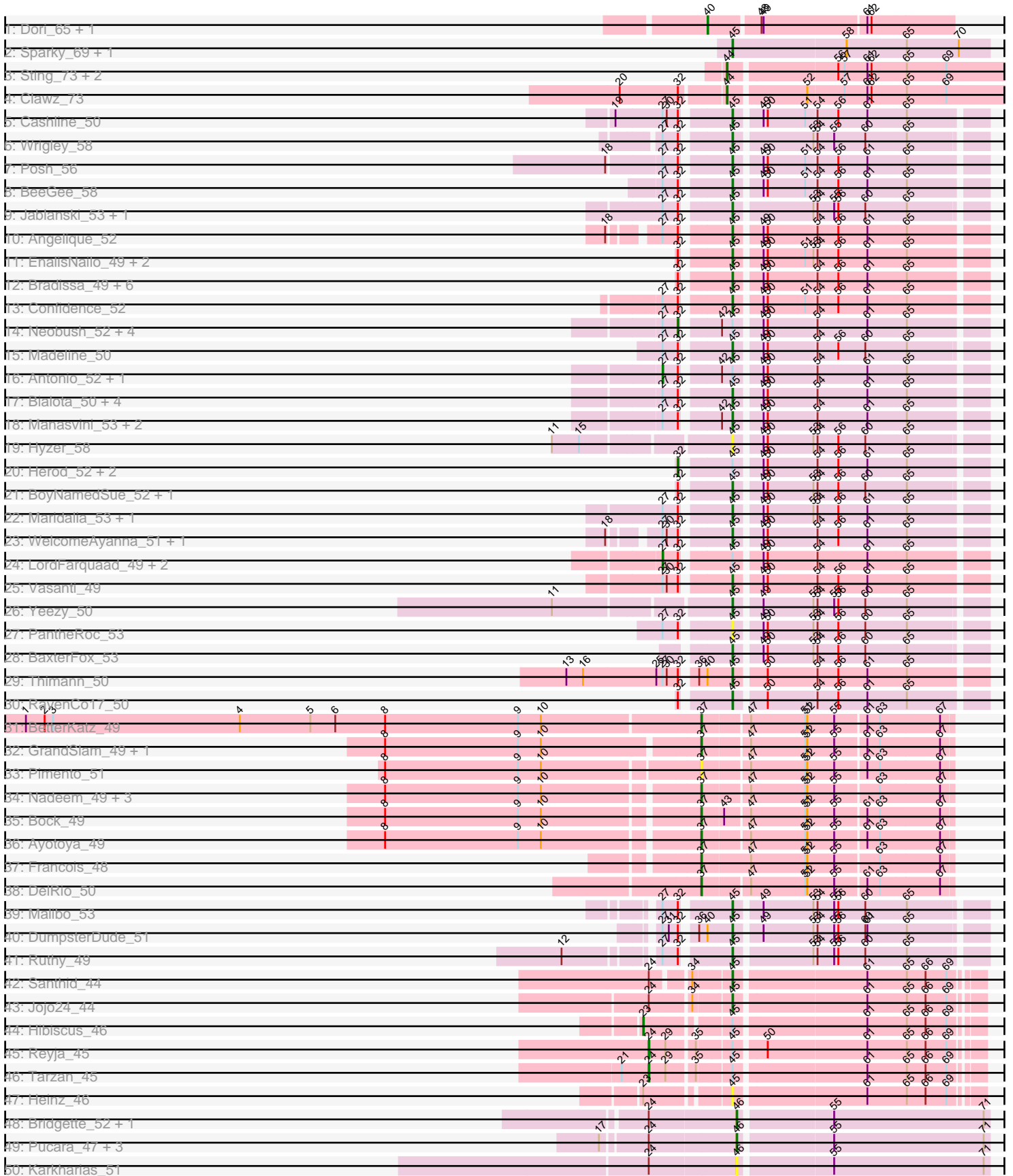
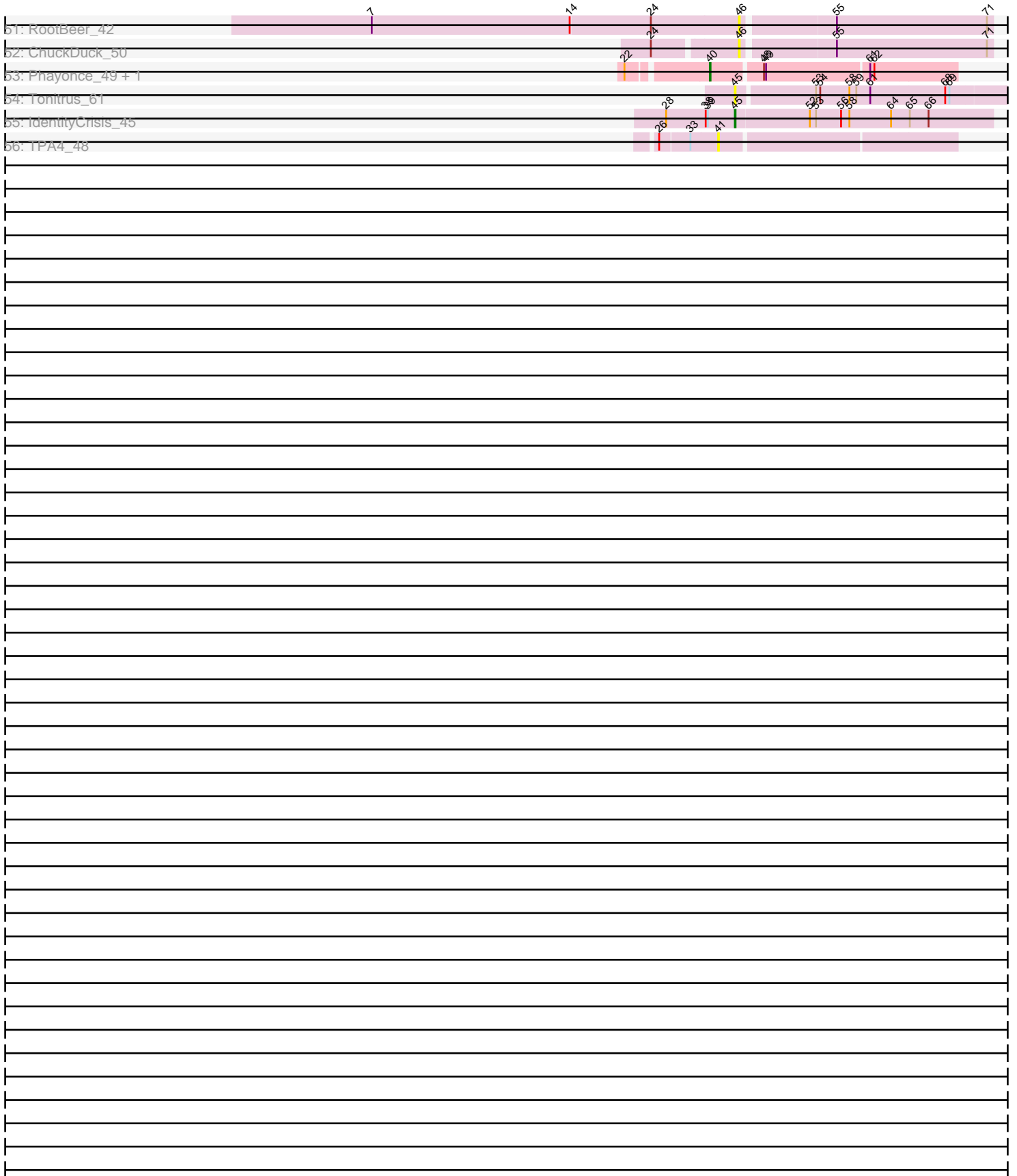


Pham 159115



Pham 159115



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 159115 Report

This analysis was run 04/28/24 on database version 559.

Pham number 159115 has 96 members, 15 are drafts.

Phages represented in each track:

- Track 1 : Dori\_65, Mask\_65
- Track 2 : Sparky\_69, Farewell\_70
- Track 3 : Sting\_73, DonTron\_73, Soos\_69
- Track 4 : Clawz\_73
- Track 5 : Cashline\_50
- Track 6 : Wrigley\_58
- Track 7 : Posh\_56
- Track 8 : BeeGee\_58
- Track 9 : Jablanski\_53, Pytheas\_53
- Track 10 : Angelique\_52
- Track 11 : EnalisNailo\_49, Pollux\_52, Floral\_50
- Track 12 : Bradissa\_49, Eviarto\_53, Marteenaa\_49, Lilas\_51, Hugley\_49, TimTam\_53, EMSquaredA\_50
- Track 13 : Confidence\_52
- Track 14 : Neobush\_52, Suscepit\_52, Trumpet\_52, Tayonia\_52, Zameen\_52
- Track 15 : Madeline\_50
- Track 16 : Antonio\_52, Kita\_53
- Track 17 : Bialota\_50, Pickett\_45, Yeet412\_47, Zirinka\_49, EdnaMode\_46
- Track 18 : Manasvini\_53, Eudoria\_52, Polly\_49
- Track 19 : Hyzer\_58
- Track 20 : Herod\_52, BatStarr\_52, Nymphadora\_53
- Track 21 : BoyNamedSue\_52, AlumE\_52
- Track 22 : Maridalia\_53, Bunnybear\_45
- Track 23 : WelcomeAyanna\_51, ThankyouJordi\_51
- Track 24 : LordFarquaad\_49, SoilAssassin\_47, Attis\_47
- Track 25 : Vasanti\_49
- Track 26 : Yeezy\_50
- Track 27 : PantheRoc\_53
- Track 28 : BaxterFox\_53
- Track 29 : Thimann\_50
- Track 30 : RavenCo17\_50
- Track 31 : BetterKatz\_49
- Track 32 : GrandSlam\_49, Chop\_49
- Track 33 : Pimento\_51
- Track 34 : Nadeem\_49, Mulch\_49, Parada\_49, Brylie\_49
- Track 35 : Bock\_49
- Track 36 : Ayotoya\_49

- Track 37 : Francois\_48
- Track 38 : DelRio\_50
- Track 39 : Malibo\_53
- Track 40 : DumpsterDude\_51
- Track 41 : Ruthy\_49
- Track 42 : Santhid\_44
- Track 43 : Jojo24\_44
- Track 44 : Hibiscus\_46
- Track 45 : Reyja\_45
- Track 46 : Tarzan\_45
- Track 47 : Heinz\_46
- Track 48 : Bridgette\_52, Constance\_50
- Track 49 : Pucara\_47, PeggyLeg03\_50, Judy\_53, GlobiWarming\_52
- Track 50 : Karkharias\_51
- Track 51 : RootBeer\_42
- Track 52 : ChuckDuck\_50
- Track 53 : Phayonce\_49, Mao1\_69
- Track 54 : Tonitrus\_61
- Track 55 : IdentityCrisis\_45
- Track 56 : TPA4\_48

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

The start number called the most often in the published annotations is 45, it was called in 44 of the 81 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AlumE\_52, Angelique\_52, BaxterFox\_53, BeeGee\_58, Bialota\_50, BoyNamedSue\_52, Bradissa\_49, Bunnybear\_45, Cashline\_50, Confidence\_52, DumpsterDude\_51, EMSquaredA\_50, EdnaMode\_46, EnalisNailo\_49, Eudoria\_52, Eviarto\_53, Farewell\_70, Floral\_50, Heinz\_46, Hugley\_49, Hyzer\_58, IdentityCrisis\_45, Jablanski\_53, Jojo24\_44, Lilas\_51, Madeline\_50, Malibo\_53, Manasvini\_53, Maridalia\_53, Marteena\_49, PantheRoc\_53, Pickett\_45, Pollux\_52, Polly\_49, Posh\_56, Pytheas\_53, RavenCo17\_50, Ruthy\_49, Santhid\_44, Sparky\_69, ThankyouJordi\_51, Thimann\_50, TimTam\_53, Tonitrus\_61, Vasanti\_49, WelcomeAyanna\_51, Wrigley\_58, Yeet412\_47, Yeezy\_50, Zirinka\_49,

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

- Antonio\_52, Attis\_47, BatStarr\_52, Herod\_52, Hibiscus\_46, Kita\_53, LordFarquaad\_49, Neobush\_52, Nymphadora\_53, Reyja\_45, SoilAssassin\_47, Susceptit\_52, Tarzan\_45, Tayonia\_52, Trumpet\_52, Zameen\_52,

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

- Ayotoya\_49, BetterKatz\_49, Bock\_49, Bridgette\_52, Brylie\_49, Chop\_49, ChuckDuck\_50, Clawz\_73, Constance\_50, DelRio\_50, DonTron\_73, Dori\_65, Francois\_48, GlobiWarming\_52, GrandSlam\_49, Judy\_53, Karkharias\_51, Mao1\_69, Mask\_65, Mulch\_49, Nadeem\_49, Parada\_49, PeggyLeg03\_50, Phayonce\_49, Pimento\_51, Pucara\_47, RootBeer\_42, Soos\_69, Sting\_73, TPA4\_48,

**Summary by start number:**

Start 23:

- Found in 2 of 96 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 1 of 81
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Hibiscus\_46 (DY),

Start 24:

- Found in 13 of 96 ( 13.5% ) of genes in pham
- Manual Annotations of this start: 2 of 81
- Called 15.4% of time when present
- Phage (with cluster) where this start called: Reyja\_45 (DY), Tarzan\_45 (DY),

Start 27:

- Found in 37 of 96 ( 38.5% ) of genes in pham
- Manual Annotations of this start: 5 of 81
- Called 13.5% of time when present
- Phage (with cluster) where this start called: Antonio\_52 (CZ1), Attis\_47 (CZ2), Kita\_53 (CZ1), LordFarquaad\_49 (CZ2), SoilAssassin\_47 (CZ2),

Start 32:

- Found in 54 of 96 ( 56.2% ) of genes in pham
- Manual Annotations of this start: 8 of 81
- Called 14.8% of time when present
- Phage (with cluster) where this start called: BatStarr\_52 (CZ1), Herod\_52 (CZ1), Neobush\_52 (CZ1), Nymphadora\_53 (CZ1), Suscepit\_52 (CZ1), Tayonia\_52 (CZ1), Trumpet\_52 (CZ1), Zameen\_52 (CZ1),

Start 37:

- Found in 12 of 96 ( 12.5% ) of genes in pham
- Manual Annotations of this start: 11 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ayotoya\_49 (DI), BetterKatz\_49 (DI), Bock\_49 (DI), Brylie\_49 (DI), Chop\_49 (DI), DelRio\_50 (DI), Francois\_48 (DI), GrandSlam\_49 (DI), Mulch\_49 (DI), Nadeem\_49 (DI), Parada\_49 (DI), Pimento\_51 (DI),

Start 40:

- Found in 6 of 96 ( 6.2% ) of genes in pham
- Manual Annotations of this start: 3 of 81
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Dori\_65 (AD), Mao1\_69 (AD), Mask\_65 (AD), Phayonce\_49 (P5),

Start 41:

- Found in 1 of 96 ( 1.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TPA4\_48 (singleton),

Start 44:

- Found in 4 of 96 ( 4.2% ) of genes in pham
- Manual Annotations of this start: 2 of 81

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Clawz\_73 (CP), DonTron\_73 (CP), Soos\_69 (CP), Sting\_73 (CP),

#### Start 45:

- Found in 66 of 96 ( 68.8% ) of genes in pham
- Manual Annotations of this start: 44 of 81
- Called 75.8% of time when present
- Phage (with cluster) where this start called: AlumE\_52 (CZ1), Angelique\_52 (CY1), BaxterFox\_53 (CZ3), BeeGee\_58 (CY), Bialota\_50 (CZ1), BoyNamedSue\_52 (CZ1), Bradissa\_49 (CY1), Bunnybear\_45 (CZ), Cashline\_50 (CY), Confidence\_52 (CY1), DumpsterDude\_51 (DW), EmsquaredA\_50 (CY1), EdnaMode\_46 (CZ2), EnalisNailo\_49 (CY1), Eudoria\_52 (CZ1), Eviarto\_53 (CZ1), Farewell\_70 (AF), Floral\_50 (CY1), Heinz\_46 (DY), Hugley\_49 (CZ1), Hyzer\_58 (CZ1), IdentityCrisis\_45 (singleton), Jablanski\_53 (CY), Jojo24\_44 (DY), Lilas\_51 (CY1), Madeline\_50 (CZ1), Malibo\_53 (DW), Manasvini\_53 (CZ1), Maridalia\_53 (CZ1), Marteena\_49 (CY1), PantheRoc\_53 (CZ3), Pickett\_45 (CZ2), Pollux\_52 (CY1), Polly\_49 (CZ1), Posh\_56 (CY), Pytheas\_53 (CY), RavenCo17\_50 (CZ8), Ruthy\_49 (DW), Santhid\_44 (DY), Sparky\_69 (AF), ThankyouJordi\_51 (CZ1), Thimann\_50 (CZ4), TimTam\_53 (CZ1), Tonitrus\_61 (singleton), Vasanti\_49 (CZ2), WelcomeAyanna\_51 (CZ1), Wrigley\_58 (CY), Yeet412\_47 (CZ2), Yeezy\_50 (CZ3), Zirinka\_49 (CZ1),

#### Start 46:

- Found in 9 of 96 ( 9.4% ) of genes in pham
- Manual Annotations of this start: 5 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bridgette\_52 (FA), ChuckDuck\_50 (FA), Constance\_50 (FA), GlobiWarming\_52 (FA), Judy\_53 (FA), Karkharias\_51 (FA), PeggyLeg03\_50 (FA), Pucara\_47 (FA), RootBeer\_42 (FA),

### Summary by clusters:

There are 17 clusters represented in this pham: CZ8, AD, DI, CZ2, CZ3, CZ1, CY1, CZ4, FA, CY, AF, DY, CZ, DW, singleton, CP, P5,

Info for manual annotations of cluster AD:

- Start number 40 was manually annotated 2 times for cluster AD.

Info for manual annotations of cluster AF:

- Start number 45 was manually annotated 2 times for cluster AF.

Info for manual annotations of cluster CP:

- Start number 44 was manually annotated 2 times for cluster CP.

Info for manual annotations of cluster CY:

- Start number 45 was manually annotated 6 times for cluster CY.

Info for manual annotations of cluster CY1:

- Start number 45 was manually annotated 9 times for cluster CY1.

Info for manual annotations of cluster CZ:

- Start number 45 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ1:

- Start number 27 was manually annotated 2 times for cluster CZ1.
- Start number 32 was manually annotated 8 times for cluster CZ1.
- Start number 45 was manually annotated 13 times for cluster CZ1.

Info for manual annotations of cluster CZ2:

- Start number 27 was manually annotated 3 times for cluster CZ2.
- Start number 45 was manually annotated 3 times for cluster CZ2.

Info for manual annotations of cluster CZ3:

- Start number 45 was manually annotated 2 times for cluster CZ3.

Info for manual annotations of cluster CZ4:

- Start number 45 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster CZ8:

- Start number 45 was manually annotated 1 time for cluster CZ8.

Info for manual annotations of cluster DI:

- Start number 37 was manually annotated 11 times for cluster DI.

Info for manual annotations of cluster DW:

- Start number 45 was manually annotated 3 times for cluster DW.

Info for manual annotations of cluster DY:

- Start number 23 was manually annotated 1 time for cluster DY.
- Start number 24 was manually annotated 2 times for cluster DY.
- Start number 45 was manually annotated 2 times for cluster DY.

Info for manual annotations of cluster FA:

- Start number 46 was manually annotated 5 times for cluster FA.

Info for manual annotations of cluster P5:

- Start number 40 was manually annotated 1 time for cluster P5.

### ***Gene Information:***

Gene: AlumE\_52 Start: 37713, Stop: 38051, Start Num: 45

Candidate Starts for AlumE\_52:

(Start: 32 @37653 has 8 MA's), (Start: 45 @37713 has 44 MA's), (49, 37746), (50, 37752), (53, 37818), (54, 37821), (56, 37851), (60, 37890), (65, 37947),

Gene: Angelique\_52 Start: 38928, Stop: 39269, Start Num: 45

Candidate Starts for Angelique\_52:

(18, 38796), (Start: 27 @38847 has 5 MA's), (Start: 32 @38868 has 8 MA's), (Start: 45 @38928 has 44 MA's), (49, 38961), (50, 38967), (54, 39036), (56, 39066), (61, 39108), (65, 39162),

Gene: Antonio\_52 Start: 36902, Stop: 37324, Start Num: 27

Candidate Starts for Antonio\_52:

(Start: 27 @36902 has 5 MA's), (Start: 32 @36923 has 8 MA's), (42, 36968), (Start: 45 @36983 has 44 MA's), (49, 37016), (50, 37022), (54, 37091), (61, 37163), (65, 37217),

Gene: Attis\_47 Start: 34035, Stop: 34457, Start Num: 27

Candidate Starts for Attis\_47:

(Start: 27 @34035 has 5 MA's), (Start: 32 @34056 has 8 MA's), (Start: 45 @34116 has 44 MA's), (49, 34149), (50, 34155), (54, 34224), (61, 34296), (65, 34350),

Gene: Ayotoya\_49 Start: 36009, Stop: 36353, Start Num: 37

Candidate Starts for Ayotoya\_49:

(8, 35574), (9, 35766), (10, 35799), (Start: 37 @36009 has 11 MA's), (47, 36072), (51, 36150), (52, 36153), (55, 36192), (61, 36234), (63, 36252), (67, 36336),

Gene: BatStarr\_52 Start: 38896, Stop: 39297, Start Num: 32

Candidate Starts for BatStarr\_52:

(Start: 32 @38896 has 8 MA's), (Start: 45 @38956 has 44 MA's), (49, 38989), (50, 38995), (54, 39064), (56, 39094), (61, 39136), (65, 39190),

Gene: BaxterFox\_53 Start: 38788, Stop: 39126, Start Num: 45

Candidate Starts for BaxterFox\_53:

(Start: 45 @38788 has 44 MA's), (49, 38821), (50, 38827), (53, 38893), (54, 38896), (56, 38926), (60, 38965), (65, 39022),

Gene: BeeGee\_58 Start: 38868, Stop: 39209, Start Num: 45

Candidate Starts for BeeGee\_58:

(Start: 27 @38787 has 5 MA's), (Start: 32 @38808 has 8 MA's), (Start: 45 @38868 has 44 MA's), (49, 38901), (50, 38907), (51, 38961), (54, 38976), (56, 39006), (61, 39048), (65, 39102),

Gene: BetterKatz\_49 Start: 35495, Stop: 35839, Start Num: 37

Candidate Starts for BetterKatz\_49:

(1, 34529), (2, 34556), (3, 34568), (4, 34838), (5, 34940), (6, 34976), (8, 35048), (9, 35240), (10, 35273), (Start: 37 @35495 has 11 MA's), (47, 35558), (51, 35636), (52, 35639), (55, 35678), (61, 35720), (63, 35738), (67, 35822),

Gene: Bialota\_50 Start: 37615, Stop: 37956, Start Num: 45

Candidate Starts for Bialota\_50:

(Start: 27 @37534 has 5 MA's), (Start: 32 @37555 has 8 MA's), (Start: 45 @37615 has 44 MA's), (49, 37648), (50, 37654), (54, 37723), (61, 37795), (65, 37849),

Gene: Bock\_49 Start: 35232, Stop: 35576, Start Num: 37

Candidate Starts for Bock\_49:

(8, 34797), (9, 34989), (10, 35022), (Start: 37 @35232 has 11 MA's), (43, 35262), (47, 35295), (51, 35373), (52, 35376), (55, 35415), (61, 35457), (63, 35475), (67, 35559),

Gene: BoyNamedSue\_52 Start: 37713, Stop: 38051, Start Num: 45

Candidate Starts for BoyNamedSue\_52:

(Start: 32 @37653 has 8 MA's), (Start: 45 @37713 has 44 MA's), (49, 37746), (50, 37752), (53, 37818), (54, 37821), (56, 37851), (60, 37890), (65, 37947),

Gene: Bradissa\_49 Start: 38078, Stop: 38419, Start Num: 45

Candidate Starts for Bradissa\_49:

(Start: 32 @38018 has 8 MA's), (Start: 45 @38078 has 44 MA's), (49, 38111), (50, 38117), (54, 38186), (56, 38216), (61, 38258), (65, 38312),

Gene: Bridgette\_52 Start: 33338, Stop: 33688, Start Num: 46



Candidate Starts for Bridgette\_52:

(Start: 24 @33215 has 2 MA's), (Start: 46 @33338 has 5 MA's), (55, 33464), (71, 33680),

Gene: Brylie\_49 Start: 35279, Stop: 35623, Start Num: 37

Candidate Starts for Brylie\_49:

(8, 34844), (9, 35036), (10, 35069), (Start: 37 @35279 has 11 MA's), (47, 35342), (51, 35420), (52, 35423), (55, 35462), (63, 35522), (67, 35606),

Gene: Bunnybear\_45 Start: 35410, Stop: 35751, Start Num: 45

Candidate Starts for Bunnybear\_45:

(Start: 27 @35329 has 5 MA's), (Start: 32 @35350 has 8 MA's), (Start: 45 @35410 has 44 MA's), (49, 35443), (50, 35449), (53, 35515), (54, 35518), (56, 35548), (61, 35590), (65, 35644),

Gene: Cashline\_50 Start: 38219, Stop: 38560, Start Num: 45

Candidate Starts for Cashline\_50:

(19, 38072), (Start: 27 @38138 has 5 MA's), (30, 38144), (Start: 32 @38159 has 8 MA's), (Start: 45 @38219 has 44 MA's), (49, 38252), (50, 38258), (51, 38312), (54, 38327), (56, 38357), (61, 38399), (65, 38453),

Gene: Chop\_49 Start: 35762, Stop: 36106, Start Num: 37

Candidate Starts for Chop\_49:

(8, 35321), (9, 35513), (10, 35546), (Start: 37 @35762 has 11 MA's), (47, 35825), (51, 35903), (52, 35906), (55, 35945), (61, 35987), (63, 36005), (67, 36089),

Gene: ChuckDuck\_50 Start: 32348, Stop: 32698, Start Num: 46

Candidate Starts for ChuckDuck\_50:

(Start: 24 @32234 has 2 MA's), (Start: 46 @32348 has 5 MA's), (55, 32474), (71, 32690),

Gene: Clawz\_73 Start: 48376, Stop: 48753, Start Num: 44

Candidate Starts for Clawz\_73:

(20, 48235), (Start: 32 @48319 has 8 MA's), (Start: 44 @48376 has 2 MA's), (52, 48478), (57, 48529), (61, 48562), (62, 48568), (65, 48616), (69, 48673),

Gene: Confidence\_52 Start: 36375, Stop: 36716, Start Num: 45

Candidate Starts for Confidence\_52:

(Start: 27 @36294 has 5 MA's), (Start: 32 @36315 has 8 MA's), (Start: 45 @36375 has 44 MA's), (49, 36408), (50, 36414), (51, 36468), (54, 36483), (56, 36513), (61, 36555), (65, 36609),

Gene: Constance\_50 Start: 32973, Stop: 33323, Start Num: 46

Candidate Starts for Constance\_50:

(Start: 24 @32850 has 2 MA's), (Start: 46 @32973 has 5 MA's), (55, 33099), (71, 33315),

Gene: DelRio\_50 Start: 36473, Stop: 36817, Start Num: 37

Candidate Starts for DelRio\_50:

(Start: 37 @36473 has 11 MA's), (47, 36536), (51, 36614), (52, 36617), (55, 36656), (61, 36698), (63, 36716), (67, 36800),

Gene: DonTron\_73 Start: 48616, Stop: 48993, Start Num: 44

Candidate Starts for DonTron\_73:

(Start: 44 @48616 has 2 MA's), (56, 48760), (57, 48769), (61, 48802), (62, 48808), (65, 48856), (69, 48913),

Gene: Dori\_65 Start: 51304, Stop: 51642, Start Num: 40

Candidate Starts for Dori\_65:

(Start: 40 @51304 has 3 MA's), (48, 51373), (49, 51376), (61, 51520), (62, 51526),

Gene: DumpsterDude\_51 Start: 40243, Stop: 40581, Start Num: 45

Candidate Starts for DumpsterDude\_51:

(Start: 27 @40162 has 5 MA's), (31, 40171), (Start: 32 @40183 has 8 MA's), (36, 40198), (Start: 40 @40207 has 3 MA's), (Start: 45 @40243 has 44 MA's), (49, 40276), (53, 40348), (54, 40351), (55, 40375), (56, 40381), (60, 40420), (61, 40423), (65, 40477),

Gene: EMSquaredA\_50 Start: 36879, Stop: 37220, Start Num: 45

Candidate Starts for EMSquaredA\_50:

(Start: 32 @36819 has 8 MA's), (Start: 45 @36879 has 44 MA's), (49, 36912), (50, 36918), (54, 36987), (56, 37017), (61, 37059), (65, 37113),

Gene: EdnaMode\_46 Start: 32804, Stop: 33145, Start Num: 45

Candidate Starts for EdnaMode\_46:

(Start: 27 @32723 has 5 MA's), (Start: 32 @32744 has 8 MA's), (Start: 45 @32804 has 44 MA's), (49, 32837), (50, 32843), (54, 32912), (61, 32984), (65, 33038),

Gene: EnalisNailo\_49 Start: 37591, Stop: 37932, Start Num: 45

Candidate Starts for EnalisNailo\_49:

(Start: 32 @37531 has 8 MA's), (Start: 45 @37591 has 44 MA's), (49, 37624), (50, 37630), (51, 37684), (53, 37696), (54, 37699), (56, 37729), (61, 37771), (65, 37825),

Gene: Eudoria\_52 Start: 36983, Stop: 37324, Start Num: 45

Candidate Starts for Eudoria\_52:

(Start: 27 @36902 has 5 MA's), (Start: 32 @36923 has 8 MA's), (42, 36968), (Start: 45 @36983 has 44 MA's), (49, 37016), (50, 37022), (54, 37091), (61, 37163), (65, 37217),

Gene: Eviarto\_53 Start: 38931, Stop: 39272, Start Num: 45

Candidate Starts for Eviarto\_53:

(Start: 32 @38871 has 8 MA's), (Start: 45 @38931 has 44 MA's), (49, 38964), (50, 38970), (54, 39039), (56, 39069), (61, 39111), (65, 39165),

Gene: Farewell\_70 Start: 47627, Stop: 47992, Start Num: 45

Candidate Starts for Farewell\_70:

(Start: 45 @47627 has 44 MA's), (58, 47789), (65, 47873), (70, 47948),

Gene: Floral\_50 Start: 38339, Stop: 38680, Start Num: 45

Candidate Starts for Floral\_50:

(Start: 32 @38279 has 8 MA's), (Start: 45 @38339 has 44 MA's), (49, 38372), (50, 38378), (51, 38432), (53, 38444), (54, 38447), (56, 38477), (61, 38519), (65, 38573),

Gene: Francois\_48 Start: 35275, Stop: 35625, Start Num: 37

Candidate Starts for Francois\_48:

(Start: 37 @35275 has 11 MA's), (47, 35344), (51, 35422), (52, 35425), (55, 35464), (63, 35524), (67, 35608),

Gene: GlobiWarming\_52 Start: 32737, Stop: 33087, Start Num: 46

Candidate Starts for GlobiWarming\_52:

(17, 32554), (Start: 24 @32614 has 2 MA's), (Start: 46 @32737 has 5 MA's), (55, 32863), (71, 33079),

Gene: GrandSlam\_49 Start: 35762, Stop: 36106, Start Num: 37

Candidate Starts for GrandSlam\_49:

(8, 35321), (9, 35513), (10, 35546), (Start: 37 @35762 has 11 MA's), (47, 35825), (51, 35903), (52, 35906), (55, 35945), (61, 35987), (63, 36005), (67, 36089),

Gene: Heinz\_46 Start: 29468, Stop: 29800, Start Num: 45

Candidate Starts for Heinz\_46:

(Start: 23 @29363 has 1 MA's), (Start: 45 @29468 has 44 MA's), (61, 29648), (65, 29702), (66, 29729), (69, 29759),

Gene: Herod\_52 Start: 38896, Stop: 39297, Start Num: 32

Candidate Starts for Herod\_52:

(Start: 32 @38896 has 8 MA's), (Start: 45 @38956 has 44 MA's), (49, 38989), (50, 38995), (54, 39064), (56, 39094), (61, 39136), (65, 39190),

Gene: Hibiscus\_46 Start: 29312, Stop: 29749, Start Num: 23

Candidate Starts for Hibiscus\_46:

(Start: 23 @29312 has 1 MA's), (Start: 45 @29417 has 44 MA's), (61, 29597), (65, 29651), (66, 29678), (69, 29708),

Gene: Hugley\_49 Start: 38955, Stop: 39296, Start Num: 45

Candidate Starts for Hugley\_49:

(Start: 32 @38895 has 8 MA's), (Start: 45 @38955 has 44 MA's), (49, 38988), (50, 38994), (54, 39063), (56, 39093), (61, 39135), (65, 39189),

Gene: Hyzer\_58 Start: 40287, Stop: 40625, Start Num: 45

Candidate Starts for Hyzer\_58:

(11, 40050), (15, 40089), (Start: 45 @40287 has 44 MA's), (49, 40320), (50, 40326), (53, 40392), (54, 40395), (56, 40425), (60, 40464), (65, 40521),

Gene: IdentityCrisis\_45 Start: 29783, Stop: 30145, Start Num: 45

Candidate Starts for IdentityCrisis\_45:

(28, 29684), (38, 29741), (39, 29744), (Start: 45 @29783 has 44 MA's), (52, 29888), (53, 29897), (56, 29930), (58, 29942), (64, 30002), (65, 30026), (66, 30053),

Gene: Jablanski\_53 Start: 39971, Stop: 40309, Start Num: 45

Candidate Starts for Jablanski\_53:

(Start: 27 @39890 has 5 MA's), (Start: 32 @39911 has 8 MA's), (Start: 45 @39971 has 44 MA's), (53, 40076), (54, 40079), (55, 40103), (56, 40109), (60, 40148), (65, 40205),

Gene: Jojo24\_44 Start: 30101, Stop: 30433, Start Num: 45

Candidate Starts for Jojo24\_44:

(Start: 24 @29999 has 2 MA's), (34, 30053), (Start: 45 @30101 has 44 MA's), (61, 30281), (65, 30335), (66, 30362), (69, 30392),

Gene: Judy\_53 Start: 33805, Stop: 34155, Start Num: 46

Candidate Starts for Judy\_53:

(17, 33622), (Start: 24 @33682 has 2 MA's), (Start: 46 @33805 has 5 MA's), (55, 33931), (71, 34147),

Gene: Karkharias\_51 Start: 32879, Stop: 33229, Start Num: 46

Candidate Starts for Karkharias\_51:

(Start: 24 @32756 has 2 MA's), (Start: 46 @32879 has 5 MA's), (55, 33005), (71, 33221),

Gene: Kita\_53 Start: 36911, Stop: 37333, Start Num: 27

Candidate Starts for Kita\_53:

(Start: 27 @36911 has 5 MA's), (Start: 32 @36932 has 8 MA's), (42, 36977), (Start: 45 @36992 has 44 MA's), (49, 37025), (50, 37031), (54, 37100), (61, 37172), (65, 37226),

Gene: Lilas\_51 Start: 39323, Stop: 39664, Start Num: 45

Candidate Starts for Lilas\_51:

(Start: 32 @39263 has 8 MA's), (Start: 45 @39323 has 44 MA's), (49, 39356), (50, 39362), (54, 39431), (56, 39461), (61, 39503), (65, 39557),

Gene: LordFarquaad\_49 Start: 34016, Stop: 34438, Start Num: 27

Candidate Starts for LordFarquaad\_49:

(Start: 27 @34016 has 5 MA's), (Start: 32 @34037 has 8 MA's), (Start: 45 @34097 has 44 MA's), (49, 34130), (50, 34136), (54, 34205), (61, 34277), (65, 34331),

Gene: Madeline\_50 Start: 37918, Stop: 38256, Start Num: 45

Candidate Starts for Madeline\_50:

(Start: 27 @37837 has 5 MA's), (Start: 32 @37858 has 8 MA's), (Start: 45 @37918 has 44 MA's), (49, 37951), (50, 37957), (54, 38026), (56, 38056), (60, 38095), (65, 38152),

Gene: Malibo\_53 Start: 37659, Stop: 37997, Start Num: 45

Candidate Starts for Malibo\_53:

(Start: 27 @37578 has 5 MA's), (Start: 32 @37599 has 8 MA's), (Start: 45 @37659 has 44 MA's), (49, 37692), (53, 37764), (54, 37767), (55, 37791), (56, 37797), (60, 37836), (65, 37893),

Gene: Manasvini\_53 Start: 37007, Stop: 37348, Start Num: 45

Candidate Starts for Manasvini\_53:

(Start: 27 @36926 has 5 MA's), (Start: 32 @36947 has 8 MA's), (42, 36992), (Start: 45 @37007 has 44 MA's), (49, 37040), (50, 37046), (54, 37115), (61, 37187), (65, 37241),

Gene: Mao1\_69 Start: 49765, Stop: 50103, Start Num: 40

Candidate Starts for Mao1\_69:

(22, 49660), (Start: 40 @49765 has 3 MA's), (48, 49834), (49, 49837), (61, 49981), (62, 49987),

Gene: Maridalia\_53 Start: 37156, Stop: 37497, Start Num: 45

Candidate Starts for Maridalia\_53:

(Start: 27 @37075 has 5 MA's), (Start: 32 @37096 has 8 MA's), (Start: 45 @37156 has 44 MA's), (49, 37189), (50, 37195), (53, 37261), (54, 37264), (56, 37294), (61, 37336), (65, 37390),

Gene: Marteena\_49 Start: 36879, Stop: 37220, Start Num: 45

Candidate Starts for Marteena\_49:

(Start: 32 @36819 has 8 MA's), (Start: 45 @36879 has 44 MA's), (49, 36912), (50, 36918), (54, 36987), (56, 37017), (61, 37059), (65, 37113),

Gene: Mask\_65 Start: 52047, Stop: 52385, Start Num: 40

Candidate Starts for Mask\_65:

(Start: 40 @52047 has 3 MA's), (48, 52116), (49, 52119), (61, 52263), (62, 52269),

Gene: Mulch\_49 Start: 35279, Stop: 35623, Start Num: 37

Candidate Starts for Mulch\_49:

(8, 34844), (9, 35036), (10, 35069), (Start: 37 @35279 has 11 MA's), (47, 35342), (51, 35420), (52, 35423), (55, 35462), (63, 35522), (67, 35606),

Gene: Nadeem\_49 Start: 35279, Stop: 35623, Start Num: 37

Candidate Starts for Nadeem\_49:

(8, 34844), (9, 35036), (10, 35069), (Start: 37 @35279 has 11 MA's), (47, 35342), (51, 35420), (52, 35423), (55, 35462), (63, 35522), (67, 35606),

Gene: Neobush\_52 Start: 36917, Stop: 37318, Start Num: 32

Candidate Starts for Neobush\_52:

(Start: 27 @36896 has 5 MA's), (Start: 32 @36917 has 8 MA's), (42, 36962), (Start: 45 @36977 has 44 MA's), (49, 37010), (50, 37016), (54, 37085), (61, 37157), (65, 37211),

Gene: Nymphadora\_53 Start: 38895, Stop: 39296, Start Num: 32

Candidate Starts for Nymphadora\_53:

(Start: 32 @38895 has 8 MA's), (Start: 45 @38955 has 44 MA's), (49, 38988), (50, 38994), (54, 39063), (56, 39093), (61, 39135), (65, 39189),

Gene: PantheRoc\_53 Start: 37764, Stop: 38102, Start Num: 45

Candidate Starts for PantheRoc\_53:

(Start: 27 @37683 has 5 MA's), (Start: 32 @37704 has 8 MA's), (Start: 45 @37764 has 44 MA's), (49, 37797), (50, 37803), (53, 37869), (54, 37872), (56, 37902), (60, 37941), (65, 37998),

Gene: Parada\_49 Start: 35279, Stop: 35623, Start Num: 37

Candidate Starts for Parada\_49:

(8, 34844), (9, 35036), (10, 35069), (Start: 37 @35279 has 11 MA's), (47, 35342), (51, 35420), (52, 35423), (55, 35462), (63, 35522), (67, 35606),

Gene: PeggyLeg03\_50 Start: 32983, Stop: 33333, Start Num: 46

Candidate Starts for PeggyLeg03\_50:

(17, 32800), (Start: 24 @32860 has 2 MA's), (Start: 46 @32983 has 5 MA's), (55, 33109), (71, 33325),

Gene: Phayonce\_49 Start: 35927, Stop: 36265, Start Num: 40

Candidate Starts for Phayonce\_49:

(22, 35822), (Start: 40 @35927 has 3 MA's), (48, 35996), (49, 35999), (61, 36143), (62, 36149),

Gene: Pickett\_45 Start: 31280, Stop: 31621, Start Num: 45

Candidate Starts for Pickett\_45:

(Start: 27 @31199 has 5 MA's), (Start: 32 @31220 has 8 MA's), (Start: 45 @31280 has 44 MA's), (49, 31313), (50, 31319), (54, 31388), (61, 31460), (65, 31514),

Gene: Pimento\_51 Start: 34876, Stop: 35220, Start Num: 37

Candidate Starts for Pimento\_51:

(8, 34435), (9, 34627), (10, 34660), (Start: 37 @34876 has 11 MA's), (47, 34939), (51, 35017), (52, 35020), (55, 35059), (61, 35101), (63, 35119), (67, 35203),

Gene: Pollux\_52 Start: 38339, Stop: 38680, Start Num: 45

Candidate Starts for Pollux\_52:

(Start: 32 @38279 has 8 MA's), (Start: 45 @38339 has 44 MA's), (49, 38372), (50, 38378), (51, 38432), (53, 38444), (54, 38447), (56, 38477), (61, 38519), (65, 38573),

Gene: Polly\_49 Start: 36426, Stop: 36767, Start Num: 45

Candidate Starts for Polly\_49:

(Start: 27 @36345 has 5 MA's), (Start: 32 @36366 has 8 MA's), (42, 36411), (Start: 45 @36426 has 44 MA's), (49, 36459), (50, 36465), (54, 36534), (61, 36606), (65, 36660),

Gene: Posh\_56 Start: 39701, Stop: 40042, Start Num: 45

Candidate Starts for Posh\_56:

(18, 39548), (Start: 27 @39620 has 5 MA's), (Start: 32 @39641 has 8 MA's), (Start: 45 @39701 has 44 MA's), (49, 39734), (50, 39740), (51, 39794), (54, 39809), (56, 39839), (61, 39881), (65, 39935),

Gene: Pucara\_47 Start: 32588, Stop: 32938, Start Num: 46

Candidate Starts for Pucara\_47:

(17, 32405), (Start: 24 @32465 has 2 MA's), (Start: 46 @32588 has 5 MA's), (55, 32714), (71, 32930),

Gene: Pytheas\_53 Start: 39970, Stop: 40308, Start Num: 45

Candidate Starts for Pytheas\_53:

(Start: 27 @39889 has 5 MA's), (Start: 32 @39910 has 8 MA's), (Start: 45 @39970 has 44 MA's), (53, 40075), (54, 40078), (55, 40102), (56, 40108), (60, 40147), (65, 40204),

Gene: RavenCo17\_50 Start: 37160, Stop: 37501, Start Num: 45

Candidate Starts for RavenCo17\_50:

(Start: 32 @37100 has 8 MA's), (Start: 45 @37160 has 44 MA's), (50, 37199), (54, 37268), (56, 37298), (61, 37340), (65, 37394),

Gene: Reyja\_45 Start: 30436, Stop: 30870, Start Num: 24

Candidate Starts for Reyja\_45:

(Start: 24 @30436 has 2 MA's), (29, 30460), (35, 30496), (Start: 45 @30538 has 44 MA's), (50, 30577), (61, 30718), (65, 30772), (66, 30799), (69, 30829),

Gene: RootBeer\_42 Start: 28714, Stop: 29064, Start Num: 46

Candidate Starts for RootBeer\_42:

(7, 28189), (14, 28474), (Start: 24 @28588 has 2 MA's), (Start: 46 @28714 has 5 MA's), (55, 28840), (71, 29056),

Gene: Ruthy\_49 Start: 37599, Stop: 37937, Start Num: 45

Candidate Starts for Ruthy\_49:

(12, 37404), (Start: 27 @37518 has 5 MA's), (Start: 32 @37539 has 8 MA's), (Start: 45 @37599 has 44 MA's), (53, 37704), (54, 37707), (55, 37731), (56, 37737), (60, 37776), (65, 37833),

Gene: Santhid\_44 Start: 28817, Stop: 29149, Start Num: 45

Candidate Starts for Santhid\_44:

(Start: 24 @28724 has 2 MA's), (34, 28769), (Start: 45 @28817 has 44 MA's), (61, 28997), (65, 29051), (66, 29078), (69, 29108),

Gene: SoilAssassin\_47 Start: 34034, Stop: 34456, Start Num: 27

Candidate Starts for SoilAssassin\_47:

(Start: 27 @34034 has 5 MA's), (Start: 32 @34055 has 8 MA's), (Start: 45 @34115 has 44 MA's), (49, 34148), (50, 34154), (54, 34223), (61, 34295), (65, 34349),

Gene: Soos\_69 Start: 47783, Stop: 48160, Start Num: 44

Candidate Starts for Soos\_69:

(Start: 44 @47783 has 2 MA's), (56, 47927), (57, 47936), (61, 47969), (62, 47975), (65, 48023), (69, 48080),

Gene: Sparky\_69 Start: 49221, Stop: 49586, Start Num: 45

Candidate Starts for Sparky\_69:

(Start: 45 @49221 has 44 MA's), (58, 49383), (65, 49467), (70, 49542),

Gene: Sting\_73 Start: 48222, Stop: 48599, Start Num: 44

Candidate Starts for Sting\_73:

(Start: 44 @48222 has 2 MA's), (56, 48366), (57, 48375), (61, 48408), (62, 48414), (65, 48462), (69, 48519),

Gene: Suscepit\_52 Start: 36924, Stop: 37325, Start Num: 32

Candidate Starts for Suscepit\_52:

(Start: 27 @36903 has 5 MA's), (Start: 32 @36924 has 8 MA's), (42, 36969), (Start: 45 @36984 has 44 MA's), (49, 37017), (50, 37023), (54, 37092), (61, 37164), (65, 37218),

Gene: TPA4\_48 Start: 36926, Stop: 37252, Start Num: 41

Candidate Starts for TPA4\_48:

(26, 36851), (33, 36887), (41, 36926),

Gene: Tarzan\_45 Start: 29828, Stop: 30262, Start Num: 24

Candidate Starts for Tarzan\_45:

(21, 29789), (Start: 24 @29828 has 2 MA's), (29, 29852), (35, 29888), (Start: 45 @29930 has 44 MA's), (61, 30110), (65, 30164), (66, 30191), (69, 30221),

Gene: Tayonia\_52 Start: 36923, Stop: 37324, Start Num: 32

Candidate Starts for Tayonia\_52:

(Start: 27 @36902 has 5 MA's), (Start: 32 @36923 has 8 MA's), (42, 36968), (Start: 45 @36983 has 44 MA's), (49, 37016), (50, 37022), (54, 37091), (61, 37163), (65, 37217),

Gene: ThankyouJordi\_51 Start: 38831, Stop: 39172, Start Num: 45

Candidate Starts for ThankyouJordi\_51:

(18, 38699), (Start: 27 @38750 has 5 MA's), (30, 38756), (Start: 32 @38771 has 8 MA's), (Start: 45 @38831 has 44 MA's), (49, 38864), (50, 38870), (54, 38939), (56, 38969), (61, 39011), (65, 39065),

Gene: Thimann\_50 Start: 35140, Stop: 35481, Start Num: 45

Candidate Starts for Thimann\_50:

(13, 34921), (16, 34945), (25, 35050), (Start: 27 @35059 has 5 MA's), (30, 35065), (Start: 32 @35080 has 8 MA's), (36, 35095), (Start: 40 @35104 has 3 MA's), (Start: 45 @35140 has 44 MA's), (50, 35179), (54, 35248), (56, 35278), (61, 35320), (65, 35374),

Gene: TimTam\_53 Start: 38955, Stop: 39296, Start Num: 45

Candidate Starts for TimTam\_53:

(Start: 32 @38895 has 8 MA's), (Start: 45 @38955 has 44 MA's), (49, 38988), (50, 38994), (54, 39063), (56, 39093), (61, 39135), (65, 39189),

Gene: Tonitrus\_61 Start: 44575, Stop: 44943, Start Num: 45

Candidate Starts for Tonitrus\_61:

(Start: 45 @44575 has 44 MA's), (53, 44683), (54, 44686), (58, 44728), (59, 44737), (61, 44755), (68, 44860), (69, 44866),

Gene: Trumpet\_52 Start: 36924, Stop: 37325, Start Num: 32

Candidate Starts for Trumpet\_52:

(Start: 27 @36903 has 5 MA's), (Start: 32 @36924 has 8 MA's), (42, 36969), (Start: 45 @36984 has 44 MA's), (49, 37017), (50, 37023), (54, 37092), (61, 37164), (65, 37218),

Gene: Vasanti\_49 Start: 33529, Stop: 33870, Start Num: 45

Candidate Starts for Vasanti\_49:

(Start: 27 @33448 has 5 MA's), (30, 33454), (Start: 32 @33469 has 8 MA's), (Start: 45 @33529 has 44 MA's), (49, 33562), (50, 33568), (54, 33637), (56, 33667), (61, 33709), (65, 33763),

Gene: WelcomeAyanna\_51 Start: 38978, Stop: 39319, Start Num: 45

Candidate Starts for WelcomeAyanna\_51:

(18, 38846), (Start: 27 @38897 has 5 MA's), (30, 38903), (Start: 32 @38918 has 8 MA's), (Start: 45 @38978 has 44 MA's), (49, 39011), (50, 39017), (54, 39086), (56, 39116), (61, 39158), (65, 39212),

Gene: Wrigley\_58 Start: 39293, Stop: 39631, Start Num: 45

Candidate Starts for Wrigley\_58:

(Start: 27 @39212 has 5 MA's), (Start: 32 @39233 has 8 MA's), (Start: 45 @39293 has 44 MA's), (53, 39398), (54, 39401), (55, 39425), (60, 39470), (65, 39527),

Gene: Yeet412\_47 Start: 34116, Stop: 34457, Start Num: 45

Candidate Starts for Yeet412\_47:

(Start: 27 @34035 has 5 MA's), (Start: 32 @34056 has 8 MA's), (Start: 45 @34116 has 44 MA's), (49, 34149), (50, 34155), (54, 34224), (61, 34296), (65, 34350),

Gene: Yeezy\_50 Start: 35894, Stop: 36232, Start Num: 45

Candidate Starts for Yeezy\_50:

(11, 35657), (Start: 45 @35894 has 44 MA's), (49, 35927), (53, 35999), (54, 36002), (55, 36026), (56, 36032), (60, 36071), (65, 36128),

Gene: Zameen\_52 Start: 36923, Stop: 37324, Start Num: 32

Candidate Starts for Zameen\_52:

(Start: 27 @36902 has 5 MA's), (Start: 32 @36923 has 8 MA's), (42, 36968), (Start: 45 @36983 has 44 MA's), (49, 37016), (50, 37022), (54, 37091), (61, 37163), (65, 37217),

Gene: Zirinka\_49 Start: 37603, Stop: 37944, Start Num: 45

Candidate Starts for Zirinka\_49:

(Start: 27 @37522 has 5 MA's), (Start: 32 @37543 has 8 MA's), (Start: 45 @37603 has 44 MA's), (49, 37636), (50, 37642), (54, 37711), (61, 37783), (65, 37837),