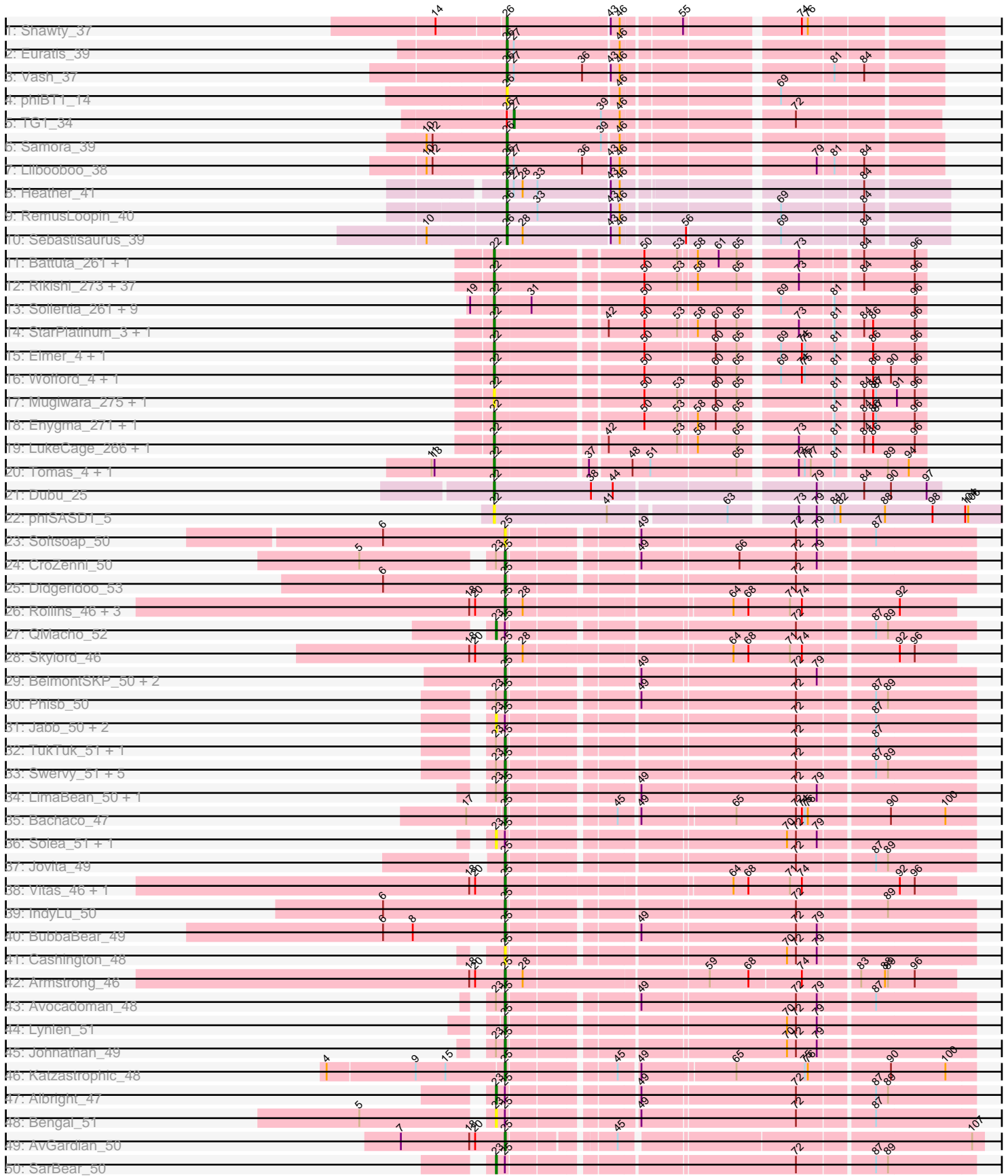
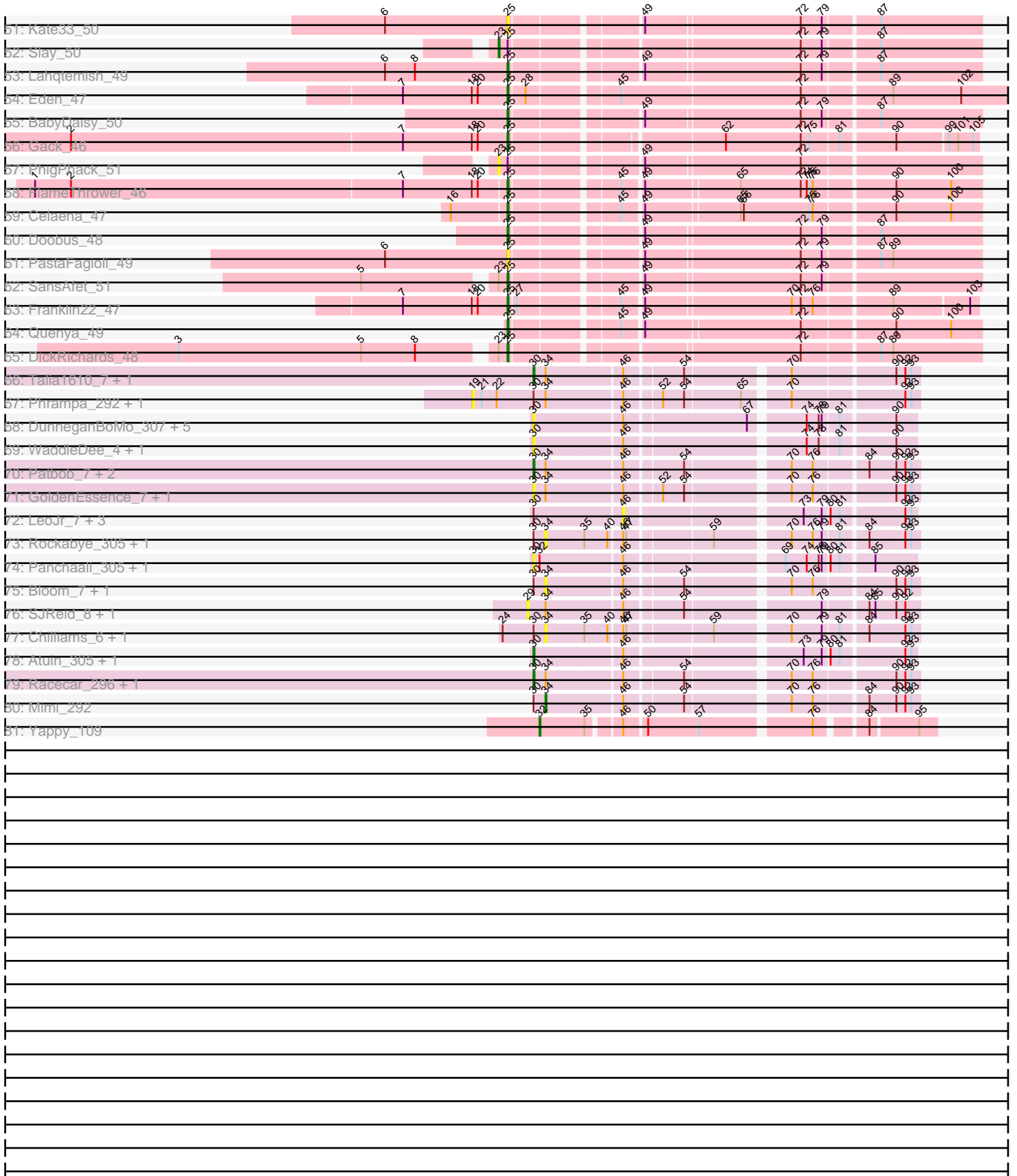


Pham 210863



Pham 210863



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 210863 Report

This analysis was run 02/22/25 on database version 588.

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 210863 has 172 members, 47 are drafts.

Phages represented in each track:

- Track 1 : Shawty\_37
- Track 2 : Euratis\_39
- Track 3 : Vash\_37
- Track 4 : phiBT1\_14
- Track 5 : TG1\_34
- Track 6 : Samora\_39
- Track 7 : Lilbooboo\_38
- Track 8 : Heather\_41
- Track 9 : RemusLoopin\_40
- Track 10 : Sebastisaurus\_39
- Track 11 : Battuta\_261, Battuta\_4
- Track 12 : Rikishi\_273, MindFlayer\_3, Karimac\_4, Gibbi\_3, Jollison\_261, SaltySpitoon\_4, JimJam\_272, PumpkinSpice\_4, PumpkinSpice\_268, MindFlayer\_255, Starbow\_261, Quarant19\_265, Rikishi\_3, TomSawyer\_269, CeilingFan\_269, KentuckyRacer\_3, KentuckyRacer\_271, Bordeaux\_4, Wipeout\_3, Starbow\_4, TomSawyer\_4, Spelly\_270, Gibbi\_274, Bordeaux\_261, Amabiko\_4, Spilled\_271, Amabiko\_268, SaltySpitoon\_264, Wipeout\_256, Spilled\_3, Jollison\_4, JimJam\_4, Spelly\_4, CeilingFan\_3, Karimac\_262, Quarant19\_4, IchabodCrane\_3, IchabodCrane\_256
- Track 13 : Sollertia\_261, Yaboi\_5, Genie2\_260, Yaboi\_266, BoomerJR\_260, Stanimal\_5, Genie2\_5, Sollertia\_5, BoomerJR\_5, Stanimal\_260
- Track 14 : StarPlatinum\_3, StarPlatinum\_273
- Track 15 : Elmer\_4, Elmer\_271
- Track 16 : Wofford\_4, Wofford\_262
- Track 17 : Mugiwara\_275, Mugiwara\_3
- Track 18 : Enygma\_271, Enygma\_3
- Track 19 : LukeCage\_266, LukeCage\_3
- Track 20 : Tomas\_4, Tomas\_260
- Track 21 : Dubu\_25
- Track 22 : phiSASD1\_5
- Track 23 : Softsoap\_50
- Track 24 : CroZenni\_50
- Track 25 : Didgeridoo\_53

- Track 26 : Rollins\_46, Bernstein\_46, Brahms\_46, Coltrane\_46
- Track 27 : QMacho\_52
- Track 28 : Skylord\_46
- Track 29 : BelmontSKP\_50, AnnaLie\_50, Arroyo\_50
- Track 30 : Phisb\_50
- Track 31 : Jabb\_50, MsUbiquitous\_50, CupcakePrincess\_50
- Track 32 : TukTuk\_51, Eula\_50
- Track 33 : Swervy\_51, Finalfrontier\_51, Kenzers\_50, Burritobowl\_50, Albedo\_51, Nicky22\_51
- Track 34 : LimaBean\_50, Abigail\_49
- Track 35 : Bachaco\_47
- Track 36 : Solea\_51, Milomuff\_51
- Track 37 : Jovita\_49
- Track 38 : Vitas\_46, Clayda5\_47
- Track 39 : IndyLu\_50
- Track 40 : BubbaBear\_49
- Track 41 : Cashington\_48
- Track 42 : Armstrong\_46
- Track 43 : Avocadoman\_48
- Track 44 : Lynlen\_51
- Track 45 : Johnathan\_49
- Track 46 : Katzastrophic\_48
- Track 47 : Albright\_47
- Track 48 : Bengal\_51
- Track 49 : AvGardian\_50
- Track 50 : SarBear\_50
- Track 51 : Kate33\_50
- Track 52 : Slay\_50
- Track 53 : Lahqtemish\_49
- Track 54 : Eden\_47
- Track 55 : BabyDaisy\_50
- Track 56 : Gack\_46
- Track 57 : PhigPhack\_51
- Track 58 : FlameThrower\_46
- Track 59 : Celaena\_47
- Track 60 : Doobus\_48
- Track 61 : PastaFagioli\_49
- Track 62 : SansAfet\_51
- Track 63 : Franklin22\_47
- Track 64 : Quenya\_49
- Track 65 : DickRichards\_48
- Track 66 : Talia1610\_7, Talia1610\_293
- Track 67 : Phrampa\_292, Phrampa\_7
- Track 68 : DunneganBoMo\_307, Ellewin\_304, KSunshine22\_298, DunneganBoMo\_4, Ellewin\_5, KSunshine22\_6
- Track 69 : WaddleDee\_4, WaddleDee\_306
- Track 70 : Patbob\_7, Patbob\_297, Mimi\_7
- Track 71 : GoldenEssence\_7, GoldenEssence\_289
- Track 72 : LeoJr\_7, ReginaGlobina\_317, LeoJr\_320, ReginaGlobina\_6
- Track 73 : Rockabye\_305, Rockabye\_6
- Track 74 : Panchaali\_305, Panchaali\_6
- Track 75 : Bloom\_7, Bloom\_294
- Track 76 : SJReid\_8, SJReid\_319

- Track 77 : Chilliams\_6, Chilliams\_297
- Track 78 : Atuin\_305, Atuin\_5
- Track 79 : Racecar\_296, Racecar\_7
- Track 80 : Mimi\_292
- Track 81 : Yappy\_109

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

The start number called the most often in the published annotations is 22, it was called in 59 of the 125 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Amabiko\_268, Amabiko\_4, Battuta\_261, Battuta\_4, BoomerJR\_260, BoomerJR\_5, Bordeaux\_261, Bordeaux\_4, CeilingFan\_269, CeilingFan\_3, Dubu\_25, Elmer\_271, Elmer\_4, Enygma\_271, Enygma\_3, Genie2\_260, Genie2\_5, Gibbi\_274, Gibbi\_3, IchabodCrane\_256, IchabodCrane\_3, JimJam\_272, JimJam\_4, Jollison\_261, Jollison\_4, Karimac\_262, Karimac\_4, KentuckyRacer\_271, KentuckyRacer\_3, LukeCage\_266, LukeCage\_3, MindFlayer\_255, MindFlayer\_3, Mugiwara\_275, Mugiwara\_3, PumpkinSpice\_268, PumpkinSpice\_4, Quarant19\_265, Quarant19\_4, Rikishi\_273, Rikishi\_3, SaltySpitoon\_264, SaltySpitoon\_4, Sollertia\_261, Sollertia\_5, Spelly\_270, Spelly\_4, Spilled\_271, Spilled\_3, Stanimal\_260, Stanimal\_5, StarPlatinum\_273, StarPlatinum\_3, Starbow\_261, Starbow\_4, TomSawyer\_269, TomSawyer\_4, Tomas\_260, Tomas\_4, Wipeout\_256, Wipeout\_3, Wofford\_262, Wofford\_4, Yaboi\_266, Yaboi\_5, phiSASD1\_5,

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

- Phrampa\_292, Phrampa\_7,

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

- Abigail\_49, Albedo\_51, Albright\_47, AnnaLie\_50, Armstrong\_46, Arroyo\_50, Atuin\_305, Atuin\_5, AvGardian\_50, Avocadoman\_48, BabyDaisy\_50, Bachaco\_47, BelmontSKP\_50, Bengal\_51, Bernstein\_46, Bloom\_294, Bloom\_7, Brahms\_46, BubbaBear\_49, Burritobowl\_50, Cashington\_48, Celaena\_47, Chilliams\_297, Chilliams\_6, Clayda5\_47, Coltrane\_46, CroZenni\_50, CupcakePrincess\_50, DickRichards\_48, Didgeridoo\_53, Doobus\_48, DunneganBoMo\_307, DunneganBoMo\_4, Eden\_47, Ellewin\_304, Ellewin\_5, Eula\_50, Euratis\_39, Finalfrontier\_51, FlameThrower\_46, Franklin22\_47, Gack\_46, GoldenEssence\_289, GoldenEssence\_7, Heather\_41, IndyLu\_50, Jabb\_50, Johnathan\_49, Jovita\_49, KSunshine22\_298, KSunshine22\_6, Kate33\_50, Katzastrophic\_48, Kenzers\_50, Lahqtemish\_49, LeoJr\_320, LeoJr\_7, Lilbooboo\_38, LimaBean\_50, Lynlen\_51, Milomuff\_51, Mimi\_292, Mimi\_7, MsUbiquitous\_50, Nicky22\_51, Panchaali\_305, Panchaali\_6, PastaFagioli\_49, Patbob\_297, Patbob\_7, PhigPhack\_51, Phisb\_50, QMacho\_52, Quenya\_49, Racecar\_296, Racecar\_7, ReginaGlobina\_317, ReginaGlobina\_6, RemusLoopin\_40, Rockabye\_305, Rockabye\_6, Rollins\_46, SJReid\_319, SJReid\_8, Samora\_39, SansAfet\_51, SarBear\_50, Sebastisaurus\_39, Shawty\_37, Skylord\_46, Slay\_50, Softsoap\_50, Solea\_51, Swervy\_51, TG1\_34, Talia1610\_293, Talia1610\_7, TukTuk\_51, Vash\_37, Vitas\_46, WaddleDee\_306, WaddleDee\_4, Yappy\_109, phiBT1\_14,

**Summary by start number:**

Start 19:

- Found in 12 of 172 ( 7.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Phrampa\_292 (FC), Phrampa\_7 (FC),

Start 22:

- Found in 68 of 172 ( 39.5% ) of genes in pham
- Manual Annotations of this start: 59 of 125
- Called 97.1% of time when present
- Phage (with cluster) where this start called: Amabiko\_268 (BE2), Amabiko\_4 (BE2), Battuta\_261 (BE2), Battuta\_4 (BE2), BoomerJR\_260 (BE2), BoomerJR\_5 (BE2), Bordeaux\_261 (BE2), Bordeaux\_4 (BE2), CeilingFan\_269 (BE2), CeilingFan\_3 (BE2), Dubu\_25 (BJ), Elmer\_271 (BE2), Elmer\_4 (BE2), Enygma\_271 (BE2), Enygma\_3 (BE2), Genie2\_260 (BE2), Genie2\_5 (BE2), Gibbi\_274 (BE2), Gibbi\_3 (BE2), IchabodCrane\_256 (BE2), IchabodCrane\_3 (BE2), JimJam\_272 (BE2), JimJam\_4 (BE2), Jollison\_261 (BE2), Jollison\_4 (BE2), Karimac\_262 (BE2), Karimac\_4 (BE2), KentuckyRacer\_271 (BE2), KentuckyRacer\_3 (BE2), LukeCage\_266 (BE2), LukeCage\_3 (BE2), MindFlayer\_255 (BE2), MindFlayer\_3 (BE2), Mugiwara\_275 (BE2), Mugiwara\_3 (BE2), PumpkinSpice\_268 (BE2), PumpkinSpice\_4 (BE2), Quaran19\_265 (BE2), Quaran19\_4 (BE2), Rikishi\_273 (BE2), Rikishi\_3 (BE2), SaltySpittoon\_264 (BE2), SaltySpittoon\_4 (BE2), Sollertia\_261 (BE2), Sollertia\_5 (BE2), Spelly\_270 (BE2), Spelly\_4 (BE2), Spilled\_271 (BE2), Spilled\_3 (BE2), Stanimal\_260 (BE2), Stanimal\_5 (BE2), StarPlatinum\_273 (BE2), StarPlatinum\_3 (BE2), Starbow\_261 (BE2), Starbow\_4 (BE2), TomSawyer\_269 (BE2), TomSawyer\_4 (BE2), Tomas\_260 (BE2), Tomas\_4 (BE2), Wipeout\_256 (BE2), Wipeout\_3 (BE2), Wofford\_262 (BE2), Wofford\_4 (BE2), Yaboi\_266 (BE2), Yaboi\_5 (BE2), phiSASD1\_5 (BJ),

Start 23:

- Found in 27 of 172 ( 15.7% ) of genes in pham
- Manual Annotations of this start: 4 of 125
- Called 40.7% of time when present
- Phage (with cluster) where this start called: Albright\_47 (EB), Bengal\_51 (EB), CupcakePrincess\_50 (EB), Jabb\_50 (EB), Milomuff\_51 (EB), MsUbiquitous\_50 (EB), PhigPhack\_51 (EB), QMacho\_52 (EB), SarBear\_50 (EB), Slay\_50 (EB), Solea\_51 (EB),

Start 25:

- Found in 59 of 172 ( 34.3% ) of genes in pham
- Manual Annotations of this start: 44 of 125
- Called 81.4% of time when present
- Phage (with cluster) where this start called: Abigail\_49 (EB), Albedo\_51 (EB), AnnaLie\_50 (EB), Armstrong\_46 (EB), Arroyo\_50 (EB), AvGardian\_50 (EB), Avocadoman\_48 (EB), BabyDaisy\_50 (EB), Bachaco\_47 (EB), BelmontSKP\_50 (EB), Bernstein\_46 (EB), Brahms\_46 (EB), BubbaBear\_49 (EB), Burritobowl\_50 (EB), Cashington\_48 (EB), Celaena\_47 (EB), Clayda5\_47 (EB), Coltrane\_46 (EB), CroZenni\_50 (EB), DickRichards\_48 (EB), Didgeridoo\_53 (EB), Doobus\_48 (EB), Eden\_47 (EB), Eula\_50 (EB), Finalfrontier\_51 (EB), FlameThrower\_46 (EB), Franklin22\_47 (EB), Gack\_46 (EB), IndyLu\_50 (EB), Johnathan\_49 (EB), Jovita\_49 (EB), Kate33\_50 (EB), Katzastrophic\_48 (EB), Kenzers\_50 (EB), Lahqtemish\_49 (EB), LimaBean\_50 (EB), Lynlen\_51 (EB), Nicky22\_51 (EB), PastaFagioli\_49 (EB),

Phisb\_50 (EB), Quenya\_49 (EB), Rollins\_46 (EB), SansAfet\_51 (EB), Skylord\_46 (EB), Softsoap\_50 (EB), Swervy\_51 (EB), TukTuk\_51 (EB), Vitas\_46 (EB),

Start 26:

- Found in 10 of 172 ( 5.8% ) of genes in pham
- Manual Annotations of this start: 8 of 125
- Called 90.0% of time when present
- Phage (with cluster) where this start called: Euratis\_39 (BB1), Heather\_41 (BB2), Lilbooboo\_38 (BB1), RemusLoopin\_40 (BB2), Samora\_39 (BB1), Sebastisaurus\_39 (BB2), Shawty\_37 (BB1), Vash\_37 (BB1), phiBT1\_14 (BB1),

Start 27:

- Found in 6 of 172 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 1 of 125
- Called 16.7% of time when present
- Phage (with cluster) where this start called: TG1\_34 (BB1),

Start 29:

- Found in 2 of 172 ( 1.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SJReid\_319 (FC), SJReid\_8 (FC),

Start 30:

- Found in 34 of 172 ( 19.8% ) of genes in pham
- Manual Annotations of this start: 7 of 125
- Called 61.8% of time when present
- Phage (with cluster) where this start called: Atuin\_305 (FC), Atuin\_5 (FC), DunneganBoMo\_307 (FC), DunneganBoMo\_4 (FC), Ellewin\_304 (FC), Ellewin\_5 (FC), GoldenEssence\_289 (FC), GoldenEssence\_7 (FC), KSunshine22\_298 (FC), KSunshine22\_6 (FC), Mimi\_7 (FC), Panchaali\_305 (FC), Panchaali\_6 (FC), Patbob\_297 (FC), Patbob\_7 (FC), Racecar\_296 (FC), Racecar\_7 (FC), Talia1610\_293 (FC), Talia1610\_7 (FC), WaddleDee\_306 (FC), WaddleDee\_4 (FC),

Start 32:

- Found in 3 of 172 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 1 of 125
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Yappy\_109 (singleton),

Start 34:

- Found in 20 of 172 ( 11.6% ) of genes in pham
- Manual Annotations of this start: 1 of 125
- Called 35.0% of time when present
- Phage (with cluster) where this start called: Bloom\_294 (FC), Bloom\_7 (FC), Chilliams\_297 (FC), Chilliams\_6 (FC), Mimi\_292 (FC), Rockabye\_305 (FC), Rockabye\_6 (FC),

Start 46:

- Found in 47 of 172 ( 27.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 8.5% of time when present

- Phage (with cluster) where this start called: LeoJr\_320 (FC), LeoJr\_7 (FC), ReginaGlobina\_317 (FC), ReginaGlobina\_6 (FC),

### **Summary by clusters:**

There are 7 clusters represented in this pham: singleton, BJ, EB, FC, BE2, BB2, BB1,

Info for manual annotations of cluster BB1:

- Start number 26 was manually annotated 5 times for cluster BB1.
- Start number 27 was manually annotated 1 time for cluster BB1.

Info for manual annotations of cluster BB2:

- Start number 26 was manually annotated 3 times for cluster BB2.

Info for manual annotations of cluster BE2:

- Start number 22 was manually annotated 58 times for cluster BE2.

Info for manual annotations of cluster BJ:

- Start number 22 was manually annotated 1 time for cluster BJ.

Info for manual annotations of cluster EB:

- Start number 23 was manually annotated 4 times for cluster EB.
- Start number 25 was manually annotated 44 times for cluster EB.

Info for manual annotations of cluster FC:

- Start number 30 was manually annotated 7 times for cluster FC.
- Start number 34 was manually annotated 1 time for cluster FC.

### **Gene Information:**

Gene: Abigail\_49 Start: 33436, Stop: 33870, Start Num: 25

Candidate Starts for Abigail\_49:

(Start: 23 @33427 has 4 MA's), (Start: 25 @33436 has 44 MA's), (49, 33550), (72, 33700), (79, 33721),

Gene: Albedo\_51 Start: 34047, Stop: 34481, Start Num: 25

Candidate Starts for Albedo\_51:

(Start: 23 @34038 has 4 MA's), (Start: 25 @34047 has 44 MA's), (72, 34311), (87, 34383), (89, 34395),

Gene: Albright\_47 Start: 32744, Stop: 33187, Start Num: 23

Candidate Starts for Albright\_47:

(Start: 23 @32744 has 4 MA's), (Start: 25 @32753 has 44 MA's), (49, 32867), (72, 33017), (87, 33089), (89, 33101),

Gene: Amabiko\_4 Start: 3239, Stop: 2847, Start Num: 22

Candidate Starts for Amabiko\_4:

(Start: 22 @3239 has 59 MA's), (50, 3101), (53, 3068), (58, 3053), (65, 3014), (73, 2963), (84, 2909), (96, 2858),

Gene: Amabiko\_268 Start: 122065, Stop: 121673, Start Num: 22

Candidate Starts for Amabiko\_268:



(Start: 22 @122065 has 59 MA's), (50, 121927), (53, 121894), (58, 121879), (65, 121840), (73, 121789), (84, 121735), (96, 121684),

Gene: AnnaLie\_50 Start: 34096, Stop: 34530, Start Num: 25

Candidate Starts for AnnaLie\_50:

(Start: 25 @34096 has 44 MA's), (49, 34210), (72, 34360), (79, 34381),

Gene: Armstrong\_46 Start: 31424, Stop: 31855, Start Num: 25

Candidate Starts for Armstrong\_46:

(18, 31388), (20, 31394), (Start: 25 @31424 has 44 MA's), (28, 31442), (59, 31619), (68, 31658), (74, 31709), (83, 31760), (88, 31784), (89, 31787), (96, 31814),

Gene: Arroyo\_50 Start: 34204, Stop: 34638, Start Num: 25

Candidate Starts for Arroyo\_50:

(Start: 25 @34204 has 44 MA's), (49, 34318), (72, 34468), (79, 34489),

Gene: Atuin\_305 Start: 180566, Stop: 180913, Start Num: 30

Candidate Starts for Atuin\_305:

(Start: 30 @180566 has 7 MA's), (46, 180650), (73, 180809), (79, 180827), (80, 180833), (81, 180842), (92, 180902), (93, 180908),

Gene: Atuin\_5 Start: 3678, Stop: 4025, Start Num: 30

Candidate Starts for Atuin\_5:

(Start: 30 @3678 has 7 MA's), (46, 3762), (73, 3921), (79, 3939), (80, 3945), (81, 3954), (92, 4014), (93, 4020),

Gene: AvGardian\_50 Start: 33876, Stop: 34307, Start Num: 25

Candidate Starts for AvGardian\_50:

(7, 33771), (18, 33840), (20, 33846), (Start: 25 @33876 has 44 MA's), (45, 33966), (107, 34296),

Gene: Avocadoman\_48 Start: 32960, Stop: 33394, Start Num: 25

Candidate Starts for Avocadoman\_48:

(Start: 23 @32951 has 4 MA's), (Start: 25 @32960 has 44 MA's), (49, 33074), (72, 33224), (79, 33245), (87, 33296),

Gene: BabyDaisy\_50 Start: 34118, Stop: 34552, Start Num: 25

Candidate Starts for BabyDaisy\_50:

(Start: 25 @34118 has 44 MA's), (49, 34232), (72, 34382), (79, 34403), (87, 34454),

Gene: Bachaco\_47 Start: 34966, Stop: 35400, Start Num: 25

Candidate Starts for Bachaco\_47:

(17, 34933), (Start: 25 @34966 has 44 MA's), (45, 35062), (49, 35080), (65, 35170), (72, 35230), (74, 35236), (75, 35239), (76, 35242), (90, 35317), (100, 35371),

Gene: Battuta\_261 Start: 121394, Stop: 121002, Start Num: 22

Candidate Starts for Battuta\_261:

(Start: 22 @121394 has 59 MA's), (50, 121256), (53, 121223), (58, 121208), (61, 121187), (65, 121169), (73, 121118), (84, 121064), (96, 121013),

Gene: Battuta\_4 Start: 3239, Stop: 2847, Start Num: 22

Candidate Starts for Battuta\_4:

(Start: 22 @3239 has 59 MA's), (50, 3101), (53, 3068), (58, 3053), (61, 3032), (65, 3014), (73, 2963), (84, 2909), (96, 2858),

Gene: BelmontSKP\_50 Start: 34096, Stop: 34530, Start Num: 25  
Candidate Starts for BelmontSKP\_50:  
(Start: 25 @34096 has 44 MA's), (49, 34210), (72, 34360), (79, 34381),

Gene: Bengal\_51 Start: 33691, Stop: 34134, Start Num: 23  
Candidate Starts for Bengal\_51:  
(5, 33571), (Start: 23 @33691 has 4 MA's), (Start: 25 @33700 has 44 MA's), (49, 33814), (72, 33964),  
(87, 34036),

Gene: Bernstein\_46 Start: 31506, Stop: 31931, Start Num: 25  
Candidate Starts for Bernstein\_46:  
(18, 31470), (20, 31476), (Start: 25 @31506 has 44 MA's), (28, 31524), (64, 31716), (68, 31731), (71,  
31773), (74, 31785), (92, 31875),

Gene: Bloom\_7 Start: 4103, Stop: 4438, Start Num: 34  
Candidate Starts for Bloom\_7:  
(Start: 30 @4091 has 7 MA's), (Start: 34 @4103 has 1 MA's), (46, 4175), (54, 4226), (70, 4319), (76,  
4340), (90, 4415), (92, 4424), (93, 4430),

Gene: Bloom\_294 Start: 177578, Stop: 177913, Start Num: 34  
Candidate Starts for Bloom\_294:  
(Start: 30 @177566 has 7 MA's), (Start: 34 @177578 has 1 MA's), (46, 177650), (54, 177701), (70,  
177794), (76, 177815), (90, 177890), (92, 177899), (93, 177905),

Gene: BoomerJR\_260 Start: 122007, Stop: 121615, Start Num: 22  
Candidate Starts for BoomerJR\_260:  
(19, 122028), (Start: 22 @122007 has 59 MA's), (31, 121971), (50, 121869), (69, 121749), (81,  
121701), (96, 121626),

Gene: BoomerJR\_5 Start: 3219, Stop: 2827, Start Num: 22  
Candidate Starts for BoomerJR\_5:  
(19, 3240), (Start: 22 @3219 has 59 MA's), (31, 3183), (50, 3081), (69, 2961), (81, 2913), (96, 2838),

Gene: Bordeaux\_4 Start: 3239, Stop: 2847, Start Num: 22  
Candidate Starts for Bordeaux\_4:  
(Start: 22 @3239 has 59 MA's), (50, 3101), (53, 3068), (58, 3053), (65, 3014), (73, 2963), (84, 2909),  
(96, 2858),

Gene: Bordeaux\_261 Start: 121977, Stop: 121585, Start Num: 22  
Candidate Starts for Bordeaux\_261:  
(Start: 22 @121977 has 59 MA's), (50, 121839), (53, 121806), (58, 121791), (65, 121752), (73,  
121701), (84, 121647), (96, 121596),

Gene: Brahms\_46 Start: 31426, Stop: 31851, Start Num: 25  
Candidate Starts for Brahms\_46:  
(18, 31390), (20, 31396), (Start: 25 @31426 has 44 MA's), (28, 31444), (64, 31636), (68, 31651), (71,  
31693), (74, 31705), (92, 31795),

Gene: BubbaBear\_49 Start: 33737, Stop: 34171, Start Num: 25  
Candidate Starts for BubbaBear\_49:  
(6, 33614), (8, 33644), (Start: 25 @33737 has 44 MA's), (49, 33851), (72, 34001), (79, 34022),

Gene: Burritobowl\_50 Start: 33661, Stop: 34095, Start Num: 25  
Candidate Starts for Burritobowl\_50:  
(Start: 23 @33652 has 4 MA's), (Start: 25 @33661 has 44 MA's), (72, 33925), (87, 33997), (89, 34009),

Gene: Cashington\_48 Start: 33017, Stop: 33451, Start Num: 25  
Candidate Starts for Cashington\_48:  
(Start: 25 @33017 has 44 MA's), (70, 33272), (72, 33281), (79, 33302),

Gene: CeilingFan\_269 Start: 123457, Stop: 123065, Start Num: 22  
Candidate Starts for CeilingFan\_269:  
(Start: 22 @123457 has 59 MA's), (50, 123319), (53, 123286), (58, 123271), (65, 123232), (73, 123181), (84, 123127), (96, 123076),

Gene: CeilingFan\_3 Start: 2850, Stop: 2458, Start Num: 22  
Candidate Starts for CeilingFan\_3:  
(Start: 22 @2850 has 59 MA's), (50, 2712), (53, 2679), (58, 2664), (65, 2625), (73, 2574), (84, 2520), (96, 2469),

Gene: Celaena\_47 Start: 34695, Stop: 35129, Start Num: 25  
Candidate Starts for Celaena\_47:  
(16, 34641), (Start: 25 @34695 has 44 MA's), (45, 34791), (49, 34809), (65, 34899), (66, 34902), (75, 34968), (76, 34971), (90, 35046), (100, 35100),

Gene: Chilliams\_6 Start: 3781, Stop: 4116, Start Num: 34  
Candidate Starts for Chilliams\_6:  
(24, 3739), (Start: 30 @3769 has 7 MA's), (Start: 34 @3781 has 1 MA's), (35, 3820), (40, 3841), (46, 3853), (47, 3856), (59, 3931), (70, 3997), (79, 4027), (81, 4042), (84, 4066), (92, 4102), (93, 4108),

Gene: Chilliams\_297 Start: 176515, Stop: 176850, Start Num: 34  
Candidate Starts for Chilliams\_297:  
(24, 176473), (Start: 30 @176503 has 7 MA's), (Start: 34 @176515 has 1 MA's), (35, 176554), (40, 176575), (46, 176587), (47, 176590), (59, 176665), (70, 176731), (79, 176761), (81, 176776), (84, 176800), (92, 176836), (93, 176842),

Gene: Clayda5\_47 Start: 31413, Stop: 31838, Start Num: 25  
Candidate Starts for Clayda5\_47:  
(18, 31377), (20, 31383), (Start: 25 @31413 has 44 MA's), (64, 31623), (68, 31638), (71, 31680), (74, 31692), (92, 31782), (96, 31797),

Gene: Coltrane\_46 Start: 31426, Stop: 31851, Start Num: 25  
Candidate Starts for Coltrane\_46:  
(18, 31390), (20, 31396), (Start: 25 @31426 has 44 MA's), (28, 31444), (64, 31636), (68, 31651), (71, 31693), (74, 31705), (92, 31795),

Gene: CroZenni\_50 Start: 33550, Stop: 33984, Start Num: 25  
Candidate Starts for CroZenni\_50:  
(5, 33421), (Start: 23 @33541 has 4 MA's), (Start: 25 @33550 has 44 MA's), (49, 33664), (66, 33757), (72, 33814), (79, 33835),

Gene: CupcakePrincess\_50 Start: 33558, Stop: 34001, Start Num: 23  
Candidate Starts for CupcakePrincess\_50:  
(Start: 23 @33558 has 4 MA's), (Start: 25 @33567 has 44 MA's), (72, 33831), (87, 33903),

Gene: DickRichards\_48 Start: 33773, Stop: 34207, Start Num: 25  
Candidate Starts for DickRichards\_48:  
(3, 33461), (5, 33644), (8, 33698), (Start: 23 @33764 has 4 MA's), (Start: 25 @33773 has 44 MA's),  
(72, 34037), (87, 34109), (89, 34121),

Gene: Didgeridoo\_53 Start: 34464, Stop: 34898, Start Num: 25  
Candidate Starts for Didgeridoo\_53:  
(6, 34341), (Start: 25 @34464 has 44 MA's), (72, 34728),

Gene: Doobus\_48 Start: 33211, Stop: 33645, Start Num: 25  
Candidate Starts for Doobus\_48:  
(Start: 25 @33211 has 44 MA's), (49, 33325), (72, 33475), (79, 33496), (87, 33547),

Gene: Dubu\_25 Start: 20964, Stop: 21389, Start Num: 22  
Candidate Starts for Dubu\_25:  
(Start: 22 @20964 has 59 MA's), (38, 21060), (44, 21081), (79, 21267), (84, 21312), (90, 21339), (97,  
21375),

Gene: DunneganBoMo\_307 Start: 182381, Stop: 182728, Start Num: 30  
Candidate Starts for DunneganBoMo\_307:  
(Start: 30 @182381 has 7 MA's), (46, 182465), (67, 182579), (74, 182627), (78, 182639), (79, 182642),  
(81, 182657), (90, 182708),

Gene: DunneganBoMo\_4 Start: 2969, Stop: 3316, Start Num: 30  
Candidate Starts for DunneganBoMo\_4:  
(Start: 30 @2969 has 7 MA's), (46, 3053), (67, 3167), (74, 3215), (78, 3227), (79, 3230), (81, 3245),  
(90, 3296),

Gene: Eden\_47 Start: 32399, Stop: 32896, Start Num: 25  
Candidate Starts for Eden\_47:  
(7, 32294), (18, 32363), (20, 32369), (Start: 25 @32399 has 44 MA's), (28, 32414), (45, 32495), (72,  
32672), (89, 32756), (102, 32822),

Gene: Ellewin\_304 Start: 182013, Stop: 182360, Start Num: 30  
Candidate Starts for Ellewin\_304:  
(Start: 30 @182013 has 7 MA's), (46, 182097), (67, 182211), (74, 182259), (78, 182271), (79, 182274),  
(81, 182289), (90, 182340),

Gene: Ellewin\_5 Start: 2899, Stop: 3246, Start Num: 30  
Candidate Starts for Ellewin\_5:  
(Start: 30 @2899 has 7 MA's), (46, 2983), (67, 3097), (74, 3145), (78, 3157), (79, 3160), (81, 3175),  
(90, 3226),

Gene: Elmer\_4 Start: 3119, Stop: 2724, Start Num: 22  
Candidate Starts for Elmer\_4:  
(Start: 22 @3119 has 59 MA's), (50, 2981), (60, 2915), (65, 2894), (69, 2861), (74, 2840), (75, 2837),  
(81, 2810), (86, 2777), (96, 2735),

Gene: Elmer\_271 Start: 125487, Stop: 125092, Start Num: 22  
Candidate Starts for Elmer\_271:  
(Start: 22 @125487 has 59 MA's), (50, 125349), (60, 125283), (65, 125262), (69, 125229), (74,  
125208), (75, 125205), (81, 125178), (86, 125145), (96, 125103),

Gene: Enygma\_271 Start: 125224, Stop: 124832, Start Num: 22

Candidate Starts for Enygma\_271:

(Start: 22 @125224 has 59 MA's), (50, 125086), (53, 125053), (58, 125038), (60, 125020), (65, 124999), (81, 124918), (84, 124894), (86, 124885), (87, 124882), (96, 124843),

Gene: Enygma\_3 Start: 2800, Stop: 2408, Start Num: 22

Candidate Starts for Enygma\_3:

(Start: 22 @2800 has 59 MA's), (50, 2662), (53, 2629), (58, 2614), (60, 2596), (65, 2575), (81, 2494), (84, 2470), (86, 2461), (87, 2458), (96, 2419),

Gene: Eula\_50 Start: 33553, Stop: 33987, Start Num: 25

Candidate Starts for Eula\_50:

(Start: 23 @33544 has 4 MA's), (Start: 25 @33553 has 44 MA's), (72, 33817), (87, 33889),

Gene: Euratis\_39 Start: 30726, Stop: 31124, Start Num: 26

Candidate Starts for Euratis\_39:

(Start: 26 @30726 has 8 MA's), (Start: 27 @30732 has 1 MA's), (46, 30834),

Gene: Finalfrontier\_51 Start: 34555, Stop: 34989, Start Num: 25

Candidate Starts for Finalfrontier\_51:

(Start: 23 @34546 has 4 MA's), (Start: 25 @34555 has 44 MA's), (72, 34819), (87, 34891), (89, 34903),

Gene: FlameThrower\_46 Start: 33765, Stop: 34199, Start Num: 25

Candidate Starts for FlameThrower\_46:

(1, 33297), (2, 33333), (7, 33663), (18, 33732), (20, 33738), (Start: 25 @33765 has 44 MA's), (45, 33861), (49, 33879), (65, 33969), (72, 34029), (74, 34035), (75, 34038), (76, 34041), (90, 34116), (100, 34170),

Gene: Franklin22\_47 Start: 32020, Stop: 32448, Start Num: 25

Candidate Starts for Franklin22\_47:

(7, 31915), (18, 31984), (20, 31990), (Start: 25 @32020 has 44 MA's), (Start: 27 @32026 has 1 MA's), (45, 32116), (49, 32134), (70, 32275), (72, 32284), (76, 32296), (89, 32368), (103, 32440),

Gene: Gack\_46 Start: 32064, Stop: 32492, Start Num: 25

Candidate Starts for Gack\_46:

(2, 31629), (7, 31959), (18, 32028), (20, 32034), (Start: 25 @32064 has 44 MA's), (62, 32253), (72, 32328), (75, 32337), (81, 32364), (90, 32415), (99, 32463), (101, 32472), (105, 32487),

Gene: Genie2\_260 Start: 122120, Stop: 121728, Start Num: 22

Candidate Starts for Genie2\_260:

(19, 122141), (Start: 22 @122120 has 59 MA's), (31, 122084), (50, 121982), (69, 121862), (81, 121814), (96, 121739),

Gene: Genie2\_5 Start: 3219, Stop: 2827, Start Num: 22

Candidate Starts for Genie2\_5:

(19, 3240), (Start: 22 @3219 has 59 MA's), (31, 3183), (50, 3081), (69, 2961), (81, 2913), (96, 2838),

Gene: Gibbi\_3 Start: 2850, Stop: 2458, Start Num: 22

Candidate Starts for Gibbi\_3:

(Start: 22 @2850 has 59 MA's), (50, 2712), (53, 2679), (58, 2664), (65, 2625), (73, 2574), (84, 2520), (96, 2469),

Gene: Gibbi\_274 Start: 122950, Stop: 122558, Start Num: 22

Candidate Starts for Gibbi\_274:

(Start: 22 @122950 has 59 MA's), (50, 122812), (53, 122779), (58, 122764), (65, 122725), (73, 122674), (84, 122620), (96, 122569),

Gene: GoldenEssence\_7 Start: 4085, Stop: 4432, Start Num: 30

Candidate Starts for GoldenEssence\_7:

(Start: 30 @4085 has 7 MA's), (Start: 34 @4097 has 1 MA's), (46, 4169), (52, 4199), (54, 4220), (70, 4313), (76, 4334), (90, 4409), (92, 4418), (93, 4424),

Gene: GoldenEssence\_289 Start: 174638, Stop: 174985, Start Num: 30

Candidate Starts for GoldenEssence\_289:

(Start: 30 @174638 has 7 MA's), (Start: 34 @174650 has 1 MA's), (46, 174722), (52, 174752), (54, 174773), (70, 174866), (76, 174887), (90, 174962), (92, 174971), (93, 174977),

Gene: Heather\_41 Start: 32025, Stop: 32429, Start Num: 26

Candidate Starts for Heather\_41:

(Start: 26 @32025 has 8 MA's), (Start: 27 @32031 has 1 MA's), (28, 32040), (33, 32055), (43, 32124), (46, 32133), (84, 32349),

Gene: IchabodCrane\_3 Start: 2847, Stop: 2455, Start Num: 22

Candidate Starts for IchabodCrane\_3:

(Start: 22 @2847 has 59 MA's), (50, 2709), (53, 2676), (58, 2661), (65, 2622), (73, 2571), (84, 2517), (96, 2466),

Gene: IchabodCrane\_256 Start: 121390, Stop: 120998, Start Num: 22

Candidate Starts for IchabodCrane\_256:

(Start: 22 @121390 has 59 MA's), (50, 121252), (53, 121219), (58, 121204), (65, 121165), (73, 121114), (84, 121060), (96, 121009),

Gene: IndyLu\_50 Start: 34038, Stop: 34472, Start Num: 25

Candidate Starts for IndyLu\_50:

(6, 33915), (Start: 25 @34038 has 44 MA's), (72, 34302), (89, 34386),

Gene: Jabb\_50 Start: 33558, Stop: 34001, Start Num: 23

Candidate Starts for Jabb\_50:

(Start: 23 @33558 has 4 MA's), (Start: 25 @33567 has 44 MA's), (72, 33831), (87, 33903),

Gene: JimJam\_272 Start: 124775, Stop: 124383, Start Num: 22

Candidate Starts for JimJam\_272:

(Start: 22 @124775 has 59 MA's), (50, 124637), (53, 124604), (58, 124589), (65, 124550), (73, 124499), (84, 124445), (96, 124394),

Gene: JimJam\_4 Start: 3239, Stop: 2847, Start Num: 22

Candidate Starts for JimJam\_4:

(Start: 22 @3239 has 59 MA's), (50, 3101), (53, 3068), (58, 3053), (65, 3014), (73, 2963), (84, 2909), (96, 2858),

Gene: Johnathan\_49 Start: 33043, Stop: 33477, Start Num: 25

Candidate Starts for Johnathan\_49:

(Start: 23 @33034 has 4 MA's), (Start: 25 @33043 has 44 MA's), (70, 33298), (72, 33307), (79, 33328),

Gene: Jollison\_261 Start: 121914, Stop: 121522, Start Num: 22

Candidate Starts for Jollison\_261:

(Start: 22 @121914 has 59 MA's), (50, 121776), (53, 121743), (58, 121728), (65, 121689), (73, 121638), (84, 121584), (96, 121533),

Gene: Jollison\_4 Start: 3239, Stop: 2847, Start Num: 22

Candidate Starts for Jollison\_4:

(Start: 22 @3239 has 59 MA's), (50, 3101), (53, 3068), (58, 3053), (65, 3014), (73, 2963), (84, 2909), (96, 2858),

Gene: Jovita\_49 Start: 33427, Stop: 33861, Start Num: 25

Candidate Starts for Jovita\_49:

(Start: 25 @33427 has 44 MA's), (72, 33691), (87, 33763), (89, 33775),

Gene: KSunshine22\_298 Start: 180460, Stop: 180807, Start Num: 30

Candidate Starts for KSunshine22\_298:

(Start: 30 @180460 has 7 MA's), (46, 180544), (67, 180658), (74, 180706), (78, 180718), (79, 180721), (81, 180736), (90, 180787),

Gene: KSunshine22\_6 Start: 3559, Stop: 3906, Start Num: 30

Candidate Starts for KSunshine22\_6:

(Start: 30 @3559 has 7 MA's), (46, 3643), (67, 3757), (74, 3805), (78, 3817), (79, 3820), (81, 3835), (90, 3886),

Gene: Karimac\_4 Start: 3241, Stop: 2849, Start Num: 22

Candidate Starts for Karimac\_4:

(Start: 22 @3241 has 59 MA's), (50, 3103), (53, 3070), (58, 3055), (65, 3016), (73, 2965), (84, 2911), (96, 2860),

Gene: Karimac\_262 Start: 122560, Stop: 122168, Start Num: 22

Candidate Starts for Karimac\_262:

(Start: 22 @122560 has 59 MA's), (50, 122422), (53, 122389), (58, 122374), (65, 122335), (73, 122284), (84, 122230), (96, 122179),

Gene: Kate33\_50 Start: 33755, Stop: 34189, Start Num: 25

Candidate Starts for Kate33\_50:

(6, 33632), (Start: 25 @33755 has 44 MA's), (49, 33869), (72, 34019), (79, 34040), (87, 34091),

Gene: Katzastrophic\_48 Start: 34275, Stop: 34709, Start Num: 25

Candidate Starts for Katzastrophic\_48:

(4, 34101), (9, 34188), (15, 34218), (Start: 25 @34275 has 44 MA's), (45, 34371), (49, 34389), (65, 34479), (75, 34548), (76, 34551), (90, 34626), (100, 34680),

Gene: KentuckyRacer\_3 Start: 2851, Stop: 2459, Start Num: 22

Candidate Starts for KentuckyRacer\_3:

(Start: 22 @2851 has 59 MA's), (50, 2713), (53, 2680), (58, 2665), (65, 2626), (73, 2575), (84, 2521), (96, 2470),

Gene: KentuckyRacer\_271 Start: 124302, Stop: 123910, Start Num: 22

Candidate Starts for KentuckyRacer\_271:

(Start: 22 @124302 has 59 MA's), (50, 124164), (53, 124131), (58, 124116), (65, 124077), (73, 124026), (84, 123972), (96, 123921),

Gene: Kenzers\_50 Start: 33579, Stop: 34013, Start Num: 25

Candidate Starts for Kenzers\_50:

(Start: 23 @33570 has 4 MA's), (Start: 25 @33579 has 44 MA's), (72, 33843), (87, 33915), (89, 33927),

Gene: Lahqtemish\_49 Start: 34037, Stop: 34471, Start Num: 25

Candidate Starts for Lahqtemish\_49:

(6, 33914), (8, 33944), (Start: 25 @34037 has 44 MA's), (49, 34151), (72, 34301), (79, 34322), (87, 34373),

Gene: LeoJr\_7 Start: 3916, Stop: 4179, Start Num: 46

Candidate Starts for LeoJr\_7:

(Start: 30 @3832 has 7 MA's), (46, 3916), (73, 4075), (79, 4093), (80, 4099), (81, 4108), (92, 4168), (93, 4174),

Gene: LeoJr\_320 Start: 181219, Stop: 181482, Start Num: 46

Candidate Starts for LeoJr\_320:

(Start: 30 @181135 has 7 MA's), (46, 181219), (73, 181378), (79, 181396), (80, 181402), (81, 181411), (92, 181471), (93, 181477),

Gene: Lilbooboo\_38 Start: 30841, Stop: 31239, Start Num: 26

Candidate Starts for Lilbooboo\_38:

(10, 30763), (12, 30769), (Start: 26 @30841 has 8 MA's), (Start: 27 @30847 has 1 MA's), (36, 30916), (43, 30940), (46, 30949), (79, 31123), (81, 31138), (84, 31165),

Gene: LimaBean\_50 Start: 33314, Stop: 33748, Start Num: 25

Candidate Starts for LimaBean\_50:

(Start: 23 @33305 has 4 MA's), (Start: 25 @33314 has 44 MA's), (49, 33428), (72, 33578), (79, 33599),

Gene: LukeCage\_266 Start: 123746, Stop: 123354, Start Num: 22

Candidate Starts for LukeCage\_266:

(Start: 22 @123746 has 59 MA's), (42, 123644), (53, 123575), (58, 123560), (65, 123521), (73, 123470), (81, 123440), (84, 123416), (86, 123407), (96, 123365),

Gene: LukeCage\_3 Start: 2842, Stop: 2450, Start Num: 22

Candidate Starts for LukeCage\_3:

(Start: 22 @2842 has 59 MA's), (42, 2740), (53, 2671), (58, 2656), (65, 2617), (73, 2566), (81, 2536), (84, 2512), (86, 2503), (96, 2461),

Gene: Lynlen\_51 Start: 33867, Stop: 34301, Start Num: 25

Candidate Starts for Lynlen\_51:

(Start: 25 @33867 has 44 MA's), (70, 34122), (72, 34131), (79, 34152),

Gene: Milomuff\_51 Start: 33535, Stop: 33978, Start Num: 23

Candidate Starts for Milomuff\_51:

(Start: 23 @33535 has 4 MA's), (Start: 25 @33544 has 44 MA's), (70, 33799), (72, 33808), (79, 33829),

Gene: Mimi\_7 Start: 4027, Stop: 4374, Start Num: 30

Candidate Starts for Mimi\_7:

(Start: 30 @4027 has 7 MA's), (Start: 34 @4039 has 1 MA's), (46, 4111), (54, 4162), (70, 4255), (76, 4276), (84, 4324), (90, 4351), (92, 4360), (93, 4366),

Gene: Mimi\_292 Start: 176699, Stop: 177034, Start Num: 34

Candidate Starts for Mimi\_292:

(Start: 30 @176687 has 7 MA's), (Start: 34 @176699 has 1 MA's), (46, 176771), (54, 176822), (70, 176915), (76, 176936), (84, 176984), (90, 177011), (92, 177020), (93, 177026),



Gene: MindFlayer\_3 Start: 2849, Stop: 2457, Start Num: 22

Candidate Starts for MindFlayer\_3:

(Start: 22 @2849 has 59 MA's), (50, 2711), (53, 2678), (58, 2663), (65, 2624), (73, 2573), (84, 2519), (96, 2468),

Gene: MindFlayer\_255 Start: 120909, Stop: 120517, Start Num: 22

Candidate Starts for MindFlayer\_255:

(Start: 22 @120909 has 59 MA's), (50, 120771), (53, 120738), (58, 120723), (65, 120684), (73, 120633), (84, 120579), (96, 120528),

Gene: MsUbiquitous\_50 Start: 33558, Stop: 34001, Start Num: 23

Candidate Starts for MsUbiquitous\_50:

(Start: 23 @33558 has 4 MA's), (Start: 25 @33567 has 44 MA's), (72, 33831), (87, 33903),

Gene: Mugiwara\_275 Start: 124214, Stop: 123822, Start Num: 22

Candidate Starts for Mugiwara\_275:

(Start: 22 @124214 has 59 MA's), (50, 124076), (53, 124043), (60, 124010), (65, 123989), (81, 123908), (84, 123884), (86, 123875), (87, 123872), (91, 123851), (96, 123833),

Gene: Mugiwara\_3 Start: 2829, Stop: 2437, Start Num: 22

Candidate Starts for Mugiwara\_3:

(Start: 22 @2829 has 59 MA's), (50, 2691), (53, 2658), (60, 2625), (65, 2604), (81, 2523), (84, 2499), (86, 2490), (87, 2487), (91, 2466), (96, 2448),

Gene: Nicky22\_51 Start: 34214, Stop: 34648, Start Num: 25

Candidate Starts for Nicky22\_51:

(Start: 23 @34205 has 4 MA's), (Start: 25 @34214 has 44 MA's), (72, 34478), (87, 34550), (89, 34562),

Gene: Panchaali\_305 Start: 182100, Stop: 182444, Start Num: 30

Candidate Starts for Panchaali\_305:

(Start: 30 @182100 has 7 MA's), (Start: 32 @182106 has 1 MA's), (46, 182184), (69, 182322), (74, 182343), (78, 182355), (79, 182358), (80, 182364), (81, 182373), (85, 182403),

Gene: Panchaali\_6 Start: 3042, Stop: 3386, Start Num: 30

Candidate Starts for Panchaali\_6:

(Start: 30 @3042 has 7 MA's), (Start: 32 @3048 has 1 MA's), (46, 3126), (69, 3264), (74, 3285), (78, 3297), (79, 3300), (80, 3306), (81, 3315), (85, 3345),

Gene: PastaFagioli\_49 Start: 34281, Stop: 34715, Start Num: 25

Candidate Starts for PastaFagioli\_49:

(6, 34158), (Start: 25 @34281 has 44 MA's), (49, 34395), (72, 34545), (79, 34566), (87, 34617), (89, 34629),

Gene: Patbob\_7 Start: 4133, Stop: 4480, Start Num: 30

Candidate Starts for Patbob\_7:

(Start: 30 @4133 has 7 MA's), (Start: 34 @4145 has 1 MA's), (46, 4217), (54, 4268), (70, 4361), (76, 4382), (84, 4430), (90, 4457), (92, 4466), (93, 4472),

Gene: Patbob\_297 Start: 179592, Stop: 179939, Start Num: 30

Candidate Starts for Patbob\_297:

(Start: 30 @179592 has 7 MA's), (Start: 34 @179604 has 1 MA's), (46, 179676), (54, 179727), (70, 179820), (76, 179841), (84, 179889), (90, 179916), (92, 179925), (93, 179931),

Gene: PhigPhack\_51 Start: 33552, Stop: 33995, Start Num: 23

Candidate Starts for PhigPhack\_51:

(Start: 23 @33552 has 4 MA's), (Start: 25 @33561 has 44 MA's), (49, 33675), (72, 33825),

Gene: Phisb\_50 Start: 33626, Stop: 34060, Start Num: 25

Candidate Starts for Phisb\_50:

(Start: 23 @33617 has 4 MA's), (Start: 25 @33626 has 44 MA's), (49, 33740), (72, 33890), (87, 33962), (89, 33974),

Gene: Phrampa\_292 Start: 180451, Stop: 180858, Start Num: 19

Candidate Starts for Phrampa\_292:

(19, 180451), (21, 180460), (Start: 22 @180475 has 59 MA's), (Start: 30 @180511 has 7 MA's), (Start: 34 @180523 has 1 MA's), (46, 180595), (52, 180625), (54, 180646), (65, 180700), (70, 180739), (92, 180844), (93, 180850),

Gene: Phrampa\_7 Start: 4080, Stop: 4487, Start Num: 19

Candidate Starts for Phrampa\_7:

(19, 4080), (21, 4089), (Start: 22 @4104 has 59 MA's), (Start: 30 @4140 has 7 MA's), (Start: 34 @4152 has 1 MA's), (46, 4224), (52, 4254), (54, 4275), (65, 4329), (70, 4368), (92, 4473), (93, 4479),

Gene: PumpkinSpice\_4 Start: 3239, Stop: 2847, Start Num: 22

Candidate Starts for PumpkinSpice\_4:

(Start: 22 @3239 has 59 MA's), (50, 3101), (53, 3068), (58, 3053), (65, 3014), (73, 2963), (84, 2909), (96, 2858),

Gene: PumpkinSpice\_268 Start: 123131, Stop: 122739, Start Num: 22

Candidate Starts for PumpkinSpice\_268:

(Start: 22 @123131 has 59 MA's), (50, 122993), (53, 122960), (58, 122945), (65, 122906), (73, 122855), (84, 122801), (96, 122750),

Gene: QMacho\_52 Start: 34198, Stop: 34641, Start Num: 23

Candidate Starts for QMacho\_52:

(Start: 23 @34198 has 4 MA's), (Start: 25 @34207 has 44 MA's), (72, 34471), (87, 34543), (89, 34555),

Gene: Quaran19\_265 Start: 122421, Stop: 122029, Start Num: 22

Candidate Starts for Quaran19\_265:

(Start: 22 @122421 has 59 MA's), (50, 122283), (53, 122250), (58, 122235), (65, 122196), (73, 122145), (84, 122091), (96, 122040),

Gene: Quaran19\_4 Start: 3239, Stop: 2847, Start Num: 22

Candidate Starts for Quaran19\_4:

(Start: 22 @3239 has 59 MA's), (50, 3101), (53, 3068), (58, 3053), (65, 3014), (73, 2963), (84, 2909), (96, 2858),

Gene: Quenya\_49 Start: 34399, Stop: 34833, Start Num: 25

Candidate Starts for Quenya\_49:

(Start: 25 @34399 has 44 MA's), (45, 34495), (49, 34513), (72, 34663), (90, 34750), (100, 34804),

Gene: Racecar\_296 Start: 177796, Stop: 178143, Start Num: 30

Candidate Starts for Racecar\_296:

(Start: 30 @177796 has 7 MA's), (Start: 34 @177808 has 1 MA's), (46, 177880), (54, 177931), (70, 178024), (76, 178045), (90, 178120), (92, 178129), (93, 178135),

Gene: Racecar\_7 Start: 4087, Stop: 4434, Start Num: 30

Candidate Starts for Racecar\_7:

(Start: 30 @4087 has 7 MA's), (Start: 34 @4099 has 1 MA's), (46, 4171), (54, 4222), (70, 4315), (76, 4336), (90, 4411), (92, 4420), (93, 4426),

Gene: ReginaGlobina\_317 Start: 181215, Stop: 181478, Start Num: 46

Candidate Starts for ReginaGlobina\_317:

(Start: 30 @181131 has 7 MA's), (46, 181215), (73, 181374), (79, 181392), (80, 181398), (81, 181407), (92, 181467), (93, 181473),

Gene: ReginaGlobina\_6 Start: 3768, Stop: 4031, Start Num: 46

Candidate Starts for ReginaGlobina\_6:

(Start: 30 @3684 has 7 MA's), (46, 3768), (73, 3927), (79, 3945), (80, 3951), (81, 3960), (92, 4020), (93, 4026),

Gene: RemusLoopin\_40 Start: 32252, Stop: 32656, Start Num: 26

Candidate Starts for RemusLoopin\_40:

(Start: 26 @32252 has 8 MA's), (33, 32282), (43, 32351), (46, 32360), (69, 32498), (84, 32576),

Gene: Rikishi\_273 Start: 122922, Stop: 122530, Start Num: 22

Candidate Starts for Rikishi\_273:

(Start: 22 @122922 has 59 MA's), (50, 122784), (53, 122751), (58, 122736), (65, 122697), (73, 122646), (84, 122592), (96, 122541),

Gene: Rikishi\_3 Start: 2849, Stop: 2457, Start Num: 22

Candidate Starts for Rikishi\_3:

(Start: 22 @2849 has 59 MA's), (50, 2711), (53, 2678), (58, 2663), (65, 2624), (73, 2573), (84, 2519), (96, 2468),

Gene: Rockabye\_305 Start: 176666, Stop: 177001, Start Num: 34

Candidate Starts for Rockabye\_305:

(Start: 30 @176654 has 7 MA's), (Start: 34 @176666 has 1 MA's), (35, 176705), (40, 176726), (46, 176738), (47, 176741), (59, 176816), (70, 176882), (76, 176903), (79, 176912), (81, 176927), (84, 176951), (92, 176987), (93, 176993),

Gene: Rockabye\_6 Start: 4053, Stop: 4388, Start Num: 34

Candidate Starts for Rockabye\_6:

(Start: 30 @4041 has 7 MA's), (Start: 34 @4053 has 1 MA's), (35, 4092), (40, 4113), (46, 4125), (47, 4128), (59, 4203), (70, 4269), (76, 4290), (79, 4299), (81, 4314), (84, 4338), (92, 4374), (93, 4380),

Gene: Rollins\_46 Start: 31506, Stop: 31931, Start Num: 25

Candidate Starts for Rollins\_46:

(18, 31470), (20, 31476), (Start: 25 @31506 has 44 MA's), (28, 31524), (64, 31716), (68, 31731), (71, 31773), (74, 31785), (92, 31875),

Gene: SJReid\_8 Start: 4281, Stop: 4634, Start Num: 29

Candidate Starts for SJReid\_8:

(29, 4281), (Start: 34 @4299 has 1 MA's), (46, 4371), (54, 4422), (79, 4545), (84, 4584), (85, 4590), (90, 4611), (92, 4620),

Gene: SJReid\_319 Start: 177120, Stop: 177473, Start Num: 29

Candidate Starts for SJReid\_319:

(29, 177120), (Start: 34 @177138 has 1 MA's), (46, 177210), (54, 177261), (79, 177384), (84, 177423), (85, 177429), (90, 177450), (92, 177459),

Gene: SaltySpitoot\_4 Start: 3239, Stop: 2847, Start Num: 22

Candidate Starts for SaltySpitoot\_4:

(Start: 22 @3239 has 59 MA's), (50, 3101), (53, 3068), (58, 3053), (65, 3014), (73, 2963), (84, 2909), (96, 2858),

Gene: SaltySpitoot\_264 Start: 121503, Stop: 121111, Start Num: 22

Candidate Starts for SaltySpitoot\_264:

(Start: 22 @121503 has 59 MA's), (50, 121365), (53, 121332), (58, 121317), (65, 121278), (73, 121227), (84, 121173), (96, 121122),

Gene: Samora\_39 Start: 31416, Stop: 31814, Start Num: 26

Candidate Starts for Samora\_39:

(10, 31338), (12, 31344), (Start: 26 @31416 has 8 MA's), (39, 31509), (46, 31524),

Gene: SansAfet\_51 Start: 33622, Stop: 34056, Start Num: 25

Candidate Starts for SansAfet\_51:

(5, 33493), (Start: 23 @33613 has 4 MA's), (Start: 25 @33622 has 44 MA's), (49, 33736), (72, 33886), (79, 33907),

Gene: SarBear\_50 Start: 33394, Stop: 33837, Start Num: 23

Candidate Starts for SarBear\_50:

(Start: 23 @33394 has 4 MA's), (Start: 25 @33403 has 44 MA's), (72, 33667), (87, 33739), (89, 33751),

Gene: Sebastisaurus\_39 Start: 31926, Stop: 32330, Start Num: 26

Candidate Starts for Sebastisaurus\_39:

(10, 31851), (Start: 26 @31926 has 8 MA's), (28, 31941), (43, 32025), (46, 32034), (56, 32091), (69, 32172), (84, 32250),

Gene: Shawty\_37 Start: 30679, Stop: 31077, Start Num: 26

Candidate Starts for Shawty\_37:

(14, 30613), (Start: 26 @30679 has 8 MA's), (43, 30778), (46, 30787), (55, 30841), (74, 30946), (76, 30952),

Gene: Skylord\_46 Start: 31437, Stop: 31862, Start Num: 25

Candidate Starts for Skylord\_46:

(18, 31401), (20, 31407), (Start: 25 @31437 has 44 MA's), (28, 31455), (64, 31647), (68, 31662), (71, 31704), (74, 31716), (92, 31806), (96, 31821),

Gene: Slay\_50 Start: 33935, Stop: 34378, Start Num: 23

Candidate Starts for Slay\_50:

(Start: 23 @33935 has 4 MA's), (Start: 25 @33944 has 44 MA's), (72, 34208), (79, 34229), (87, 34280),

Gene: Softsoap\_50 Start: 33602, Stop: 34036, Start Num: 25

Candidate Starts for Softsoap\_50:

(6, 33479), (Start: 25 @33602 has 44 MA's), (49, 33716), (72, 33866), (79, 33887), (87, 33938),

Gene: Solea\_51 Start: 33535, Stop: 33978, Start Num: 23

Candidate Starts for Solea\_51:

(Start: 23 @33535 has 4 MA's), (Start: 25 @33544 has 44 MA's), (70, 33799), (72, 33808), (79, 33829),

Gene: Sollertia\_261 Start: 122109, Stop: 121717, Start Num: 22

Candidate Starts for Sollertia\_261:

(19, 122130), (Start: 22 @122109 has 59 MA's), (31, 122073), (50, 121971), (69, 121851), (81, 121803), (96, 121728),

Gene: Sollertia\_5 Start: 3219, Stop: 2827, Start Num: 22

Candidate Starts for Sollertia\_5:

(19, 3240), (Start: 22 @3219 has 59 MA's), (31, 3183), (50, 3081), (69, 2961), (81, 2913), (96, 2838),

Gene: Spelly\_270 Start: 122043, Stop: 121651, Start Num: 22

Candidate Starts for Spelly\_270:

(Start: 22 @122043 has 59 MA's), (50, 121905), (53, 121872), (58, 121857), (65, 121818), (73, 121767), (84, 121713), (96, 121662),

Gene: Spelly\_4 Start: 3239, Stop: 2847, Start Num: 22

Candidate Starts for Spelly\_4:

(Start: 22 @3239 has 59 MA's), (50, 3101), (53, 3068), (58, 3053), (65, 3014), (73, 2963), (84, 2909), (96, 2858),

Gene: Spilled\_271 Start: 123318, Stop: 122926, Start Num: 22

Candidate Starts for Spilled\_271:

(Start: 22 @123318 has 59 MA's), (50, 123180), (53, 123147), (58, 123132), (65, 123093), (73, 123042), (84, 122988), (96, 122937),

Gene: Spilled\_3 Start: 2849, Stop: 2457, Start Num: 22

Candidate Starts for Spilled\_3:

(Start: 22 @2849 has 59 MA's), (50, 2711), (53, 2678), (58, 2663), (65, 2624), (73, 2573), (84, 2519), (96, 2468),

Gene: Stanimal\_5 Start: 3219, Stop: 2827, Start Num: 22

Candidate Starts for Stanimal\_5:

(19, 3240), (Start: 22 @3219 has 59 MA's), (31, 3183), (50, 3081), (69, 2961), (81, 2913), (96, 2838),

Gene: Stanimal\_260 Start: 122493, Stop: 122101, Start Num: 22

Candidate Starts for Stanimal\_260:

(19, 122514), (Start: 22 @122493 has 59 MA's), (31, 122457), (50, 122355), (69, 122235), (81, 122187), (96, 122112),

Gene: StarPlatinum\_3 Start: 2983, Stop: 2591, Start Num: 22

Candidate Starts for StarPlatinum\_3:

(Start: 22 @2983 has 59 MA's), (42, 2881), (50, 2845), (53, 2812), (58, 2797), (60, 2779), (65, 2758), (73, 2707), (81, 2677), (84, 2653), (86, 2644), (96, 2602),

Gene: StarPlatinum\_273 Start: 124670, Stop: 124278, Start Num: 22

Candidate Starts for StarPlatinum\_273:

(Start: 22 @124670 has 59 MA's), (42, 124568), (50, 124532), (53, 124499), (58, 124484), (60, 124466), (65, 124445), (73, 124394), (81, 124364), (84, 124340), (86, 124331), (96, 124289),

Gene: Starbow\_261 Start: 122087, Stop: 121695, Start Num: 22

Candidate Starts for Starbow\_261:

(Start: 22 @122087 has 59 MA's), (50, 121949), (53, 121916), (58, 121901), (65, 121862), (73, 121811), (84, 121757), (96, 121706),

Gene: Starbow\_4 Start: 3239, Stop: 2847, Start Num: 22

Candidate Starts for Starbow\_4:

(Start: 22 @3239 has 59 MA's), (50, 3101), (53, 3068), (58, 3053), (65, 3014), (73, 2963), (84, 2909), (96, 2858),

Gene: Swervy\_51 Start: 33675, Stop: 34109, Start Num: 25

Candidate Starts for Swervy\_51:

(Start: 23 @33666 has 4 MA's), (Start: 25 @33675 has 44 MA's), (72, 33939), (87, 34011), (89, 34023),

Gene: TG1\_34 Start: 29721, Stop: 30113, Start Num: 27

Candidate Starts for TG1\_34:

(Start: 26 @29715 has 8 MA's), (Start: 27 @29721 has 1 MA's), (39, 29808), (46, 29826), (72, 29979),

Gene: Talia1610\_7 Start: 4042, Stop: 4389, Start Num: 30

Candidate Starts for Talia1610\_7:

(Start: 30 @4042 has 7 MA's), (Start: 34 @4054 has 1 MA's), (46, 4126), (54, 4177), (70, 4270), (90, 4366), (92, 4375), (93, 4381),

Gene: Talia1610\_293 Start: 178514, Stop: 178861, Start Num: 30

Candidate Starts for Talia1610\_293:

(Start: 30 @178514 has 7 MA's), (Start: 34 @178526 has 1 MA's), (46, 178598), (54, 178649), (70, 178742), (90, 178838), (92, 178847), (93, 178853),

Gene: TomSawyer\_269 Start: 124612, Stop: 124220, Start Num: 22

Candidate Starts for TomSawyer\_269:

(Start: 22 @124612 has 59 MA's), (50, 124474), (53, 124441), (58, 124426), (65, 124387), (73, 124336), (84, 124282), (96, 124231),

Gene: TomSawyer\_4 Start: 2833, Stop: 2441, Start Num: 22

Candidate Starts for TomSawyer\_4:

(Start: 22 @2833 has 59 MA's), (50, 2695), (53, 2662), (58, 2647), (65, 2608), (73, 2557), (84, 2503), (96, 2452),

Gene: Tomas\_4 Start: 3256, Stop: 2858, Start Num: 22

Candidate Starts for Tomas\_4:

(11, 3319), (13, 3316), (Start: 22 @3256 has 59 MA's), (37, 3169), (48, 3130), (51, 3112), (65, 3028), (73, 2977), (75, 2971), (77, 2965), (81, 2944), (89, 2896), (94, 2875),

Gene: Tomas\_260 Start: 124963, Stop: 124565, Start Num: 22

Candidate Starts for Tomas\_260:

(11, 125026), (13, 125023), (Start: 22 @124963 has 59 MA's), (37, 124876), (48, 124837), (51, 124819), (65, 124735), (73, 124684), (75, 124678), (77, 124672), (81, 124651), (89, 124603), (94, 124582),

Gene: TukTuk\_51 Start: 33683, Stop: 34117, Start Num: 25

Candidate Starts for TukTuk\_51:

(Start: 23 @33674 has 4 MA's), (Start: 25 @33683 has 44 MA's), (72, 33947), (87, 34019),

Gene: Vash\_37 Start: 30660, Stop: 31058, Start Num: 26

Candidate Starts for Vash\_37:

(Start: 26 @30660 has 8 MA's), (Start: 27 @30666 has 1 MA's), (36, 30735), (43, 30759), (46, 30768), (81, 30957), (84, 30984),

Gene: Vitas\_46 Start: 31419, Stop: 31844, Start Num: 25  
Candidate Starts for Vitas\_46:  
(18, 31383), (20, 31389), (Start: 25 @31419 has 44 MA's), (64, 31629), (68, 31644), (71, 31686), (74, 31698), (92, 31788), (96, 31803),

Gene: WaddleDee\_4 Start: 2969, Stop: 3316, Start Num: 30  
Candidate Starts for WaddleDee\_4:  
(Start: 30 @2969 has 7 MA's), (46, 3053), (74, 3215), (78, 3227), (81, 3245), (90, 3296),

Gene: WaddleDee\_306 Start: 181164, Stop: 181511, Start Num: 30  
Candidate Starts for WaddleDee\_306:  
(Start: 30 @181164 has 7 MA's), (46, 181248), (74, 181410), (78, 181422), (81, 181440), (90, 181491),

Gene: Wipeout\_3 Start: 2854, Stop: 2462, Start Num: 22  
Candidate Starts for Wipeout\_3:  
(Start: 22 @2854 has 59 MA's), (50, 2716), (53, 2683), (58, 2668), (65, 2629), (73, 2578), (84, 2524), (96, 2473),

Gene: Wipeout\_256 Start: 123585, Stop: 123193, Start Num: 22  
Candidate Starts for Wipeout\_256:  
(Start: 22 @123585 has 59 MA's), (50, 123447), (53, 123414), (58, 123399), (65, 123360), (73, 123309), (84, 123255), (96, 123204),

Gene: Wofford\_4 Start: 3125, Stop: 2730, Start Num: 22  
Candidate Starts for Wofford\_4:  
(Start: 22 @3125 has 59 MA's), (50, 2987), (60, 2921), (65, 2900), (69, 2867), (74, 2846), (75, 2843), (81, 2816), (86, 2783), (90, 2765), (96, 2741),

Gene: Wofford\_262 Start: 124918, Stop: 124523, Start Num: 22  
Candidate Starts for Wofford\_262:  
(Start: 22 @124918 has 59 MA's), (50, 124780), (60, 124714), (65, 124693), (69, 124660), (74, 124639), (75, 124636), (81, 124609), (86, 124576), (90, 124558), (96, 124534),

Gene: Yaboi\_5 Start: 3219, Stop: 2827, Start Num: 22  
Candidate Starts for Yaboi\_5:  
(19, 3240), (Start: 22 @3219 has 59 MA's), (31, 3183), (50, 3081), (69, 2961), (81, 2913), (96, 2838),

Gene: Yaboi\_266 Start: 122037, Stop: 121645, Start Num: 22  
Candidate Starts for Yaboi\_266:  
(19, 122058), (Start: 22 @122037 has 59 MA's), (31, 122001), (50, 121899), (69, 121779), (81, 121731), (96, 121656),

Gene: Yappy\_109 Start: 56080, Stop: 55733, Start Num: 32  
Candidate Starts for Yappy\_109:  
(Start: 32 @56080 has 1 MA's), (35, 56035), (46, 56008), (50, 55990), (57, 55939), (76, 55837), (84, 55795), (95, 55750),

Gene: phiBT1\_14 Start: 32102, Stop: 32500, Start Num: 26  
Candidate Starts for phiBT1\_14:  
(Start: 26 @32102 has 8 MA's), (46, 32210), (69, 32348),

Gene: phiSASD1\_5 Start: 21806, Stop: 22309, Start Num: 22  
Candidate Starts for phiSASD1\_5:

(Start: 22 @21806 has 59 MA's), (41, 21917), (63, 22025), (73, 22085), (79, 22103), (81, 22118), (82, 22124), (88, 22169), (98, 22217), (104, 22250), (106, 22253),