15491, Stop: 15793, Start Num: 30

Candidate Starts for Dunamis\_23:

(2, 15254), (3, 15257), (4, 15260), (5, 15269), (8, 15287), (12, 15302), (14, 15323), (15, 15341), (21, 15401), (24, 15431), (Start: 30 @15491 has 2 MA's), (Start: 32 @15497 has 26 MA's), (43, 15563), (56, 15713), (57, 15719), (65, 15782),

Gene: Eesa\_22 Start: 17891, Stop: 18175, Start Num: 32

Candidate Starts for Eesa\_22:

(Start: 32 @17891 has 26 MA's), (47, 18020), (48, 18023), (53, 18068), (59, 18134), (61, 18140),

Gene: Elva\_24 Start: 19907, Stop: 20248, Start Num: 28

Candidate Starts for Elva\_24:

(Start: 28 @19907 has 44 MA's), (35, 19937), (39, 19970), (40, 19973),

Gene: Eula\_24 Start: 19276, Stop: 19617, Start Num: 28

Candidate Starts for Eula\_24:

(Start: 28 @19276 has 44 MA's), (35, 19306), (39, 19339), (40, 19342), (48, 19420), (60, 19549),

Gene: Finalfrontier\_25 Start: 19783, Stop: 20124, Start Num: 28

Candidate Starts for Finalfrontier\_25:

(Start: 28 @19783 has 44 MA's), (35, 19813), (39, 19846), (40, 19849), (46, 19891), (48, 19927), (60, 20056),

Gene: FlameThrower\_22 Start: 19518, Stop: 19862, Start Num: 28

Candidate Starts for FlameThrower\_22:

(Start: 28 @19518 has 44 MA's), (35, 19548), (43, 19596), (45, 19611),

Gene: Galaxy\_23 Start: 17720, Stop: 18004, Start Num: 32

Candidate Starts for Galaxy\_23:

(Start: 32 @17720 has 26 MA's), (37, 17762), (38, 17768), (40, 17774), (43, 17786), (47, 17849), (50, 17867), (54, 17912), (55, 17933), (57, 17942), (59, 17963),

Gene: HannahPhantana\_23 Start: 16705, Stop: 16935, Start Num: 42

Candidate Starts for HannahPhantana\_23:

(Start: 32 @16642 has 26 MA's), (42, 16705), (48, 16774), (49, 16783), (53, 16819), (59, 16885),

Gene: Icarian\_24 Start: 19822, Stop: 20163, Start Num: 28

Candidate Starts for Icarian\_24:

(26, 19795), (Start: 28 @19822 has 44 MA's), (35, 19852), (39, 19885), (46, 19930),

Gene: IndyLu\_24 Start: 19238, Stop: 19579, Start Num: 28

Candidate Starts for IndyLu\_24:

(Start: 28 @19238 has 44 MA's), (35, 19268), (39, 19301), (40, 19304), (46, 19346), (48, 19382), (60, 19511),

Gene: Jamun\_22 Start: 17334, Stop: 17621, Start Num: 32

Candidate Starts for Jamun\_22:

(Start: 32 @17334 has 26 MA's), (36, 17361), (48, 17466), (58, 17568), (59, 17577), (62, 17592),

Gene: Johnathan\_24 Start: 19296, Stop: 19637, Start Num: 28

Candidate Starts for Johnathan\_24:

(Start: 28 @19296 has 44 MA's), (35, 19326), (39, 19359), (40, 19362), (46, 19404), (60, 19569),

Gene: Jovita\_24 Start: 19380, Stop: 19721, Start Num: 28

Candidate Starts for Jovita\_24:

(Start: 28 @19380 has 44 MA's), (35, 19410), (39, 19443), (40, 19446), (48, 19524), (60, 19653),

Gene: Juno112\_21 Start: 16205, Stop: 16495, Start Num: 32

Candidate Starts for Juno112\_21:

(Start: 32 @16205 has 26 MA's), (36, 16232), (48, 16337), (53, 16382), (59, 16448), (63, 16478),

Gene: KHumphrey\_21 Start: 16202, Stop: 16492, Start Num: 32

Candidate Starts for KHumphrey\_21:

(Start: 32 @16202 has 26 MA's), (36, 16229), (48, 16334), (53, 16379), (59, 16445), (63, 16475),



Gene: Katzastrophic\_22 Start: 19650, Stop: 19976, Start Num: 28  
Candidate Starts for Katzastrophic\_22:  
(Start: 28 @19650 has 44 MA's), (35, 19680), (37, 19704), (39, 19713), (44, 19737),

Gene: Kenzers\_24 Start: 19266, Stop: 19607, Start Num: 28  
Candidate Starts for Kenzers\_24:  
(Start: 28 @19266 has 44 MA's), (35, 19296), (39, 19329), (40, 19332), (46, 19374), (48, 19410), (60, 19539),

Gene: Kepler\_22 Start: 16477, Stop: 16770, Start Num: 32  
Candidate Starts for Kepler\_22:  
(Start: 32 @16477 has 26 MA's), (42, 16540), (48, 16609), (49, 16618), (53, 16654), (59, 16720),

Gene: Kuleana\_22 Start: 16584, Stop: 16892, Start Num: 32  
Candidate Starts for Kuleana\_22:  
(22, 16503), (24, 16512), (Start: 32 @16584 has 26 MA's), (41, 16644), (49, 16725), (55, 16818),

Gene: Lahqtemish\_24 Start: 19289, Stop: 19630, Start Num: 28  
Candidate Starts for Lahqtemish\_24:  
(Start: 28 @19289 has 44 MA's), (35, 19319), (39, 19352), (40, 19355), (46, 19397), (48, 19433), (60, 19562),

Gene: Leona\_21 Start: 16264, Stop: 16560, Start Num: 32  
Candidate Starts for Leona\_21:  
(Start: 32 @16264 has 26 MA's), (36, 16291), (48, 16396), (53, 16441), (59, 16507), (63, 16537),

Gene: LimaBean\_24 Start: 19292, Stop: 19633, Start Num: 28  
Candidate Starts for LimaBean\_24:  
(Start: 28 @19292 has 44 MA's), (35, 19322), (39, 19355), (40, 19358), (46, 19400), (60, 19565),

Gene: LittleTokyo\_22 Start: 16542, Stop: 16829, Start Num: 32  
Candidate Starts for LittleTokyo\_22:  
(Start: 32 @16542 has 26 MA's), (36, 16569), (48, 16674), (50, 16689),

Gene: Loviatar\_40 Start: 19917, Stop: 20258, Start Num: 28  
Candidate Starts for Loviatar\_40:  
(26, 19890), (Start: 28 @19917 has 44 MA's), (35, 19947), (39, 19980), (46, 20025),

Gene: Lunar\_23 Start: 16639, Stop: 16932, Start Num: 32  
Candidate Starts for Lunar\_23:  
(Start: 32 @16639 has 26 MA's), (42, 16702), (48, 16771), (49, 16780), (53, 16816), (59, 16882),

Gene: Lynlen\_24 Start: 19266, Stop: 19607, Start Num: 28  
Candidate Starts for Lynlen\_24:  
(Start: 28 @19266 has 44 MA's), (35, 19296), (39, 19329), (40, 19332), (46, 19374), (48, 19410), (60, 19539),

Gene: Melons\_23 Start: 16639, Stop: 16932, Start Num: 32  
Candidate Starts for Melons\_23:  
(Start: 32 @16639 has 26 MA's), (42, 16702), (48, 16771), (49, 16780), (53, 16816), (59, 16882),

Gene: Mendel\_21 Start: 15255, Stop: 15551, Start Num: 32  
Candidate Starts for Mendel\_21:

(2, 15012), (3, 15015), (4, 15018), (5, 15027), (8, 15045), (12, 15060), (14, 15081), (15, 15099), (21, 15159), (24, 15189), (Start: 30 @15249 has 2 MA's), (Start: 32 @15255 has 26 MA's), (43, 15321), (56, 15471), (57, 15477), (65, 15540),

Gene: Nicky22\_25 Start: 19726, Stop: 20067, Start Num: 28

Candidate Starts for Nicky22\_25:

(6, 19522), (20, 19645), (Start: 28 @19726 has 44 MA's), (35, 19756), (39, 19789), (40, 19792), (48, 19870), (60, 19999),

Gene: Olliecat\_22 Start: 17933, Stop: 18280, Start Num: 28

Candidate Starts for Olliecat\_22:

(Start: 28 @17933 has 44 MA's), (34, 17951),

Gene: Orcanus\_22 Start: 17591, Stop: 17875, Start Num: 32

Candidate Starts for Orcanus\_22:

(Start: 32 @17591 has 26 MA's), (47, 17720), (48, 17723), (53, 17768), (59, 17834), (61, 17840),

Gene: Phisb\_24 Start: 19292, Stop: 19633, Start Num: 28

Candidate Starts for Phisb\_24:

(18, 19196), (Start: 28 @19292 has 44 MA's), (35, 19322), (39, 19355), (40, 19358), (46, 19400), (48, 19436), (60, 19565),

Gene: PhluffyCoco\_21 Start: 16204, Stop: 16494, Start Num: 32

Candidate Starts for PhluffyCoco\_21:

(Start: 32 @16204 has 26 MA's), (36, 16231), (48, 16336), (53, 16381), (59, 16447), (63, 16477),

Gene: Polka\_22 Start: 16483, Stop: 16776, Start Num: 32

Candidate Starts for Polka\_22:

(7, 16264), (10, 16270), (11, 16279), (13, 16282), (16, 16321), (18, 16360), (19, 16363), (25, 16417), (27, 16441), (Start: 32 @16483 has 26 MA's), (42, 16546), (48, 16615), (49, 16624), (53, 16660), (59, 16726),

Gene: QMacho\_25 Start: 19759, Stop: 20100, Start Num: 28

Candidate Starts for QMacho\_25:

(Start: 28 @19759 has 44 MA's), (35, 19789), (39, 19822), (40, 19825), (48, 19903), (60, 20032),

Gene: Quenya\_23 Start: 19515, Stop: 19841, Start Num: 28

Candidate Starts for Quenya\_23:

(20, 19434), (Start: 28 @19515 has 44 MA's), (37, 19569), (39, 19578), (44, 19602), (52, 19704), (64, 19818),

Gene: RedFox\_21 Start: 16204, Stop: 16494, Start Num: 32

Candidate Starts for RedFox\_21:

(Start: 32 @16204 has 26 MA's), (36, 16231), (48, 16336), (53, 16381), (59, 16447), (63, 16477),

Gene: Renna12\_22 Start: 16554, Stop: 16850, Start Num: 32

Candidate Starts for Renna12\_22:

(Start: 32 @16554 has 26 MA's), (36, 16581), (48, 16686), (53, 16731), (59, 16797), (63, 16827),

Gene: Ruchi\_22 Start: 17874, Stop: 18161, Start Num: 32

Candidate Starts for Ruchi\_22:

(Start: 32 @17874 has 26 MA's), (48, 18006), (58, 18108), (59, 18117), (62, 18132),

Gene: SanaSana\_24 Start: 19856, Stop: 20197, Start Num: 28

Candidate Starts for SanaSana\_24:

(26, 19829), (Start: 28 @19856 has 44 MA's), (35, 19886), (39, 19919), (46, 19964),

Gene: SansAfet\_24 Start: 19203, Stop: 19544, Start Num: 28

Candidate Starts for SansAfet\_24:

(Start: 28 @19203 has 44 MA's), (35, 19233), (39, 19266), (40, 19269), (46, 19311), (60, 19476),

Gene: SarBear\_24 Start: 19257, Stop: 19598, Start Num: 28

Candidate Starts for SarBear\_24:

(20, 19176), (Start: 28 @19257 has 44 MA's), (35, 19287), (39, 19320), (40, 19323), (48, 19401), (60, 19530),

Gene: Shayna\_22 Start: 18614, Stop: 18955, Start Num: 28

Candidate Starts for Shayna\_22:

(Start: 28 @18614 has 44 MA's), (35, 18644), (40, 18680), (46, 18722), (48, 18758), (66, 18929),

Gene: Slay\_24 Start: 19799, Stop: 20140, Start Num: 28

Candidate Starts for Slay\_24:

(18, 19703), (Start: 28 @19799 has 44 MA's), (35, 19829), (39, 19862), (40, 19865), (48, 19943), (60, 20072),

Gene: Stoor\_23 Start: 19853, Stop: 20194, Start Num: 28

Candidate Starts for Stoor\_23:

(26, 19826), (Start: 28 @19853 has 44 MA's), (35, 19883), (39, 19916), (46, 19961),

Gene: Stromboli\_23 Start: 19983, Stop: 20324, Start Num: 28

Candidate Starts for Stromboli\_23:

(26, 19956), (Start: 28 @19983 has 44 MA's), (35, 20013), (39, 20046), (46, 20091), (51, 20148),

Gene: SunnyD\_24 Start: 18618, Stop: 18956, Start Num: 28

Candidate Starts for SunnyD\_24:

(Start: 28 @18618 has 44 MA's), (35, 18648), (40, 18684), (46, 18726), (48, 18762), (66, 18933),

Gene: Swervy\_24 Start: 19257, Stop: 19598, Start Num: 28

Candidate Starts for Swervy\_24:

(20, 19176), (Start: 28 @19257 has 44 MA's), (35, 19287), (39, 19320), (40, 19323), (48, 19401), (60, 19530),

Gene: Swim\_24 Start: 15748, Stop: 16050, Start Num: 30

Candidate Starts for Swim\_24:

(2, 15511), (3, 15514), (4, 15517), (5, 15526), (8, 15544), (12, 15559), (14, 15580), (15, 15598), (21, 15658), (24, 15688), (Start: 30 @15748 has 2 MA's), (Start: 32 @15754 has 26 MA's), (43, 15820), (56, 15970), (57, 15976), (65, 16039),

Gene: TaylorSipht\_22 Start: 16608, Stop: 16895, Start Num: 32

Candidate Starts for TaylorSipht\_22:

(Start: 32 @16608 has 26 MA's), (36, 16635), (38, 16656), (58, 16842), (59, 16851), (63, 16881),

Gene: Tillums\_24 Start: 15881, Stop: 16183, Start Num: 30

Candidate Starts for Tillums\_24:

(Start: 30 @15881 has 2 MA's), (Start: 32 @15887 has 26 MA's), (43, 15953), (56, 16103), (57, 16109), (65, 16172),

Gene: TukTuk\_24 Start: 19315, Stop: 19656, Start Num: 28

Candidate Starts for TukTuk\_24:

(Start: 28 @19315 has 44 MA's), (35, 19345), (39, 19378), (40, 19381), (48, 19459), (60, 19588),

Gene: Vulpecula\_22 Start: 17332, Stop: 17619, Start Num: 32

Candidate Starts for Vulpecula\_22:

(Start: 32 @17332 has 26 MA's), (36, 17359), (48, 17464), (58, 17566), (59, 17575), (62, 17590),