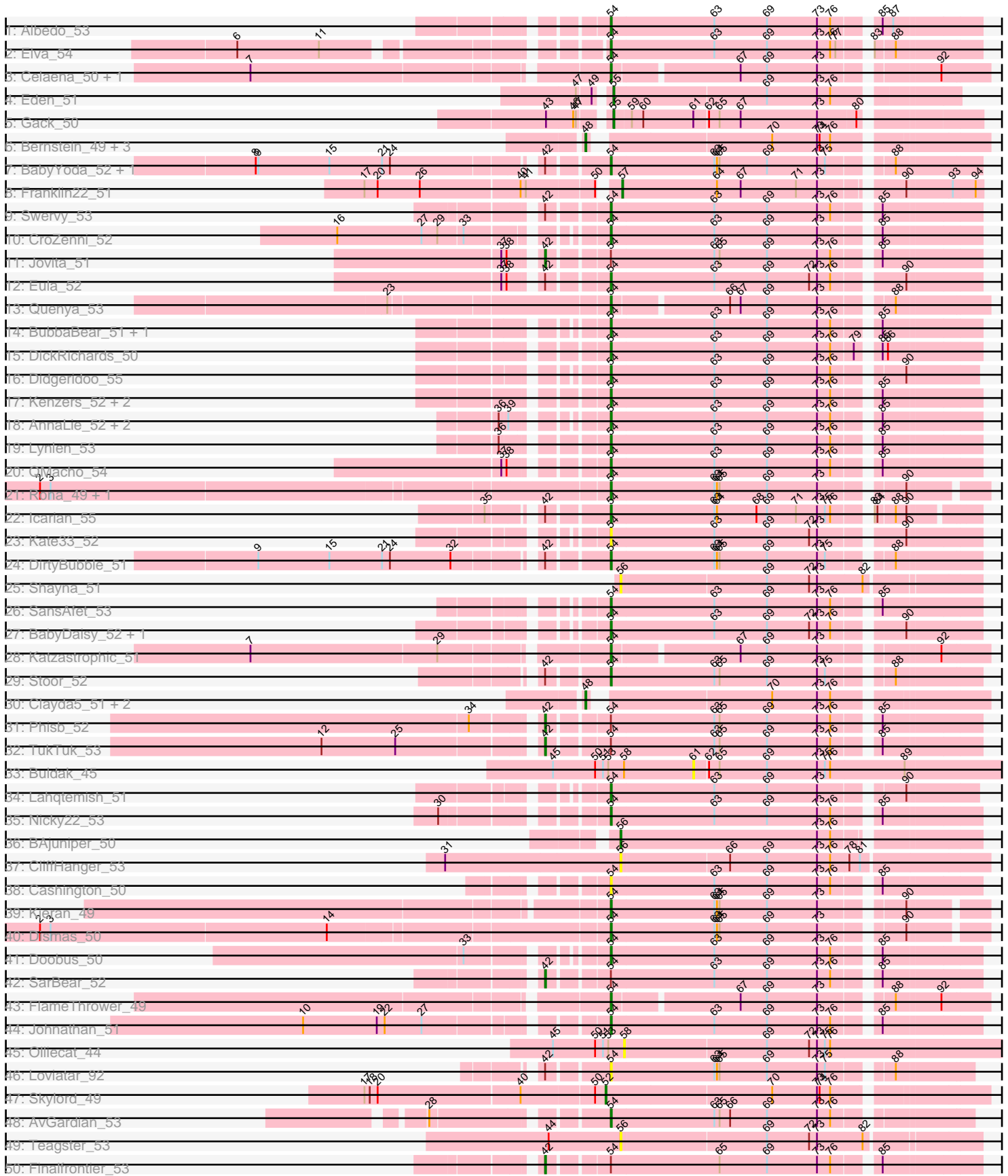


Pham 180482





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 180482 Report

This analysis was run 11/02/24 on database version 579.

Pham number 180482 has 68 members, 8 are drafts.

Phages represented in each track:

- Track 1 : Albedo\_53
- Track 2 : Elva\_54
- Track 3 : Celaena\_50, Bachaco\_50
- Track 4 : Eden\_51
- Track 5 : Gack\_50
- Track 6 : Bernstein\_49, Rollins\_49, Coltrane\_49, Brahms\_49
- Track 7 : BabyYoda\_52, Stromboli\_52
- Track 8 : Franklin22\_51
- Track 9 : Swervy\_53
- Track 10 : CroZenni\_52
- Track 11 : Jovita\_51
- Track 12 : Eula\_52
- Track 13 : Quenya\_53
- Track 14 : BubbaBear\_51, Avocadoman\_50
- Track 15 : DickRichards\_50
- Track 16 : Didgeridoo\_55
- Track 17 : Kenzers\_52, Albright\_49, Burritobowl\_52
- Track 18 : AnnaLie\_52, BelmontSKP\_52, Arroyo\_52
- Track 19 : Lynlen\_53
- Track 20 : QMacho\_54
- Track 21 : Rona\_49, Sharkboy\_50
- Track 22 : Icarian\_55
- Track 23 : Kate33\_52
- Track 24 : DirtyBubble\_51
- Track 25 : Shayna\_51
- Track 26 : SansAfet\_53
- Track 27 : BabyDaisy\_52, IndyLu\_52
- Track 28 : Katzastrophic\_51
- Track 29 : Stoor\_52
- Track 30 : Clayda5\_51, Armstrong\_49, Vitas\_49
- Track 31 : Phisb\_52
- Track 32 : TukTuk\_53
- Track 33 : Buldak\_45
- Track 34 : Lahqtemish\_51
- Track 35 : Nicky22\_53
- Track 36 : BAjuniper\_50
- Track 37 : CliffHanger\_53

- Track 38 : Cashington\_50
- Track 39 : Kieran\_49
- Track 40 : Dismas\_50
- Track 41 : Doobus\_50
- Track 42 : SarBear\_52
- Track 43 : FlameThrower\_49
- Track 44 : Johnathan\_51
- Track 45 : Olliecat\_44
- Track 46 : Loviatar\_92
- Track 47 : Skylord\_49
- Track 48 : AvGardian\_53
- Track 49 : Teagster\_53
- Track 50 : Finalfrontier\_53
- Track 51 : LimaBean\_52, Abigail\_51
- Track 52 : ChiliPepper\_49
- Track 53 : SanaSana\_54

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

The start number called the most often in the published annotations is 54, it was called in 43 of the 60 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abigail\_51, Albedo\_53, Albright\_49, AnnaLie\_52, Arroyo\_52, AvGardian\_53, Avocadoman\_50, BabyDaisy\_52, BabyYoda\_52, Bachaco\_50, BelmontSKP\_52, BubbaBear\_51, Burritobowl\_52, Cashington\_50, Celaena\_50, ChiliPepper\_49, CroZenni\_52, DickRichards\_50, Didgeridoo\_55, DirtyBubble\_51, Dismas\_50, Doobus\_50, Elva\_54, Eula\_52, FlameThrower\_49, Icarian\_55, IndyLu\_52, Johnathan\_51, Kate33\_52, Katzastrophic\_51, Kenzers\_52, Kieran\_49, Lahqtemish\_51, LimaBean\_52, Loviatar\_92, Lynlen\_53, Nicky22\_53, QMacho\_54, Quenya\_53, Rona\_49, SanaSana\_54, SansAfet\_53, Sharkboy\_50, Stoor\_52, Stromboli\_52, Swervy\_53,

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

- Finalfrontier\_53, Jovita\_51, Phisb\_52, SarBear\_52, TukTuk\_53,

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

- Armstrong\_49, BAjuniper\_50, Bernstein\_49, Brahms\_49, Buldak\_45, Clayda5\_51, CliffHanger\_53, Coltrane\_49, Eden\_51, Franklin22\_51, Gack\_50, Olliecat\_44, Rollins\_49, Shayna\_51, Skylord\_49, Teagster\_53, Vitas\_49,

**Summary by start number:**

Start 42:

- Found in 14 of 68 ( 20.6% ) of genes in pham
- Manual Annotations of this start: 5 of 60
- Called 35.7% of time when present
- Phage (with cluster) where this start called: Finalfrontier\_53 (EB), Jovita\_51 (EB), Phisb\_52 (EB), SarBear\_52 (EB), TukTuk\_53 (EB),

Start 48:

- Found in 7 of 68 ( 10.3% ) of genes in pham
- Manual Annotations of this start: 7 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Armstrong\_49 (EB), Bernstein\_49 (EB), Brahms\_49 (EB), Clayda5\_51 (EB), Coltrane\_49 (EB), Rollins\_49 (EB), Vitas\_49 (EB),

Start 52:

- Found in 1 of 68 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 1 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Skylord\_49 (EB),

Start 54:

- Found in 51 of 68 ( 75.0% ) of genes in pham
- Manual Annotations of this start: 43 of 60
- Called 90.2% of time when present
- Phage (with cluster) where this start called: Abigail\_51 (EB), Albedo\_53 (EB), Albright\_49 (EB), AnnaLie\_52 (EB), Arroyo\_52 (EB), AvGuardian\_53 (EB), Avocadoman\_50 (EB), BabyDaisy\_52 (EB), BabyYoda\_52 (EB), Bachaco\_50 (EB), BelmontSKP\_52 (EB), BubbaBear\_51 (EB), Burritobowl\_52 (EB), Cashington\_50 (EB), Celaena\_50 (EB), ChiliPepper\_49 (EB), CroZenni\_52 (EB), DickRichards\_50 (EB), Didgeridoo\_55 (EB), DirtyBubble\_51 (EB), Dismas\_50 (EB), Doobus\_50 (EB), Elva\_54 (EB), Eula\_52 (EB), FlameThrower\_49 (EB), Icarian\_55 (EB), IndyLu\_52 (EB), Johnathan\_51 (EB), Kate33\_52 (EB), Katzastrophic\_51 (EB), Kenzers\_52 (EB), Kieran\_49 (EB), Lahqtemish\_51 (EB), LimaBean\_52 (EB), Loviatar\_92 (EB), Lynlen\_53 (EB), Nicky22\_53 (EB), QMacho\_54 (EB), Quenya\_53 (EB), Rona\_49 (EB), SanaSana\_54 (EB), SansAfet\_53 (EB), Sharkboy\_50 (EB), Stoor\_52 (EB), Stromboli\_52 (EB), Swervy\_53 (EB),

Start 55:

- Found in 2 of 68 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 2 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Eden\_51 (EB), Gack\_50 (EB),

Start 56:

- Found in 4 of 68 ( 5.9% ) of genes in pham
- Manual Annotations of this start: 1 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BAjuniper\_50 (EB), CliffHanger\_53 (EB), Shayna\_51 (EB), Teagster\_53 (EB),

Start 57:

- Found in 1 of 68 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 1 of 60
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Franklin22\_51 (EB),

Start 58:

- Found in 2 of 68 ( 2.9% ) of genes in pham
- No Manual Annotations of this start.

- Called 50.0% of time when present
- Phage (with cluster) where this start called: Olliecat\_44 (EB),

Start 61:

- Found in 2 of 68 ( 2.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Buldak\_45 (EB),

### **Summary by clusters:**

There is one cluster represented in this pham: EB

Info for manual annotations of cluster EB:

- Start number 42 was manually annotated 5 times for cluster EB.
- Start number 48 was manually annotated 7 times for cluster EB.
- Start number 52 was manually annotated 1 time for cluster EB.
- Start number 54 was manually annotated 43 times for cluster EB.
- Start number 55 was manually annotated 2 times for cluster EB.
- Start number 56 was manually annotated 1 time for cluster EB.
- Start number 57 was manually annotated 1 time for cluster EB.

### **Gene Information:**

Gene: Abigail\_51 Start: 34257, Stop: 34655, Start Num: 54

Candidate Starts for Abigail\_51:

(Start: 54 @34257 has 43 MA's), (63, 34374), (69, 34434), (73, 34491), (76, 34506), (85, 34548), (91, 34590),

Gene: Albedo\_53 Start: 34982, Stop: 35380, Start Num: 54

Candidate Starts for Albedo\_53:

(Start: 54 @34982 has 43 MA's), (63, 35099), (69, 35159), (73, 35216), (76, 35231), (85, 35273), (87, 35285),

Gene: Albright\_49 Start: 33688, Stop: 34086, Start Num: 54

Candidate Starts for Albright\_49:

(Start: 54 @33688 has 43 MA's), (63, 33805), (69, 33865), (73, 33922), (76, 33937), (85, 33979),

Gene: AnnaLie\_52 Start: 34917, Stop: 35315, Start Num: 54

Candidate Starts for AnnaLie\_52:

(36, 34830), (39, 34839), (Start: 54 @34917 has 43 MA's), (63, 35034), (69, 35094), (73, 35151), (76, 35166), (85, 35208),

Gene: Armstrong\_49 Start: 32812, Stop: 33222, Start Num: 48

Candidate Starts for Armstrong\_49:

(Start: 48 @32812 has 7 MA's), (70, 32998), (73, 33049), (76, 33064),

Gene: Arroyo\_52 Start: 35025, Stop: 35423, Start Num: 54

Candidate Starts for Arroyo\_52:

(36, 34938), (39, 34947), (Start: 54 @35025 has 43 MA's), (63, 35142), (69, 35202), (73, 35259), (76, 35274), (85, 35316),

Gene: AvGardian\_53 Start: 35215, Stop: 35601, Start Num: 54

Candidate Starts for AvGardian\_53:

(28, 35041), (Start: 54 @35215 has 43 MA's), (63, 35332), (65, 35338), (66, 35350), (69, 35392), (73, 35449), (76, 35464),

Gene: Avocadoman\_50 Start: 33889, Stop: 34287, Start Num: 54

Candidate Starts for Avocadoman\_50:

(Start: 54 @33889 has 43 MA's), (63, 34006), (69, 34066), (73, 34123), (76, 34138), (85, 34180),

Gene: BAjuniper\_50 Start: 35580, Stop: 35963, Start Num: 56

Candidate Starts for BAjuniper\_50:

(Start: 56 @35580 has 1 MA's), (73, 35802), (76, 35817),

Gene: BabyDaisy\_52 Start: 35047, Stop: 35445, Start Num: 54

Candidate Starts for BabyDaisy\_52:

(Start: 54 @35047 has 43 MA's), (63, 35164), (69, 35224), (72, 35272), (73, 35281), (76, 35296), (90, 35365),

Gene: BabyYoda\_52 Start: 35636, Stop: 36031, Start Num: 54

Candidate Starts for BabyYoda\_52:

(8, 35270), (9, 35273), (15, 35354), (21, 35414), (24, 35423), (Start: 42 @35573 has 5 MA's), (Start: 54 @35636 has 43 MA's), (63, 35753), (64, 35756), (65, 35759), (69, 35813), (73, 35870), (75, 35879), (88, 35939),

Gene: Bachaco\_50 Start: 36378, Stop: 36770, Start Num: 54

Candidate Starts for Bachaco\_50:

(7, 35997), (Start: 54 @36378 has 43 MA's), (67, 36513), (69, 36543), (73, 36600), (92, 36717),

Gene: BelmontSKP\_52 Start: 34917, Stop: 35315, Start Num: 54

Candidate Starts for BelmontSKP\_52:

(36, 34830), (39, 34839), (Start: 54 @34917 has 43 MA's), (63, 35034), (69, 35094), (73, 35151), (76, 35166), (85, 35208),

Gene: Bernstein\_49 Start: 32810, Stop: 33220, Start Num: 48

Candidate Starts for Bernstein\_49:

(Start: 48 @32810 has 7 MA's), (70, 32996), (73, 33047), (74, 33050), (76, 33062),

Gene: Brahms\_49 Start: 32730, Stop: 33140, Start Num: 48

Candidate Starts for Brahms\_49:

(Start: 48 @32730 has 7 MA's), (70, 32916), (73, 32967), (74, 32970), (76, 32982),

Gene: BubbaBear\_51 Start: 34666, Stop: 35064, Start Num: 54

Candidate Starts for BubbaBear\_51:

(Start: 54 @34666 has 43 MA's), (63, 34783), (69, 34843), (73, 34900), (76, 34915), (85, 34957),

Gene: Buldak\_45 Start: 31351, Stop: 31743, Start Num: 61

Candidate Starts for Buldak\_45:

(45, 31192), (50, 31240), (51, 31249), (53, 31255), (58, 31273), (61, 31351), (62, 31366), (65, 31378), (69, 31432), (73, 31489), (75, 31498), (76, 31504), (89, 31588),

Gene: Burritobowl\_52 Start: 34596, Stop: 34994, Start Num: 54

Candidate Starts for Burritobowl\_52:

(Start: 54 @34596 has 43 MA's), (63, 34713), (69, 34773), (73, 34830), (76, 34845), (85, 34887),

Gene: Cashington\_50 Start: 34009, Stop: 34407, Start Num: 54

Candidate Starts for Cashington\_50:

(Start: 54 @34009 has 43 MA's), (63, 34126), (69, 34186), (73, 34243), (76, 34258), (85, 34300),

Gene: Celaena\_50 Start: 36140, Stop: 36532, Start Num: 54

Candidate Starts for Celaena\_50:

(7, 35759), (Start: 54 @36140 has 43 MA's), (67, 36275), (69, 36305), (73, 36362), (92, 36479),

Gene: ChiliPepper\_49 Start: 35441, Stop: 35836, Start Num: 54

Candidate Starts for ChiliPepper\_49:

(1, 34808), (4, 34973), (5, 35003), (Start: 54 @35441 has 43 MA's), (63, 35558), (64, 35561), (65, 35564), (69, 35618), (73, 35675), (90, 35756),

Gene: Clayda5\_51 Start: 32795, Stop: 33205, Start Num: 48

Candidate Starts for Clayda5\_51:

(Start: 48 @32795 has 7 MA's), (70, 32981), (73, 33032), (76, 33047),

Gene: CliffHanger\_53 Start: 32791, Stop: 33195, Start Num: 56

Candidate Starts for CliffHanger\_53:

(31, 32593), (Start: 56 @32791 has 1 MA's), (66, 32911), (69, 32953), (73, 33010), (76, 33025), (78, 33046), (81, 33058),

Gene: Coltrane\_49 Start: 32730, Stop: 33140, Start Num: 48

Candidate Starts for Coltrane\_49:

(Start: 48 @32730 has 7 MA's), (70, 32916), (73, 32967), (74, 32970), (76, 32982),

Gene: CroZenni\_52 Start: 34533, Stop: 34931, Start Num: 54

Candidate Starts for CroZenni\_52:

(16, 34269), (27, 34365), (29, 34383), (33, 34410), (Start: 54 @34533 has 43 MA's), (63, 34650), (69, 34710), (73, 34767), (85, 34824),

Gene: DickRichards\_50 Start: 34708, Stop: 35106, Start Num: 54

Candidate Starts for DickRichards\_50:

(Start: 54 @34708 has 43 MA's), (63, 34825), (69, 34885), (73, 34942), (76, 34957), (79, 34981), (85, 34999), (86, 35005),

Gene: Didgeridoo\_55 Start: 35393, Stop: 35785, Start Num: 54

Candidate Starts for Didgeridoo\_55:

(Start: 54 @35393 has 43 MA's), (63, 35510), (69, 35570), (73, 35627), (76, 35642), (90, 35708),

Gene: DirtyBubble\_51 Start: 35304, Stop: 35699, Start Num: 54

Candidate Starts for DirtyBubble\_51:

(9, 34941), (15, 35022), (21, 35082), (24, 35091), (32, 35160), (Start: 42 @35241 has 5 MA's), (Start: 54 @35304 has 43 MA's), (63, 35421), (64, 35424), (65, 35427), (69, 35481), (73, 35538), (75, 35547), (88, 35607),

Gene: Dismas\_50 Start: 35363, Stop: 35758, Start Num: 54

Candidate Starts for Dismas\_50:

(2, 34739), (3, 34751), (14, 35063), (Start: 54 @35363 has 43 MA's), (63, 35480), (64, 35483), (65, 35486), (69, 35540), (73, 35597), (90, 35678),



Gene: Doobus\_50 Start: 34197, Stop: 34595, Start Num: 54

Candidate Starts for Doobus\_50:

(33, 34071), (Start: 54 @34197 has 43 MA's), (63, 34314), (69, 34374), (73, 34431), (76, 34446), (85, 34488),

Gene: Eden\_51 Start: 34095, Stop: 34463, Start Num: 55

Candidate Starts for Eden\_51:

(47, 34068), (49, 34083), (Start: 55 @34095 has 2 MA's), (69, 34266), (73, 34323), (76, 34338),

Gene: Elva\_54 Start: 35701, Stop: 36096, Start Num: 54

Candidate Starts for Elva\_54:

(6, 35338), (11, 35431), (Start: 54 @35701 has 43 MA's), (63, 35818), (69, 35878), (73, 35935), (76, 35950), (77, 35956), (83, 35983), (88, 36004),

Gene: Eula\_52 Start: 34380, Stop: 34778, Start Num: 54

Candidate Starts for Eula\_52:

(37, 34287), (38, 34293), (Start: 42 @34320 has 5 MA's), (Start: 54 @34380 has 43 MA's), (63, 34497), (69, 34557), (72, 34605), (73, 34614), (76, 34629), (90, 34698),

Gene: Finalfrontier\_53 Start: 35430, Stop: 35888, Start Num: 42

Candidate Starts for Finalfrontier\_53:

(Start: 42 @35430 has 5 MA's), (Start: 54 @35490 has 43 MA's), (65, 35613), (69, 35667), (73, 35724), (76, 35739), (85, 35781),

Gene: FlameThrower\_49 Start: 35177, Stop: 35569, Start Num: 54

Candidate Starts for FlameThrower\_49:

(Start: 54 @35177 has 43 MA's), (67, 35312), (69, 35342), (73, 35399), (88, 35468), (92, 35516),

Gene: Franklin22\_51 Start: 33389, Stop: 33772, Start Num: 57

Candidate Starts for Franklin22\_51:

(17, 33122), (20, 33137), (26, 33185), (40, 33296), (41, 33302), (50, 33374), (Start: 57 @33389 has 1 MA's), (64, 33497), (67, 33524), (71, 33587), (73, 33611), (90, 33692), (93, 33740), (94, 33764),

Gene: Gack\_50 Start: 33692, Stop: 34081, Start Num: 55

Candidate Starts for Gack\_50:

(43, 33632), (46, 33662), (47, 33665), (Start: 55 @33692 has 2 MA's), (59, 33710), (60, 33722), (61, 33779), (62, 33794), (65, 33806), (67, 33830), (73, 33917), (80, 33959),

Gene: Icarian\_55 Start: 36309, Stop: 36695, Start Num: 54

Candidate Starts for Icarian\_55:

(35, 36201), (Start: 42 @36246 has 5 MA's), (Start: 54 @36309 has 43 MA's), (63, 36426), (64, 36429), (68, 36474), (69, 36486), (71, 36519), (73, 36543), (75, 36552), (76, 36558), (83, 36591), (84, 36594), (88, 36612), (90, 36624),

Gene: IndyLu\_52 Start: 34967, Stop: 35365, Start Num: 54

Candidate Starts for IndyLu\_52:

(Start: 54 @34967 has 43 MA's), (63, 35084), (69, 35144), (72, 35192), (73, 35201), (76, 35216), (90, 35285),

Gene: Johnathan\_51 Start: 34035, Stop: 34433, Start Num: 54

Candidate Starts for Johnathan\_51:

(10, 33726), (19, 33810), (22, 33819), (27, 33861), (Start: 54 @34035 has 43 MA's), (63, 34152), (69, 34212), (73, 34269), (76, 34284), (85, 34326),

Gene: Jovita\_51 Start: 34194, Stop: 34652, Start Num: 42

Candidate Starts for Jovita\_51:

(37, 34161), (38, 34167), (Start: 42 @34194 has 5 MA's), (Start: 54 @34254 has 43 MA's), (63, 34371), (65, 34377), (69, 34431), (73, 34488), (76, 34503), (85, 34545),

Gene: Kate33\_52 Start: 34684, Stop: 35082, Start Num: 54

Candidate Starts for Kate33\_52:

(Start: 54 @34684 has 43 MA's), (63, 34801), (69, 34861), (72, 34909), (73, 34918), (90, 35002),

Gene: Katzastrophic\_51 Start: 35687, Stop: 36079, Start Num: 54

Candidate Starts for Katzastrophic\_51:

(7, 35306), (29, 35516), (Start: 54 @35687 has 43 MA's), (67, 35822), (69, 35852), (73, 35909), (92, 36026),

Gene: Kenzers\_52 Start: 34514, Stop: 34912, Start Num: 54

Candidate Starts for Kenzers\_52:

(Start: 54 @34514 has 43 MA's), (63, 34631), (69, 34691), (73, 34748), (76, 34763), (85, 34805),

Gene: Kieran\_49 Start: 35404, Stop: 35799, Start Num: 54

Candidate Starts for Kieran\_49:

(Start: 54 @35404 has 43 MA's), (63, 35521), (64, 35524), (65, 35527), (69, 35581), (73, 35638), (90, 35719),

Gene: Lahqtemish\_51 Start: 34966, Stop: 35358, Start Num: 54

Candidate Starts for Lahqtemish\_51:

(Start: 54 @34966 has 43 MA's), (63, 35083), (69, 35143), (73, 35200), (90, 35281),

Gene: LimaBean\_52 Start: 34135, Stop: 34533, Start Num: 54

Candidate Starts for LimaBean\_52:

(Start: 54 @34135 has 43 MA's), (63, 34252), (69, 34312), (73, 34369), (76, 34384), (85, 34426), (91, 34468),

Gene: Loviatar\_92 Start: 36712, Stop: 37098, Start Num: 54

Candidate Starts for Loviatar\_92:

(Start: 42 @36649 has 5 MA's), (Start: 54 @36712 has 43 MA's), (63, 36829), (64, 36832), (65, 36835), (69, 36889), (73, 36946), (75, 36955), (88, 37015),

Gene: Lynlen\_53 Start: 34694, Stop: 35092, Start Num: 54

Candidate Starts for Lynlen\_53:

(36, 34601), (Start: 54 @34694 has 43 MA's), (63, 34811), (69, 34871), (73, 34928), (76, 34943), (85, 34985),

Gene: Nicky22\_53 Start: 35149, Stop: 35547, Start Num: 54

Candidate Starts for Nicky22\_53:

(30, 34996), (Start: 54 @35149 has 43 MA's), (63, 35266), (69, 35326), (73, 35383), (76, 35398), (85, 35440),

Gene: Olliecat\_44 Start: 31336, Stop: 31794, Start Num: 58

Candidate Starts for Olliecat\_44:

(45, 31255), (50, 31303), (51, 31312), (53, 31318), (58, 31336), (69, 31495), (72, 31543), (73, 31552), (75, 31561), (76, 31567),

Gene: Phisb\_52 Start: 34558, Stop: 35016, Start Num: 42

Candidate Starts for Phisb\_52:

(34, 34495), (Start: 42 @34558 has 5 MA's), (Start: 54 @34618 has 43 MA's), (63, 34735), (65, 34741), (69, 34795), (73, 34852), (76, 34867), (85, 34909),

Gene: QMacho\_54 Start: 35034, Stop: 35432, Start Num: 54

Candidate Starts for QMacho\_54:

(37, 34941), (38, 34947), (Start: 54 @35034 has 43 MA's), (63, 35151), (69, 35211), (73, 35268), (76, 35283), (85, 35325),

Gene: Quenya\_53 Start: 35819, Stop: 36211, Start Num: 54

Candidate Starts for Quenya\_53:

(23, 35582), (Start: 54 @35819 has 43 MA's), (66, 35942), (67, 35954), (69, 35984), (73, 36041), (88, 36110),

Gene: Rollins\_49 Start: 32810, Stop: 33220, Start Num: 48

Candidate Starts for Rollins\_49:

(Start: 48 @32810 has 7 MA's), (70, 32996), (73, 33047), (74, 33050), (76, 33062),

Gene: Rona\_49 Start: 35354, Stop: 35749, Start Num: 54

Candidate Starts for Rona\_49:

(2, 34730), (3, 34742), (Start: 54 @35354 has 43 MA's), (63, 35471), (64, 35474), (65, 35477), (69, 35531), (73, 35588), (90, 35669),

Gene: SanaSana\_54 Start: 36016, Stop: 36411, Start Num: 54

Candidate Starts for SanaSana\_54:

(9, 35653), (13, 35728), (15, 35734), (21, 35794), (24, 35803), (Start: 42 @35953 has 5 MA's), (Start: 54 @36016 has 43 MA's), (63, 36133), (65, 36139), (69, 36193), (73, 36250), (75, 36259), (88, 36319),

Gene: SansAfet\_53 Start: 34443, Stop: 34841, Start Num: 54

Candidate Starts for SansAfet\_53:

(Start: 54 @34443 has 43 MA's), (63, 34560), (69, 34620), (73, 34677), (76, 34692), (85, 34734),

Gene: SarBear\_52 Start: 34278, Stop: 34736, Start Num: 42

Candidate Starts for SarBear\_52:

(Start: 42 @34278 has 5 MA's), (Start: 54 @34338 has 43 MA's), (63, 34455), (69, 34515), (73, 34572), (76, 34587), (85, 34629),

Gene: Sharkboy\_50 Start: 35453, Stop: 35848, Start Num: 54

Candidate Starts for Sharkboy\_50:

(2, 34829), (3, 34841), (Start: 54 @35453 has 43 MA's), (63, 35570), (64, 35573), (65, 35576), (69, 35630), (73, 35687), (90, 35768),

Gene: Shayna\_51 Start: 33259, Stop: 33651, Start Num: 56

Candidate Starts for Shayna\_51:

(Start: 56 @33259 has 1 MA's), (69, 33421), (72, 33469), (73, 33478), (82, 33529),

Gene: Skylord\_49 Start: 32769, Stop: 33179, Start Num: 52

Candidate Starts for Skylord\_49:

(17, 32505), (18, 32511), (20, 32520), (40, 32679), (50, 32757), (Start: 52 @32769 has 1 MA's), (70, 32955), (73, 33006), (74, 33009), (76, 33021),

Gene: Stoor\_52 Start: 35803, Stop: 36198, Start Num: 54

Candidate Starts for Stoor\_52:

(Start: 42 @35740 has 5 MA's), (Start: 54 @35803 has 43 MA's), (63, 35920), (65, 35926), (69, 35980), (73, 36037), (75, 36046), (88, 36106),

Gene: Stromboli\_52 Start: 35674, Stop: 36069, Start Num: 54

Candidate Starts for Stromboli\_52:

(8, 35308), (9, 35311), (15, 35392), (21, 35452), (24, 35461), (Start: 42 @35611 has 5 MA's), (Start: 54 @35674 has 43 MA's), (63, 35791), (64, 35794), (65, 35797), (69, 35851), (73, 35908), (75, 35917), (88, 35977),

Gene: Swervy\_53 Start: 34610, Stop: 35008, Start Num: 54

Candidate Starts for Swervy\_53:

(Start: 42 @34550 has 5 MA's), (Start: 54 @34610 has 43 MA's), (63, 34727), (69, 34787), (73, 34844), (76, 34859), (85, 34901),

Gene: Teagster\_53 Start: 33895, Stop: 34287, Start Num: 56

Candidate Starts for Teagster\_53:

(44, 33814), (Start: 56 @33895 has 1 MA's), (69, 34057), (72, 34105), (73, 34114), (82, 34165),

Gene: TukTuk\_53 Start: 34615, Stop: 35073, Start Num: 42

Candidate Starts for TukTuk\_53:

(12, 34387), (25, 34471), (Start: 42 @34615 has 5 MA's), (Start: 54 @34675 has 43 MA's), (63, 34792), (65, 34798), (69, 34852), (73, 34909), (76, 34924), (85, 34966),

Gene: Vitas\_49 Start: 32801, Stop: 33211, Start Num: 48

Candidate Starts for Vitas\_49:

(Start: 48 @32801 has 7 MA's), (70, 32987), (73, 33038), (76, 33053),