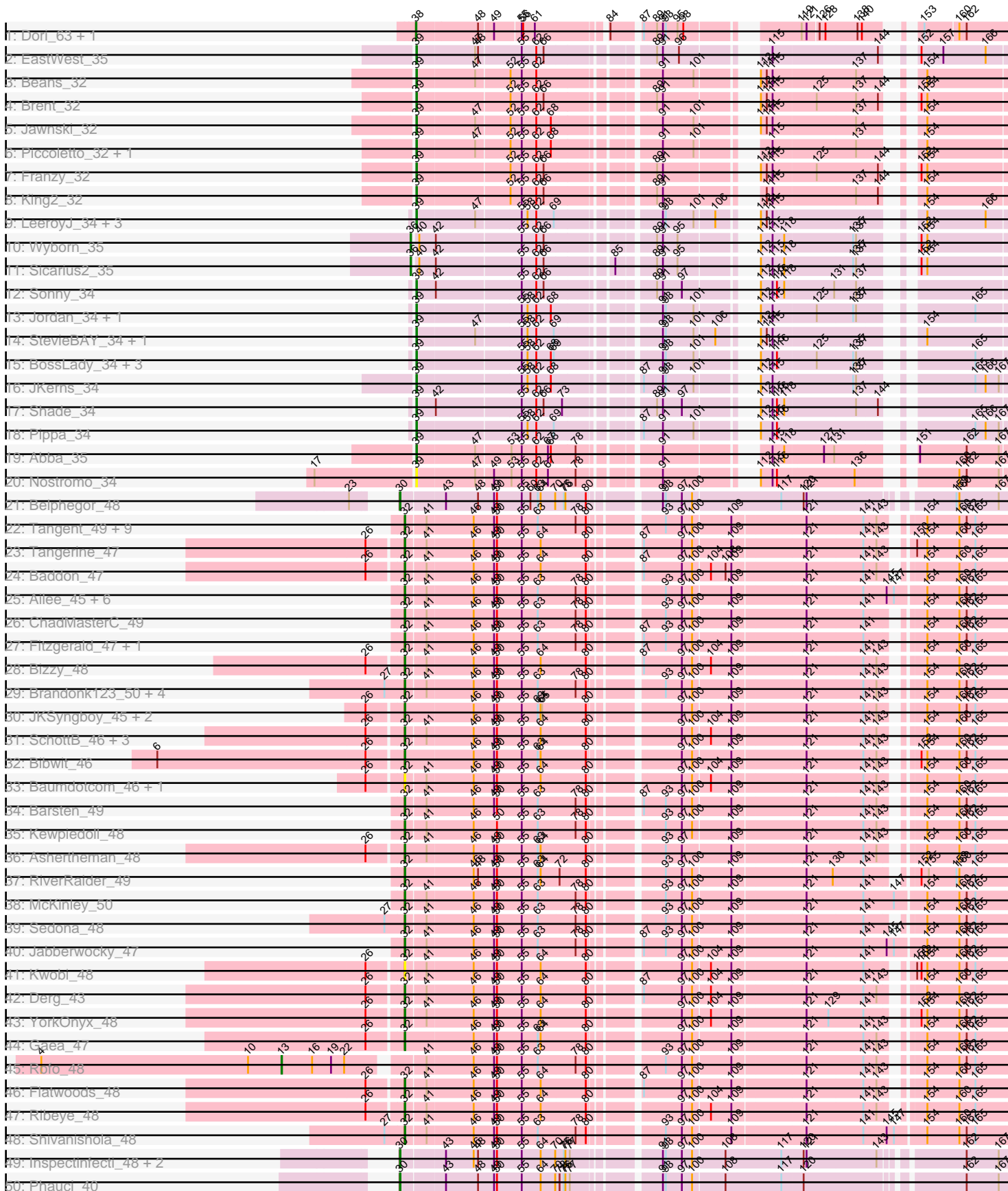
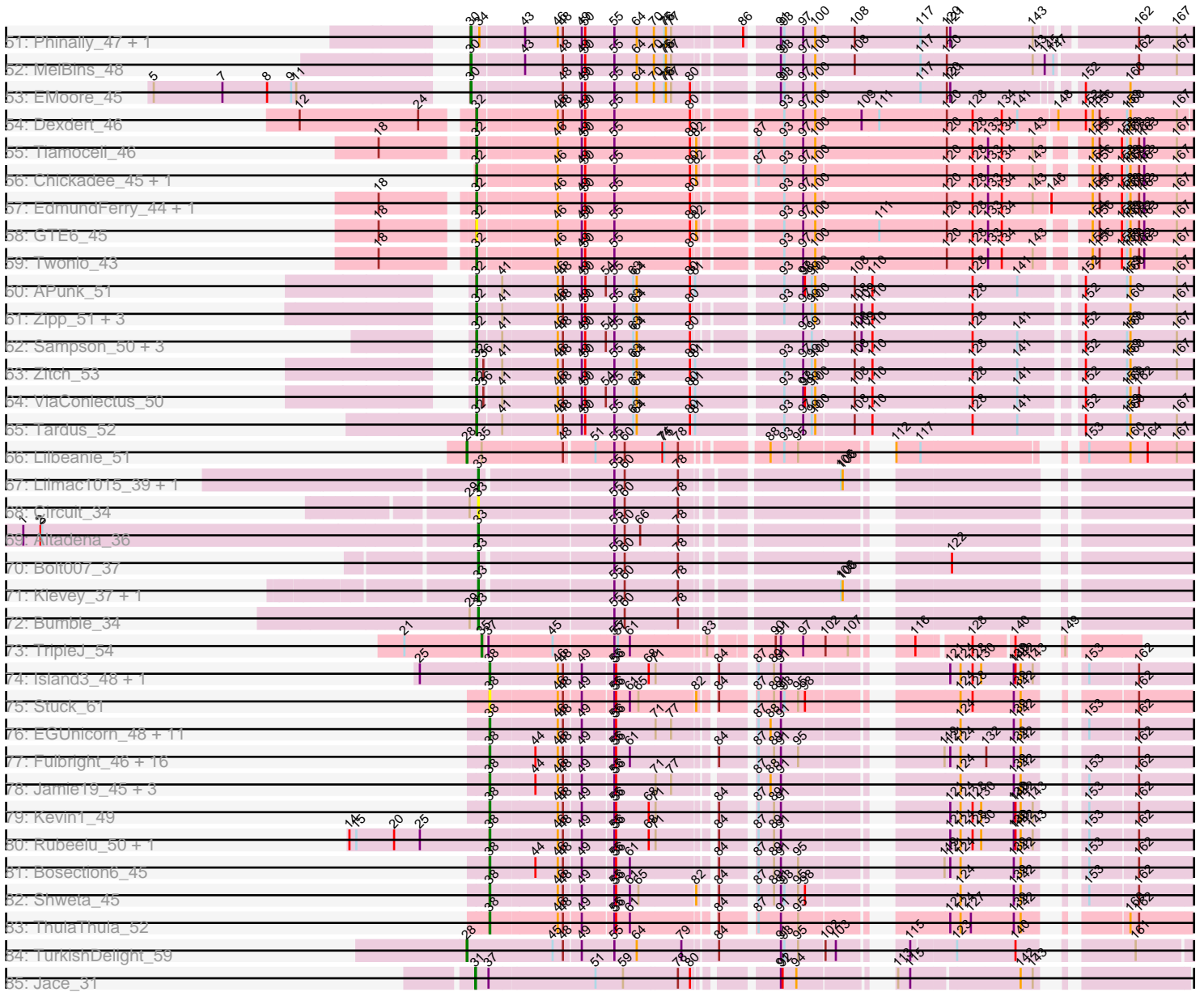


Pham 224333



Pham 224333



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 224333 Report

This analysis was run 03/28/25 on database version 593.

Pham number 224333 has 166 members, 20 are drafts.

Phages represented in each track:

- Track 1 : Dori\_63, Mask\_63
- Track 2 : EastWest\_35
- Track 3 : Beans\_32
- Track 4 : Brent\_32
- Track 5 : Jawnski\_32
- Track 6 : Piccoletto\_32, NathanVaag\_32
- Track 7 : Franzy\_32
- Track 8 : King2\_32
- Track 9 : LeeroyJ\_34, BarretLemon\_34, BigDome\_34, Timinator\_34
- Track 10 : Wyborn\_35
- Track 11 : Sicarius2\_35
- Track 12 : Sonny\_34
- Track 13 : Jordan\_34, Zartrosa\_34
- Track 14 : StevieBAY\_34, GravityBall\_34
- Track 15 : BossLady\_34, Martha\_34, TaeYoung\_34, Grekaycon\_34
- Track 16 : JKerns\_34
- Track 17 : Shade\_34
- Track 18 : Pippa\_34
- Track 19 : Abba\_35
- Track 20 : Nostromo\_34
- Track 21 : Belphegor\_48
- Track 22 : Tangent\_49, FuegoCuervo\_51, MoontowerMania\_48, Charming\_49, Geodirt\_47, Vivi2\_51, Fosterous\_46, Love\_52, Kamashten\_46, Thing3\_46
- Track 23 : Tangerine\_47
- Track 24 : Baddon\_47
- Track 25 : Ailee\_45, Sitar\_48, Affeca\_46, Stultus\_47, Keitabear\_48, Lennon\_48, Angelicage\_46
- Track 26 : ChadMasterC\_49
- Track 27 : Fitzgerald\_47, Sanjuju\_47
- Track 28 : Bizzy\_48
- Track 29 : Brandonk123\_50, Galadriel\_48, Nordenberg\_43, Paries\_51, BobBob\_46
- Track 30 : JKSyngboy\_45, Saronaya\_47, Gustavo\_47
- Track 31 : SchottB\_46, StorminNorm\_47, Kroos\_48, Tycho\_47
- Track 32 : Bibwit\_46
- Track 33 : Baumdotcom\_46, LilHam\_45
- Track 34 : Barsten\_49
- Track 35 : Kewpiedoll\_48

- Track 36 : Ashertheman\_48
- Track 37 : RiverRaider\_49
- Track 38 : McKinley\_50
- Track 39 : Sedona\_48
- Track 40 : Jabberwocky\_47
- Track 41 : Kwobi\_48
- Track 42 : Derg\_43
- Track 43 : YorkOnyx\_48
- Track 44 : Gaea\_47
- Track 45 : Rofo\_48
- Track 46 : Flatwoods\_48
- Track 47 : Ribeye\_48
- Track 48 : Shivanishola\_48
- Track 49 : Inspectinfecti\_48, Hans\_49, Ali17\_45
- Track 50 : Phauci\_40
- Track 51 : Phinally\_47, Leonard\_47
- Track 52 : MelBins\_48
- Track 53 : EMoore\_45
- Track 54 : Dxdert\_46
- Track 55 : Tiamoceli\_46
- Track 56 : Chickadee\_45, Kwekel\_45
- Track 57 : EdmundFerry\_44, RoadKill\_43
- Track 58 : GTE6\_45
- Track 59 : Twonlo\_43
- Track 60 : APunk\_51
- Track 61 : Zipp\_51, Delrey21\_50, DoctorFroggo\_50, Verity\_50
- Track 62 : Sampson\_50, Scioto\_51, Natkenzie\_50, Abblin\_50
- Track 63 : Zitch\_53
- Track 64 : ViaConlectus\_50
- Track 65 : Tardus\_52
- Track 66 : Lilbeanie\_51
- Track 67 : Lilmac1015\_39, CalWood4100\_39
- Track 68 : Circuit\_34
- Track 69 : Altadena\_36
- Track 70 : Bolt007\_37
- Track 71 : Klevey\_37, Prairie\_36
- Track 72 : Bumble\_34
- Track 73 : TripleJ\_54
- Track 74 : Island3\_48, Brujita\_48
- Track 75 : Stuck\_61
- Track 76 : EGUnicorn\_48, Andies\_44, ShrimpFriedEgg\_51, Rebel\_43, Nenae\_51, Purgamenstris\_51, Raymond7\_45, BabeRuth\_52, Redi\_51, Hanako\_51, PhancyPhin\_51, Phrann\_48
- Track 77 : Fulbright\_46, Melville\_50, Parmesanjohn\_47, Schnauzer\_48, Magsby\_47, Scitech\_44, Silvafighter\_48, Tortoise12\_47, Carcharodon\_47, Gex\_47, Xerxes\_47, Pipsqueaks\_47, Smurph\_47, Phloss\_45, Tapioca\_49, Chewbacca\_49, Duplicity\_47
- Track 78 : Jamie19\_45, Panchino\_44, SpongeBob\_45, Snekmaggedon\_45
- Track 79 : Kevin1\_49
- Track 80 : Rubeelu\_50, Butters\_50
- Track 81 : Bosection6\_45
- Track 82 : Shweta\_45
- Track 83 : ThulaThula\_52

- Track 84 : TurkishDelight\_59
- Track 85 : Jace\_31

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

The start number called the most often in the published annotations is 32, it was called in 60 of the 146 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- APunk\_51, Abblin\_50, Affeca\_46, Ailee\_45, Angelicage\_46, Ashertheman\_48, Baddon\_47, Barsten\_49, Baumdotcom\_46, Bibwit\_46, Bizzy\_48, BobBob\_46, Brandonk123\_50, ChadMasterC\_49, Charming\_49, Chickadee\_45, Delrey21\_50, Derg\_43, Dextert\_46, DoctorFroggo\_50, EdmundFerry\_44, Fitzgerald\_47, Flatwoods\_48, Fosterous\_46, FuegoCuervo\_51, GTE6\_45, Gaea\_47, Galadriel\_48, Geodirt\_47, Gustavo\_47, JKSyngboy\_45, Jabberwocky\_47, Kamashten\_46, Keitabear\_48, Kewpiedoll\_48, Kroos\_48, Kwekel\_45, Kwobi\_48, Lennon\_48, LillHam\_45, Love\_52, McKinley\_50, MoontowerMania\_48, Natkenzie\_50, Nordenberg\_43, Paries\_51, Ribeye\_48, RiverRaider\_49, RoadKill\_43, Sampson\_50, Sanjuju\_47, Saronaya\_47, SchottB\_46, Scioto\_51, Sedona\_48, Shivanishola\_48, Sitar\_48, StorminNorm\_47, Stultus\_47, Tangent\_49, Tangerine\_47, Tardus\_52, Thing3\_46, Tiamoceli\_46, Twonlo\_43, Tycho\_47, Verity\_50, ViaConlectus\_50, Vivi2\_51, YorkOnyx\_48, Zipp\_51, Zitch\_53,

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

- 

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

- Abba\_35, Ali17\_45, Altadena\_36, Andies\_44, BabeRuth\_52, BarretLemon\_34, Beans\_32, Belphegor\_48, BigDome\_34, Bolt007\_37, Bosection6\_45, BossLady\_34, Brent\_32, Brujita\_48, Bumble\_34, Butters\_50, CalWood4100\_39, Carcharodon\_47, Chewbacca\_49, Circuit\_34, Dori\_63, Duplicity\_47, EGUnicorn\_48, EMoore\_45, EastWest\_35, Franzy\_32, Fulbright\_46, Gex\_47, GravityBall\_34, Grekaycon\_34, Hanako\_51, Hans\_49, Inspectinfecti\_48, Island3\_48, JKerns\_34, Jace\_31, Jamie19\_45, Jawnski\_32, Jordan\_34, Kevin1\_49, King2\_32, Klevey\_37, LeeroyJ\_34, Leonard\_47, Lilbeanie\_51, Lilmac1015\_39, Magsby\_47, Martha\_34, Mask\_63, MelBins\_48, Melville\_50, NathanVaag\_32, Nenae\_51, Nostromo\_34, Panchino\_44, Parmesanjohn\_47, PhancyPhin\_51, Phauci\_40, Phinally\_47, Phloss\_45, Phrann\_48, Piccoletto\_32, Pippa\_34, Pipsqueaks\_47, Prairie\_36, Purgamenstris\_51, Raymond7\_45, Rebel\_43, Redi\_51, Rofo\_48, Rubeelu\_50, Schnauzer\_48, Scitech\_44, Shade\_34, ShrimpFriedEgg\_51, Shweta\_45, Sicarius2\_35, Silvafighter\_48, Smurph\_47, Snekmaggon\_45, Sonny\_34, SpongeBob\_45, StevieBAY\_34, Stuck\_61, TaeYoung\_34, Tapioca\_49, ThulaThula\_52, Timinator\_34, Tortoise12\_47, TripleJ\_54, TurkishDelight\_59, Wyborn\_35, Xerxes\_47, Zartrosa\_34,

### **Summary by start number:**

Start 13:

- Found in 1 of 166 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 146
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Rofo\_48 (DE1),

#### Start 28:

- Found in 2 of 166 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 2 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lilbeanie\_51 (DE5), TurkishDelight\_59 (singleton),

#### Start 30:

- Found in 9 of 166 ( 5.4% ) of genes in pham
- Manual Annotations of this start: 9 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ali17\_45 (DE2), Belphegor\_48 (DE), EMOore\_45 (DE2), Hans\_49 (DE2), Inspectinfecti\_48 (DE2), Leonard\_47 (DE2), MelBins\_48 (DE2), Phauci\_40 (DE2), Phinally\_47 (DE2),

#### Start 31:

- Found in 1 of 166 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jace\_31 (singleton),

#### Start 32:

- Found in 72 of 166 ( 43.4% ) of genes in pham
- Manual Annotations of this start: 60 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: APunk\_51 (DE4), Abblin\_50 (DE4), Affeca\_46 (DE1), Ailee\_45 (DE1), Angelicage\_46 (DE1), Ashertheman\_48 (DE1), Baddon\_47 (DE1), Barsten\_49 (DE1), Baumdotcom\_46 (DE1), Bibwit\_46 (DE1), Bizzy\_48 (DE1), BobBob\_46 (DE1), Brandonk123\_50 (DE1), ChadMasterC\_49 (DE1), Charming\_49 (DE1), Chickadee\_45 (DE3), Delrey21\_50 (DE4), Derg\_43 (DE1), Dextert\_46 (DE3), DoctorFroggo\_50 (DE4), EdmundFerry\_44 (DE3), Fitzgerald\_47 (DE1), Flatwoods\_48 (DE1), Fosterous\_46 (DE1), FuegoCuervo\_51 (DE1), GTE6\_45 (DE3), Gaea\_47 (DE1), Galadriel\_48 (DE1), Geodirt\_47 (DE1), Gustavo\_47 (DE1), JKSyngboy\_45 (DE1), Jabberwocky\_47 (DE1), Kamashten\_46 (DE1), Keitabear\_48 (DE1), Kewpiedoll\_48 (DE1), Kroos\_48 (DE1), Kwekel\_45 (DE3), Kwobi\_48 (DE1), Lennon\_48 (DE1), LilHam\_45 (DE1), Love\_52 (DE1), McKinley\_50 (DE1), MoontowerMania\_48 (DE1), Natkenzie\_50 (DE4), Nordenberg\_43 (DE1), Paries\_51 (DE1), Ribeye\_48 (DE1), RiverRaider\_49 (DE1), RoadKill\_43 (DE3), Sampson\_50 (DE4), Sanjuju\_47 (DE1), Saronaya\_47 (DE1), SchottB\_46 (DE1), Scioto\_51 (DE4), Sedona\_48 (DE1), Shivanishola\_48 (DE1), Sitar\_48 (DE1), StorminNorm\_47 (DE1), Stultus\_47 (DE1), Tangent\_49 (DE1), Tangerine\_47 (DE1), Tardus\_52 (DE4), Thing3\_46 (DE1), Tiamoceli\_46 (DE3), Twonlo\_43 (DE3), Tycho\_47 (DE1), Verity\_50 (DE4), ViaConlectus\_50 (DE4), Vivi2\_51 (DE1), YorkOnyx\_48 (DE1), Zipp\_51 (DE4), Zitch\_53 (DE4),

#### Start 33:

- Found in 8 of 166 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 6 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Altadena\_36 (FH), Bolt007\_37 (FH), Bumble\_34 (FH), CalWood4100\_39 (FH), Circuit\_34 (FH), Klevey\_37 (FH),

Lilmac1015\_39 (FH), Prairie\_36 (FH),

Start 35:

- Found in 2 of 166 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 146
- Called 50.0% of time when present
- Phage (with cluster) where this start called: TripleJ\_54 (FJ),

Start 36:

- Found in 4 of 166 ( 2.4% ) of genes in pham
- Manual Annotations of this start: 2 of 146
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Sicarius2\_35 (AO2), Wyborn\_35 (AO2),

Start 38:

- Found in 44 of 166 ( 26.5% ) of genes in pham
- Manual Annotations of this start: 40 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Andies\_44 (N), BabeRuth\_52 (N), Bosection6\_45 (N), Brujita\_48 (I1), Butters\_50 (N), Carcharodon\_47 (N), Chewbacca\_49 (N), Dori\_63 (AD), Duplicity\_47 (N), EGUnicorn\_48 (N), Fulbright\_46 (N), Gex\_47 (N), Hanako\_51 (N), Island3\_48 (I1), Jamie19\_45 (N), Kevin1\_49 (N), Magsby\_47 (N), Mask\_63 (AD), Melville\_50 (N), Nenae\_51 (N), Panchino\_44 (N), Parmesanjohn\_47 (N), PhancyPhin\_51 (N), Phloss\_45 (N), Phrann\_48 (N), Pipsqueaks\_47 (N), Purgamenstris\_51 (N), Raymond7\_45 (N), Rebel\_43 (N), Redi\_51 (N), Rubeelu\_50 (N), Schnauzer\_48 (N), Scitech\_44 (N), ShrimpFriedEgg\_51 (N), Shweta\_45 (N), Silvafighter\_48 (N), Smurph\_47 (N), Snekmaggedon\_45 (N), SpongeBob\_45 (N), Stuck\_61 (I2), Tapioca\_49 (N), ThulaThula\_52 (P5), Tortoise12\_47 (N), Xerxes\_47 (N),

Start 39:

- Found in 26 of 166 ( 15.7% ) of genes in pham
- Manual Annotations of this start: 24 of 146
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abba\_35 (AO3), BarretLemon\_34 (AO2), Beans\_32 (AO1), BigDome\_34 (AO2), BossLady\_34 (AO2), Brent\_32 (AO1), EastWest\_35 (AO), Franzy\_32 (AO1), GravityBall\_34 (AO2), Grekaycon\_34 (AO2), JKerns\_34 (AO2), Jawnski\_32 (AO1), Jordan\_34 (AO2), King2\_32 (AO1), LeeroyJ\_34 (AO2), Martha\_34 (AO2), NathanVaag\_32 (AO1), Nostromo\_34 (AO3), Piccoletto\_32 (AO1), Pippa\_34 (AO2), Shade\_34 (AO2), Sonny\_34 (AO2), StevieBAY\_34 (AO2), TaeYoung\_34 (AO2), Timinator\_34 (AO2), Zartrosa\_34 (AO2),

### Summary by clusters:

There are 18 clusters represented in this pham: singleton, DE, AD, P5, I1, DE1, DE2, DE3, DE4, DE5, AO, N, AO3, AO2, AO1, FH, FJ, I2,

Info for manual annotations of cluster AD:

- Start number 38 was manually annotated 2 times for cluster AD.

Info for manual annotations of cluster AO:

- Start number 39 was manually annotated 1 time for cluster AO.

Info for manual annotations of cluster AO1:

- Start number 39 was manually annotated 7 times for cluster AO1.

Info for manual annotations of cluster AO2:

- Start number 36 was manually annotated 2 times for cluster AO2.
- Start number 39 was manually annotated 15 times for cluster AO2.

Info for manual annotations of cluster AO3:

- Start number 39 was manually annotated 1 time for cluster AO3.

Info for manual annotations of cluster DE:

- Start number 30 was manually annotated 1 time for cluster DE.

Info for manual annotations of cluster DE1:

- Start number 13 was manually annotated 1 time for cluster DE1.
- Start number 32 was manually annotated 44 times for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 30 was manually annotated 8 times for cluster DE2.

Info for manual annotations of cluster DE3:

- Start number 32 was manually annotated 7 times for cluster DE3.

Info for manual annotations of cluster DE4:

- Start number 32 was manually annotated 9 times for cluster DE4.

Info for manual annotations of cluster DE5:

- Start number 28 was manually annotated 1 time for cluster DE5.

Info for manual annotations of cluster FH:

- Start number 33 was manually annotated 6 times for cluster FH.

Info for manual annotations of cluster FJ:

- Start number 35 was manually annotated 1 time for cluster FJ.

Info for manual annotations of cluster I1:

- Start number 38 was manually annotated 2 times for cluster I1.

Info for manual annotations of cluster N:

- Start number 38 was manually annotated 35 times for cluster N.

Info for manual annotations of cluster P5:

- Start number 38 was manually annotated 1 time for cluster P5.

**Gene Information:**

Gene: APunk\_51 Start: 41866, Stop: 43041, Start Num: 32

Candidate Starts for APunk\_51:

(Start: 32 @41866 has 60 MA's), (41, 41905), (46, 41998), (48, 42007), (49, 42040), (50, 42046), (54, 42082), (55, 42097), (63, 42130), (64, 42136), (80, 42229), (81, 42238), (93, 42373), (97, 42406), (98,



42409), (99, 42421), (100, 42427), (108, 42490), (110, 42520), (128, 42691), (141, 42766), (152, 42850), (159, 42922), (160, 42928), (167, 43009),

Gene: Abba\_35 Start: 27714, Stop: 28745, Start Num: 39

Candidate Starts for Abba\_35:

(Start: 39 @27714 has 24 MA's), (47, 27831), (53, 27897), (55, 27915), (62, 27945), (67, 27969), (68, 27975), (78, 28023), (91, 28155), (115, 28317), (118, 28341), (127, 28416), (131, 28437), (151, 28542), (162, 28635), (167, 28701),

Gene: Abblin\_50 Start: 42409, Stop: 43563, Start Num: 32

Candidate Starts for Abblin\_50:

(Start: 32 @42409 has 60 MA's), (41, 42448), (46, 42541), (48, 42550), (49, 42583), (50, 42589), (54, 42625), (55, 42640), (63, 42673), (64, 42679), (80, 42772), (97, 42928), (99, 42943), (108, 43012), (109, 43024), (110, 43042), (128, 43213), (141, 43288), (152, 43372), (159, 43444), (160, 43450), (167, 43531),

Gene: Affeca\_46 Start: 40965, Stop: 42128, Start Num: 32

Candidate Starts for Affeca\_46:

(Start: 32 @40965 has 60 MA's), (41, 41004), (46, 41097), (49, 41139), (50, 41145), (55, 41196), (63, 41229), (78, 41304), (80, 41325), (93, 41448), (97, 41481), (100, 41502), (109, 41577), (121, 41715), (141, 41829), (145, 41877), (147, 41892), (154, 41952), (160, 42018), (162, 42033), (165, 42051),

Gene: Ailee\_45 Start: 40558, Stop: 41721, Start Num: 32

Candidate Starts for Ailee\_45:

(Start: 32 @40558 has 60 MA's), (41, 40597), (46, 40690), (49, 40732), (50, 40738), (55, 40789), (63, 40822), (78, 40897), (80, 40918), (93, 41041), (97, 41074), (100, 41095), (109, 41170), (121, 41308), (141, 41422), (145, 41470), (147, 41485), (154, 41545), (160, 41611), (162, 41626), (165, 41644),

Gene: Ali17\_45 Start: 39857, Stop: 41008, Start Num: 30

Candidate Starts for Ali17\_45:

(Start: 30 @39857 has 9 MA's), (43, 39941), (46, 39998), (48, 40007), (49, 40040), (50, 40046), (55, 40094), (64, 40133), (70, 40163), (75, 40181), (76, 40184), (77, 40193), (91, 40343), (93, 40349), (97, 40382), (100, 40403), (108, 40466), (117, 40580), (120, 40622), (121, 40628), (143, 40766), (162, 40910), (167, 40976),

Gene: Altadena\_36 Start: 26934, Stop: 28001, Start Num: 33

Candidate Starts for Altadena\_36:

(1, 26163), (2, 26193), (3, 26196), (Start: 33 @26934 has 6 MA's), (55, 27156), (60, 27174), (66, 27201), (78, 27264),

Gene: Andies\_44 Start: 31627, Stop: 32637, Start Num: 38

Candidate Starts for Andies\_44:

(Start: 38 @31627 has 40 MA's), (46, 31741), (48, 31750), (49, 31777), (55, 31828), (56, 31831), (71, 31897), (77, 31924), (87, 32032), (88, 32050), (91, 32068), (124, 32317), (139, 32407), (142, 32419), (153, 32467), (162, 32548),

Gene: Angelicage\_46 Start: 41383, Stop: 42546, Start Num: 32

Candidate Starts for Angelicage\_46:

(Start: 32 @41383 has 60 MA's), (41, 41422), (46, 41515), (49, 41557), (50, 41563), (55, 41614), (63, 41647), (78, 41722), (80, 41743), (93, 41866), (97, 41899), (100, 41920), (109, 41995), (121, 42133), (141, 42247), (145, 42295), (147, 42310), (154, 42370), (160, 42436), (162, 42451), (165, 42469),

Gene: Ashertheman\_48 Start: 41154, Stop: 42287, Start Num: 32

Candidate Starts for Ashertheman\_48:

(26, 41085), (Start: 32 @41154 has 60 MA's), (41, 41199), (46, 41292), (49, 41334), (50, 41340), (55, 41391), (63, 41424), (64, 41430), (80, 41520), (93, 41643), (97, 41676), (109, 41772), (121, 41910), (141, 42024), (143, 42051), (154, 42111), (160, 42177), (165, 42210),

Gene: BabeRuth\_52 Start: 33348, Stop: 34358, Start Num: 38

Candidate Starts for BabeRuth\_52:

(Start: 38 @33348 has 40 MA's), (46, 33462), (48, 33471), (49, 33498), (55, 33549), (56, 33552), (71, 33618), (77, 33645), (87, 33753), (88, 33771), (91, 33789), (124, 34038), (139, 34128), (142, 34140), (153, 34188), (162, 34269),

Gene: Baddon\_47 Start: 41688, Stop: 42815, Start Num: 32

Candidate Starts for Baddon\_47:

(26, 41619), (Start: 32 @41688 has 60 MA's), (41, 41727), (46, 41820), (49, 41862), (50, 41868), (55, 41919), (64, 41958), (80, 42048), (87, 42129), (97, 42204), (100, 42225), (104, 42258), (108, 42288), (109, 42300), (121, 42438), (141, 42552), (143, 42579), (154, 42639), (160, 42705), (165, 42738),

Gene: BarretLemon\_34 Start: 28805, Stop: 29824, Start Num: 39

Candidate Starts for BarretLemon\_34:

(Start: 39 @28805 has 24 MA's), (47, 28922), (55, 29006), (58, 29018), (62, 29036), (69, 29072), (91, 29246), (93, 29252), (101, 29309), (106, 29348), (112, 29384), (114, 29396), (115, 29408), (154, 29651), (166, 29771),

Gene: Barsten\_49 Start: 41538, Stop: 42665, Start Num: 32

Candidate Starts for Barsten\_49:

(Start: 32 @41538 has 60 MA's), (41, 41577), (46, 41670), (49, 41712), (50, 41718), (55, 41769), (63, 41802), (78, 41877), (80, 41898), (87, 41979), (93, 42021), (97, 42054), (100, 42075), (109, 42150), (121, 42288), (141, 42402), (143, 42429), (154, 42489), (160, 42555), (162, 42570), (165, 42588),

Gene: Baumdotcom\_46 Start: 40560, Stop: 41684, Start Num: 32

Candidate Starts for Baumdotcom\_46:

(26, 40491), (Start: 32 @40560 has 60 MA's), (41, 40596), (46, 40689), (49, 40731), (50, 40737), (55, 40788), (64, 40827), (80, 40917), (97, 41073), (100, 41094), (104, 41127), (109, 41169), (121, 41307), (141, 41421), (143, 41448), (154, 41508), (160, 41574), (165, 41607),

Gene: Beans\_32 Start: 28492, Stop: 29520, Start Num: 39

Candidate Starts for Beans\_32:

(Start: 39 @28492 has 24 MA's), (47, 28609), (52, 28675), (55, 28693), (62, 28723), (91, 28933), (101, 28996), (112, 29071), (114, 29083), (115, 29095), (137, 29260), (154, 29338),

Gene: Belphegor\_48 Start: 41897, Stop: 43045, Start Num: 30

Candidate Starts for Belphegor\_48:

(23, 41861), (Start: 30 @41897 has 9 MA's), (43, 41978), (48, 42044), (49, 42077), (50, 42083), (55, 42131), (60, 42149), (63, 42164), (64, 42170), (70, 42200), (75, 42218), (76, 42221), (80, 42263), (91, 42380), (93, 42386), (97, 42419), (100, 42440), (117, 42617), (120, 42659), (121, 42665), (159, 42926), (160, 42932), (167, 43013),

Gene: Bibwit\_46 Start: 40244, Stop: 41377, Start Num: 32

Candidate Starts for Bibwit\_46:

(6, 39749), (26, 40175), (Start: 32 @40244 has 60 MA's), (46, 40382), (49, 40424), (50, 40430), (55, 40481), (63, 40514), (64, 40520), (80, 40610), (97, 40766), (100, 40787), (109, 40862), (121, 41000), (141, 41114), (143, 41141), (152, 41189), (154, 41201), (160, 41267), (162, 41282), (165, 41300),

Gene: BigDome\_34 Start: 28797, Stop: 29816, Start Num: 39

Candidate Starts for BigDome\_34:

(Start: 39 @28797 has 24 MA's), (47, 28914), (55, 28998), (58, 29010), (62, 29028), (69, 29064), (91, 29238), (93, 29244), (101, 29301), (106, 29340), (112, 29376), (114, 29388), (115, 29400), (154, 29643), (166, 29763),

Gene: Bizzy\_48 Start: 40845, Stop: 41972, Start Num: 32

Candidate Starts for Bizzy\_48:

(26, 40776), (Start: 32 @40845 has 60 MA's), (41, 40884), (46, 40977), (49, 41019), (50, 41025), (55, 41076), (64, 41115), (80, 41205), (87, 41286), (97, 41361), (100, 41382), (104, 41415), (109, 41457), (121, 41595), (141, 41709), (143, 41736), (154, 41796), (160, 41862), (165, 41895),

Gene: BobBob\_46 Start: 40656, Stop: 41780, Start Num: 32

Candidate Starts for BobBob\_46:

(27, 40617), (Start: 32 @40656 has 60 MA's), (41, 40692), (46, 40785), (49, 40827), (50, 40833), (55, 40884), (63, 40917), (78, 40992), (80, 41013), (93, 41136), (97, 41169), (100, 41190), (109, 41265), (121, 41403), (141, 41517), (143, 41544), (154, 41604), (160, 41670), (162, 41685), (165, 41703),

Gene: Bolt007\_37 Start: 29435, Stop: 30487, Start Num: 33

Candidate Starts for Bolt007\_37:

(Start: 33 @29435 has 6 MA's), (55, 29645), (60, 29663), (78, 29753), (122, 30122),

Gene: Bosection6\_45 Start: 31093, Stop: 32103, Start Num: 38

Candidate Starts for Bosection6\_45:

(Start: 38 @31093 has 40 MA's), (44, 31168), (46, 31207), (48, 31216), (49, 31243), (55, 31294), (56, 31297), (61, 31321), (84, 31447), (87, 31498), (89, 31522), (91, 31534), (95, 31564), (119, 31756), (121, 31765), (124, 31783), (139, 31873), (142, 31885), (153, 31933), (162, 32014),

Gene: BossLady\_34 Start: 28774, Stop: 29793, Start Num: 39

Candidate Starts for BossLady\_34:

(Start: 39 @28774 has 24 MA's), (55, 28975), (58, 28987), (62, 29005), (68, 29035), (69, 29041), (91, 29215), (93, 29221), (101, 29278), (112, 29353), (115, 29377), (116, 29386), (125, 29464), (135, 29536), (137, 29542), (165, 29719),

Gene: Brandonk123\_50 Start: 41790, Stop: 42914, Start Num: 32

Candidate Starts for Brandonk123\_50:

(27, 41751), (Start: 32 @41790 has 60 MA's), (41, 41826), (46, 41919), (49, 41961), (50, 41967), (55, 42018), (63, 42051), (78, 42126), (80, 42147), (93, 42270), (97, 42303), (100, 42324), (109, 42399), (121, 42537), (141, 42651), (143, 42678), (154, 42738), (160, 42804), (162, 42819), (165, 42837),

Gene: Brent\_32 Start: 28455, Stop: 29483, Start Num: 39

Candidate Starts for Brent\_32:

(Start: 39 @28455 has 24 MA's), (52, 28638), (55, 28656), (62, 28686), (66, 28701), (89, 28884), (91, 28896), (112, 29034), (114, 29046), (115, 29058), (125, 29145), (137, 29223), (144, 29265), (152, 29289), (154, 29301),

Gene: Brujita\_48 Start: 33774, Stop: 34781, Start Num: 38

Candidate Starts for Brujita\_48:

(25, 33654), (Start: 38 @33774 has 40 MA's), (46, 33885), (48, 33894), (49, 33921), (55, 33972), (56, 33975), (68, 34032), (71, 34041), (84, 34125), (87, 34176), (89, 34200), (91, 34212), (121, 34443), (124, 34461), (128, 34482), (130, 34497), (139, 34551), (140, 34554), (142, 34563), (143, 34581), (153, 34611), (162, 34692),

Gene: Bumble\_34 Start: 26999, Stop: 28066, Start Num: 33

Candidate Starts for Bumble\_34:

(29, 26987), (Start: 33 @26999 has 6 MA's), (55, 27221), (60, 27239), (78, 27329),

Gene: Butters\_50 Start: 33050, Stop: 34057, Start Num: 38

Candidate Starts for Butters\_50:

(14, 32807), (15, 32819), (20, 32885), (25, 32930), (Start: 38 @33050 has 40 MA's), (46, 33161), (48, 33170), (49, 33197), (55, 33248), (56, 33251), (68, 33308), (71, 33317), (84, 33401), (87, 33452), (89, 33476), (91, 33488), (121, 33719), (124, 33737), (128, 33758), (130, 33773), (139, 33827), (140, 33830), (142, 33839), (143, 33857), (153, 33887), (162, 33968),

Gene: CalWood4100\_39 Start: 28926, Stop: 29978, Start Num: 33

Candidate Starts for CalWood4100\_39:

(Start: 33 @28926 has 6 MA's), (55, 29136), (60, 29154), (78, 29244), (105, 29481), (106, 29484),

Gene: Carcharodon\_47 Start: 32442, Stop: 33452, Start Num: 38

Candidate Starts for Carcharodon\_47:

(Start: 38 @32442 has 40 MA's), (44, 32517), (46, 32556), (48, 32565), (49, 32592), (55, 32643), (56, 32646), (61, 32670), (84, 32796), (87, 32847), (89, 32871), (91, 32883), (95, 32913), (119, 33105), (121, 33114), (124, 33132), (132, 33174), (139, 33222), (142, 33234), (162, 33363),

Gene: ChadMasterC\_49 Start: 42937, Stop: 44064, Start Num: 32

Candidate Starts for ChadMasterC\_49:

(Start: 32 @42937 has 60 MA's), (41, 42976), (46, 43069), (49, 43111), (50, 43117), (55, 43168), (63, 43201), (78, 43276), (80, 43297), (93, 43420), (97, 43453), (100, 43474), (109, 43549), (121, 43687), (141, 43801), (154, 43888), (160, 43954), (162, 43969), (165, 43987),

Gene: Charming\_49 Start: 41293, Stop: 42420, Start Num: 32

Candidate Starts for Charming\_49:

(Start: 32 @41293 has 60 MA's), (41, 41332), (46, 41425), (49, 41467), (50, 41473), (55, 41524), (63, 41557), (78, 41632), (80, 41653), (93, 41776), (97, 41809), (100, 41830), (109, 41905), (121, 42043), (141, 42157), (143, 42184), (154, 42244), (160, 42310), (162, 42325), (165, 42343),

Gene: Chewbacca\_49 Start: 32442, Stop: 33452, Start Num: 38

Candidate Starts for Chewbacca\_49:

(Start: 38 @32442 has 40 MA's), (44, 32517), (46, 32556), (48, 32565), (49, 32592), (55, 32643), (56, 32646), (61, 32670), (84, 32796), (87, 32847), (89, 32871), (91, 32883), (95, 32913), (119, 33105), (121, 33114), (124, 33132), (132, 33174), (139, 33222), (142, 33234), (162, 33363),

Gene: Chickadee\_45 Start: 37929, Stop: 39083, Start Num: 32

Candidate Starts for Chickadee\_45:

(Start: 32 @37929 has 60 MA's), (46, 38058), (49, 38100), (50, 38106), (55, 38157), (80, 38286), (82, 38292), (87, 38370), (93, 38412), (97, 38445), (100, 38466), (120, 38685), (128, 38730), (133, 38754), (134, 38778), (143, 38829), (154, 38898), (156, 38910), (158, 38949), (159, 38958), (160, 38964), (162, 38979), (163, 38988), (167, 39045),

Gene: Circuit\_34 Start: 27961, Stop: 29031, Start Num: 33

Candidate Starts for Circuit\_34:

(29, 27946), (Start: 33 @27961 has 6 MA's), (55, 28186), (60, 28204), (78, 28294),

Gene: Delrey21\_50 Start: 43180, Stop: 44334, Start Num: 32

Candidate Starts for Delrey21\_50:

(Start: 32 @43180 has 60 MA's), (41, 43219), (46, 43312), (48, 43321), (49, 43354), (50, 43360), (55, 43411), (63, 43444), (64, 43450), (80, 43543), (93, 43666), (97, 43699), (99, 43714), (100, 43720), (108, 43783), (109, 43795), (110, 43813), (128, 43984), (152, 44143), (160, 44221), (167, 44302),

Gene: Derg\_43 Start: 40440, Stop: 41564, Start Num: 32

Candidate Starts for Derg\_43:

(26, 40371), (Start: 32 @40440 has 60 MA's), (41, 40476), (46, 40569), (49, 40611), (50, 40617), (55, 40668), (64, 40707), (80, 40797), (87, 40878), (97, 40953), (100, 40974), (104, 41007), (109, 41049), (121, 41187), (141, 41301), (143, 41328), (154, 41388), (160, 41454), (165, 41487),

Gene: Dextrert\_46 Start: 38194, Stop: 39375, Start Num: 32

Candidate Starts for Dextrert\_46:

(12, 37912), (24, 38119), (Start: 32 @38194 has 60 MA's), (46, 38326), (48, 38335), (49, 38368), (50, 38374), (55, 38425), (80, 38554), (93, 38680), (97, 38713), (100, 38734), (109, 38809), (111, 38839), (120, 38953), (128, 38998), (134, 39046), (141, 39073), (148, 39136), (152, 39184), (154, 39196), (156, 39208), (159, 39256), (160, 39262), (167, 39343),

Gene: DoctorFroggo\_50 Start: 43180, Stop: 44334, Start Num: 32

Candidate Starts for DoctorFroggo\_50:

(Start: 32 @43180 has 60 MA's), (41, 43219), (46, 43312), (48, 43321), (49, 43354), (50, 43360), (55, 43411), (63, 43444), (64, 43450), (80, 43543), (93, 43666), (97, 43699), (99, 43714), (100, 43720), (108, 43783), (109, 43795), (110, 43813), (128, 43984), (152, 44143), (160, 44221), (167, 44302),

Gene: Dori\_63 Start: 49123, Stop: 50127, Start Num: 38

Candidate Starts for Dori\_63:

(Start: 38 @49123 has 40 MA's), (48, 49246), (49, 49273), (55, 49324), (56, 49327), (61, 49351), (84, 49477), (87, 49528), (89, 49552), (91, 49564), (93, 49570), (95, 49594), (98, 49606), (119, 49786), (121, 49795), (126, 49816), (128, 49828), (138, 49891), (140, 49900), (153, 49957), (160, 50023), (162, 50038),

Gene: Duplicity\_47 Start: 32451, Stop: 33461, Start Num: 38

Candidate Starts for Duplicity\_47:

(Start: 38 @32451 has 40 MA's), (44, 32526), (46, 32565), (48, 32574), (49, 32601), (55, 32652), (56, 32655), (61, 32679), (84, 32805), (87, 32856), (89, 32880), (91, 32892), (95, 32922), (119, 33114), (121, 33123), (124, 33141), (132, 33183), (139, 33231), (142, 33243), (162, 33372),

Gene: EGUunicorn\_48 Start: 31139, Stop: 32149, Start Num: 38

Candidate Starts for EGUunicorn\_48:

(Start: 38 @31139 has 40 MA's), (46, 31253), (48, 31262), (49, 31289), (55, 31340), (56, 31343), (71, 31409), (77, 31436), (87, 31544), (88, 31562), (91, 31580), (124, 31829), (139, 31919), (142, 31931), (153, 31979), (162, 32060),

Gene: EMoore\_45 Start: 41058, Stop: 42209, Start Num: 30

Candidate Starts for EMoore\_45:

(5, 40575), (7, 40695), (8, 40773), (9, 40815), (11, 40824), (Start: 30 @41058 has 9 MA's), (48, 41208), (49, 41241), (50, 41247), (55, 41295), (64, 41334), (70, 41364), (75, 41382), (76, 41385), (77, 41394), (80, 41427), (91, 41544), (93, 41550), (97, 41583), (100, 41604), (117, 41781), (120, 41823), (121, 41829), (152, 42018), (160, 42096),

Gene: EastWest\_35 Start: 28014, Stop: 29039, Start Num: 39

Candidate Starts for EastWest\_35:

(Start: 39 @28014 has 24 MA's), (47, 28131), (48, 28137), (55, 28215), (62, 28245), (66, 28260), (89, 28443), (91, 28455), (96, 28488), (115, 28617), (144, 28824), (152, 28848), (157, 28893), (166,

28980),

Gene: EdmundFerry\_44 Start: 37970, Stop: 39154, Start Num: 32

Candidate Starts for EdmundFerry\_44:

(18, 37829), (Start: 32 @37970 has 60 MA's), (46, 38099), (49, 38141), (50, 38147), (55, 38198), (80, 38327), (93, 38453), (97, 38486), (100, 38507), (120, 38726), (128, 38771), (133, 38795), (134, 38819), (143, 38870), (146, 38897), (154, 38969), (156, 38981), (158, 39020), (159, 39029), (160, 39035), (162, 39050), (163, 39059), (167, 39116),

Gene: Fitzgerald\_47 Start: 42195, Stop: 43319, Start Num: 32

Candidate Starts for Fitzgerald\_47:

(Start: 32 @42195 has 60 MA's), (41, 42231), (46, 42324), (49, 42366), (50, 42372), (55, 42423), (63, 42456), (78, 42531), (80, 42552), (87, 42633), (93, 42675), (97, 42708), (100, 42729), (109, 42804), (121, 42942), (141, 43056), (154, 43143), (160, 43209), (162, 43224), (165, 43242),

Gene: Flatwoods\_48 Start: 40789, Stop: 41913, Start Num: 32

Candidate Starts for Flatwoods\_48:

(26, 40720), (Start: 32 @40789 has 60 MA's), (41, 40825), (46, 40918), (49, 40960), (50, 40966), (55, 41017), (64, 41056), (80, 41146), (87, 41227), (97, 41302), (100, 41323), (109, 41398), (121, 41536), (141, 41650), (143, 41677), (154, 41737), (160, 41803), (165, 41836),

Gene: Fosterous\_46 Start: 40754, Stop: 41881, Start Num: 32

Candidate Starts for Fosterous\_46:

(Start: 32 @40754 has 60 MA's), (41, 40793), (46, 40886), (49, 40928), (50, 40934), (55, 40985), (63, 41018), (78, 41093), (80, 41114), (93, 41237), (97, 41270), (100, 41291), (109, 41366), (121, 41504), (141, 41618), (143, 41645), (154, 41705), (160, 41771), (162, 41786), (165, 41804),

Gene: Franzy\_32 Start: 28454, Stop: 29482, Start Num: 39

Candidate Starts for Franzy\_32:

(Start: 39 @28454 has 24 MA's), (52, 28637), (55, 28655), (62, 28685), (66, 28700), (89, 28883), (91, 28895), (112, 29033), (114, 29045), (115, 29057), (125, 29144), (144, 29264), (152, 29288), (154, 29300),

Gene: FuegoCuervo\_51 Start: 40622, Stop: 41746, Start Num: 32

Candidate Starts for FuegoCuervo\_51:

(Start: 32 @40622 has 60 MA's), (41, 40661), (46, 40754), (49, 40796), (50, 40802), (55, 40853), (63, 40886), (78, 40961), (80, 40982), (93, 41105), (97, 41138), (100, 41159), (109, 41234), (121, 41372), (141, 41486), (143, 41513), (154, 41573), (160, 41639), (162, 41654), (165, 41672),

Gene: Fulbright\_46 Start: 31531, Stop: 32541, Start Num: 38

Candidate Starts for Fulbright\_46:

(Start: 38 @31531 has 40 MA's), (44, 31606), (46, 31645), (48, 31654), (49, 31681), (55, 31732), (56, 31735), (61, 31759), (84, 31885), (87, 31936), (89, 31960), (91, 31972), (95, 32002), (119, 32194), (121, 32203), (124, 32221), (132, 32263), (139, 32311), (142, 32323), (162, 32452),

Gene: GTE6\_45 Start: 38462, Stop: 39616, Start Num: 32

Candidate Starts for GTE6\_45:

(18, 38321), (Start: 32 @38462 has 60 MA's), (46, 38591), (49, 38633), (50, 38639), (55, 38690), (80, 38819), (82, 38825), (93, 38945), (97, 38978), (100, 38999), (111, 39104), (120, 39218), (128, 39263), (133, 39287), (134, 39311), (154, 39431), (156, 39443), (158, 39482), (159, 39491), (160, 39497), (162, 39512), (163, 39521), (167, 39578),

Gene: Gaea\_47 Start: 40432, Stop: 41565, Start Num: 32

Candidate Starts for Gaea\_47:

(26, 40363), (Start: 32 @40432 has 60 MA's), (46, 40570), (49, 40612), (50, 40618), (55, 40669), (63, 40702), (64, 40708), (80, 40798), (97, 40954), (100, 40975), (109, 41050), (121, 41188), (141, 41302), (143, 41329), (154, 41389), (160, 41455), (162, 41470), (165, 41488),

Gene: Galadriel\_48 Start: 41561, Stop: 42682, Start Num: 32

Candidate Starts for Galadriel\_48:

(27, 41522), (Start: 32 @41561 has 60 MA's), (41, 41597), (46, 41690), (49, 41732), (50, 41738), (55, 41789), (63, 41822), (78, 41897), (80, 41918), (93, 42041), (97, 42074), (100, 42095), (109, 42170), (121, 42308), (141, 42422), (143, 42449), (154, 42509), (160, 42575), (162, 42590), (165, 42608),

Gene: Geodirt\_47 Start: 42173, Stop: 43297, Start Num: 32

Candidate Starts for Geodirt\_47:

(Start: 32 @42173 has 60 MA's), (41, 42212), (46, 42305), (49, 42347), (50, 42353), (55, 42404), (63, 42437), (78, 42512), (80, 42533), (93, 42656), (97, 42689), (100, 42710), (109, 42785), (121, 42923), (141, 43037), (143, 43064), (154, 43124), (160, 43190), (162, 43205), (165, 43223),

Gene: Gex\_47 Start: 32458, Stop: 33468, Start Num: 38

Candidate Starts for Gex\_47:

(Start: 38 @32458 has 40 MA's), (44, 32533), (46, 32572), (48, 32581), (49, 32608), (55, 32659), (56, 32662), (61, 32686), (84, 32812), (87, 32863), (89, 32887), (91, 32899), (95, 32929), (119, 33121), (121, 33130), (124, 33148), (132, 33190), (139, 33238), (142, 33250), (162, 33379),

Gene: GravityBall\_34 Start: 28804, Stop: 29823, Start Num: 39

Candidate Starts for GravityBall\_34:

(Start: 39 @28804 has 24 MA's), (47, 28921), (55, 29005), (58, 29017), (62, 29035), (69, 29071), (91, 29245), (93, 29251), (101, 29308), (106, 29347), (112, 29383), (114, 29395), (115, 29407), (154, 29650),

Gene: Grekaycon\_34 Start: 28720, Stop: 29739, Start Num: 39

Candidate Starts for Grekaycon\_34:

(Start: 39 @28720 has 24 MA's), (55, 28921), (58, 28933), (62, 28951), (68, 28981), (69, 28987), (91, 29161), (93, 29167), (101, 29224), (112, 29299), (115, 29323), (116, 29332), (125, 29410), (135, 29482), (137, 29488), (165, 29665),

Gene: Gustavo\_47 Start: 40605, Stop: 41738, Start Num: 32

Candidate Starts for Gustavo\_47:

(26, 40536), (Start: 32 @40605 has 60 MA's), (46, 40743), (49, 40785), (50, 40791), (55, 40842), (63, 40875), (64, 40881), (65, 40884), (80, 40971), (97, 41127), (100, 41148), (109, 41223), (121, 41361), (141, 41475), (143, 41502), (154, 41562), (160, 41628), (162, 41643), (165, 41661),

Gene: Hanako\_51 Start: 33348, Stop: 34358, Start Num: 38

Candidate Starts for Hanako\_51:

(Start: 38 @33348 has 40 MA's), (46, 33462), (48, 33471), (49, 33498), (55, 33549), (56, 33552), (71, 33618), (77, 33645), (87, 33753), (88, 33771), (91, 33789), (124, 34038), (139, 34128), (142, 34140), (153, 34188), (162, 34269),

Gene: Hans\_49 Start: 40497, Stop: 41648, Start Num: 30

Candidate Starts for Hans\_49:

(Start: 30 @40497 has 9 MA's), (43, 40581), (46, 40638), (48, 40647), (49, 40680), (50, 40686), (55, 40734), (64, 40773), (70, 40803), (75, 40821), (76, 40824), (77, 40833), (91, 40983), (93, 40989), (97, 41022), (100, 41043), (108, 41106), (117, 41220), (120, 41262), (121, 41268), (143, 41406), (162, 41550), (167, 41616),

Gene: Inspectinfecti\_48 Start: 40943, Stop: 42094, Start Num: 30

Candidate Starts for Inspectinfecti\_48:

(Start: 30 @40943 has 9 MA's), (43, 41027), (46, 41084), (48, 41093), (49, 41126), (50, 41132), (55, 41180), (64, 41219), (70, 41249), (75, 41267), (76, 41270), (77, 41279), (91, 41429), (93, 41435), (97, 41468), (100, 41489), (108, 41552), (117, 41666), (120, 41708), (121, 41714), (143, 41852), (162, 41996), (167, 42062),

Gene: Island3\_48 Start: 33774, Stop: 34781, Start Num: 38

Candidate Starts for Island3\_48:

(25, 33654), (Start: 38 @33774 has 40 MA's), (46, 33885), (48, 33894), (49, 33921), (55, 33972), (56, 33975), (68, 34032), (71, 34041), (84, 34125), (87, 34176), (89, 34200), (91, 34212), (121, 34443), (124, 34461), (128, 34482), (130, 34497), (139, 34551), (140, 34554), (142, 34563), (143, 34581), (153, 34611), (162, 34692),

Gene: JKSyngboy\_45 Start: 41204, Stop: 42337, Start Num: 32

Candidate Starts for JKSyngboy\_45:

(26, 41135), (Start: 32 @41204 has 60 MA's), (46, 41342), (49, 41384), (50, 41390), (55, 41441), (63, 41474), (64, 41480), (65, 41483), (80, 41570), (97, 41726), (100, 41747), (109, 41822), (121, 41960), (141, 42074), (143, 42101), (154, 42161), (160, 42227), (162, 42242), (165, 42260),

Gene: JKerns\_34 Start: 28666, Stop: 29685, Start Num: 39

Candidate Starts for JKerns\_34:

(Start: 39 @28666 has 24 MA's), (55, 28867), (58, 28879), (62, 28897), (68, 28927), (87, 29071), (91, 29107), (93, 29113), (101, 29170), (112, 29245), (115, 29269), (135, 29428), (137, 29434), (165, 29611), (166, 29632), (167, 29659),

Gene: Jabberwocky\_47 Start: 42599, Stop: 43762, Start Num: 32

Candidate Starts for Jabberwocky\_47:

(Start: 32 @42599 has 60 MA's), (41, 42638), (46, 42731), (49, 42773), (50, 42779), (55, 42830), (63, 42863), (78, 42938), (80, 42959), (87, 43040), (93, 43082), (97, 43115), (100, 43136), (109, 43211), (121, 43349), (141, 43463), (145, 43511), (147, 43526), (154, 43586), (160, 43652), (162, 43667), (165, 43685),

Gene: Jace\_31 Start: 25322, Stop: 26353, Start Num: 31

Candidate Starts for Jace\_31:

(Start: 31 @25322 has 1 MA's), (37, 25343), (51, 25523), (59, 25571), (78, 25664), (80, 25685), (91, 25793), (92, 25796), (94, 25820), (113, 25934), (115, 25955), (142, 26132), (143, 26150),

Gene: Jamie19\_45 Start: 31639, Stop: 32649, Start Num: 38

Candidate Starts for Jamie19\_45:

(Start: 38 @31639 has 40 MA's), (44, 31714), (46, 31753), (48, 31762), (49, 31789), (55, 31840), (56, 31843), (71, 31909), (77, 31936), (87, 32044), (88, 32062), (91, 32080), (124, 32329), (139, 32419), (142, 32431), (153, 32479), (162, 32560),

Gene: Jawnski\_32 Start: 28461, Stop: 29489, Start Num: 39

Candidate Starts for Jawnski\_32:

(Start: 39 @28461 has 24 MA's), (47, 28578), (52, 28644), (55, 28662), (62, 28692), (68, 28722), (91, 28902), (101, 28965), (112, 29040), (114, 29052), (115, 29064), (137, 29229), (154, 29307),

Gene: Jordan\_34 Start: 28716, Stop: 29735, Start Num: 39

Candidate Starts for Jordan\_34:



(Start: 39 @28716 has 24 MA's), (55, 28917), (58, 28929), (62, 28947), (68, 28977), (91, 29157), (93, 29163), (101, 29220), (112, 29295), (115, 29319), (125, 29406), (135, 29478), (137, 29484), (165, 29661),

Gene: Kamashten\_46 Start: 40534, Stop: 41661, Start Num: 32

Candidate Starts for Kamashten\_46:

(Start: 32 @40534 has 60 MA's), (41, 40573), (46, 40666), (49, 40708), (50, 40714), (55, 40765), (63, 40798), (78, 40873), (80, 40894), (93, 41017), (97, 41050), (100, 41071), (109, 41146), (121, 41284), (141, 41398), (143, 41425), (154, 41485), (160, 41551), (162, 41566), (165, 41584),

Gene: Keitabear\_48 Start: 42189, Stop: 43352, Start Num: 32

Candidate Starts for Keitabear\_48:

(Start: 32 @42189 has 60 MA's), (41, 42228), (46, 42321), (49, 42363), (50, 42369), (55, 42420), (63, 42453), (78, 42528), (80, 42549), (93, 42672), (97, 42705), (100, 42726), (109, 42801), (121, 42939), (141, 43053), (145, 43101), (147, 43116), (154, 43176), (160, 43242), (162, 43257), (165, 43275),

Gene: Kevin1\_49 Start: 32486, Stop: 33493, Start Num: 38

Candidate Starts for Kevin1\_49:

(Start: 38 @32486 has 40 MA's), (46, 32597), (48, 32606), (49, 32633), (55, 32684), (56, 32687), (68, 32744), (71, 32753), (84, 32837), (87, 32888), (89, 32912), (91, 32924), (121, 33155), (124, 33173), (128, 33194), (130, 33209), (139, 33263), (140, 33266), (142, 33275), (143, 33293), (153, 33323), (162, 33404),

Gene: Kewpiedoll\_48 Start: 41475, Stop: 42602, Start Num: 32

Candidate Starts for Kewpiedoll\_48:

(Start: 32 @41475 has 60 MA's), (41, 41514), (46, 41607), (50, 41655), (55, 41706), (63, 41739), (78, 41814), (80, 41835), (93, 41958), (97, 41991), (100, 42012), (109, 42087), (121, 42225), (141, 42339), (143, 42366), (154, 42426), (160, 42492), (162, 42507), (165, 42525),

Gene: King2\_32 Start: 28450, Stop: 29478, Start Num: 39

Candidate Starts for King2\_32:

(Start: 39 @28450 has 24 MA's), (52, 28633), (55, 28651), (62, 28681), (66, 28696), (89, 28879), (91, 28891), (114, 29041), (115, 29053), (137, 29218), (144, 29260), (154, 29296),

Gene: Klevey\_37 Start: 28353, Stop: 29405, Start Num: 33

Candidate Starts for Klevey\_37:

(Start: 33 @28353 has 6 MA's), (55, 28563), (60, 28581), (78, 28671), (105, 28908), (106, 28911),

Gene: Kroos\_48 Start: 41345, Stop: 42472, Start Num: 32

Candidate Starts for Kroos\_48:

(26, 41276), (Start: 32 @41345 has 60 MA's), (41, 41384), (46, 41477), (49, 41519), (50, 41525), (55, 41576), (64, 41615), (80, 41705), (97, 41861), (100, 41882), (104, 41915), (109, 41957), (121, 42095), (141, 42209), (143, 42236), (154, 42296), (160, 42362), (165, 42395),

Gene: Kwekel\_45 Start: 37890, Stop: 39044, Start Num: 32

Candidate Starts for Kwekel\_45:

(Start: 32 @37890 has 60 MA's), (46, 38019), (49, 38061), (50, 38067), (55, 38118), (80, 38247), (82, 38253), (87, 38331), (93, 38373), (97, 38406), (100, 38427), (120, 38646), (128, 38691), (133, 38715), (134, 38739), (143, 38790), (154, 38859), (156, 38871), (158, 38910), (159, 38919), (160, 38925), (162, 38940), (163, 38949), (167, 39006),

Gene: Kwobi\_48 Start: 41331, Stop: 42458, Start Num: 32

Candidate Starts for Kwobi\_48:

(26, 41262), (Start: 32 @41331 has 60 MA's), (41, 41370), (46, 41463), (49, 41505), (50, 41511), (55, 41562), (64, 41601), (80, 41691), (97, 41847), (100, 41868), (104, 41901), (109, 41943), (121, 42081), (141, 42195), (150, 42261), (152, 42270), (154, 42282), (160, 42348), (162, 42363), (165, 42381),

Gene: LeeroyJ\_34 Start: 28804, Stop: 29823, Start Num: 39

Candidate Starts for LeeroyJ\_34:

(Start: 39 @28804 has 24 MA's), (47, 28921), (55, 29005), (58, 29017), (62, 29035), (69, 29071), (91, 29245), (93, 29251), (101, 29308), (106, 29347), (112, 29383), (114, 29395), (115, 29407), (154, 29650), (166, 29770),

Gene: Lennon\_48 Start: 42278, Stop: 43441, Start Num: 32

Candidate Starts for Lennon\_48:

(Start: 32 @42278 has 60 MA's), (41, 42317), (46, 42410), (49, 42452), (50, 42458), (55, 42509), (63, 42542), (78, 42617), (80, 42638), (93, 42761), (97, 42794), (100, 42815), (109, 42890), (121, 43028), (141, 43142), (145, 43190), (147, 43205), (154, 43265), (160, 43331), (162, 43346), (165, 43364),

Gene: Leonard\_47 Start: 40587, Stop: 41741, Start Num: 30

Candidate Starts for Leonard\_47:

(Start: 30 @40587 has 9 MA's), (34, 40602), (43, 40671), (46, 40728), (48, 40737), (49, 40770), (50, 40776), (55, 40824), (64, 40863), (70, 40893), (75, 40911), (76, 40914), (77, 40923), (86, 41031), (91, 41076), (93, 41082), (97, 41115), (100, 41136), (108, 41199), (117, 41313), (120, 41355), (121, 41361), (143, 41499), (162, 41643), (167, 41709),

Gene: LilHam\_45 Start: 39953, Stop: 41077, Start Num: 32

Candidate Starts for LilHam\_45:

(26, 39884), (Start: 32 @39953 has 60 MA's), (41, 39989), (46, 40082), (49, 40124), (50, 40130), (55, 40181), (64, 40220), (80, 40310), (97, 40466), (100, 40487), (104, 40520), (109, 40562), (121, 40700), (141, 40814), (143, 40841), (154, 40901), (160, 40967), (165, 41000),

Gene: Lilbeanie\_51 Start: 37513, Stop: 38625, Start Num: 28

Candidate Starts for Lilbeanie\_51:

(Start: 28 @37513 has 2 MA's), (Start: 35 @37537 has 1 MA's), (48, 37675), (51, 37723), (55, 37753), (60, 37771), (74, 37837), (75, 37840), (78, 37864), (88, 37981), (93, 38005), (95, 38029), (112, 38137), (117, 38179), (153, 38395), (160, 38467), (164, 38497), (167, 38548),

Gene: Lilmac1015\_39 Start: 28926, Stop: 29978, Start Num: 33

Candidate Starts for Lilmac1015\_39:

(Start: 33 @28926 has 6 MA's), (55, 29136), (60, 29154), (78, 29244), (105, 29481), (106, 29484),

Gene: Love\_52 Start: 42726, Stop: 43853, Start Num: 32

Candidate Starts for Love\_52:

(Start: 32 @42726 has 60 MA's), (41, 42765), (46, 42858), (49, 42900), (50, 42906), (55, 42957), (63, 42990), (78, 43065), (80, 43086), (93, 43209), (97, 43242), (100, 43263), (109, 43338), (121, 43476), (141, 43590), (143, 43617), (154, 43677), (160, 43743), (162, 43758), (165, 43776),

Gene: Magsby\_47 Start: 32459, Stop: 33469, Start Num: 38

Candidate Starts for Magsby\_47:

(Start: 38 @32459 has 40 MA's), (44, 32534), (46, 32573), (48, 32582), (49, 32609), (55, 32660), (56, 32663), (61, 32687), (84, 32813), (87, 32864), (89, 32888), (91, 32900), (95, 32930), (119, 33122), (121, 33131), (124, 33149), (132, 33191), (139, 33239), (142, 33251), (162, 33380),

Gene: Martha\_34 Start: 28721, Stop: 29740, Start Num: 39

Candidate Starts for Martha\_34:

(Start: 39 @28721 has 24 MA's), (55, 28922), (58, 28934), (62, 28952), (68, 28982), (69, 28988), (91, 29162), (93, 29168), (101, 29225), (112, 29300), (115, 29324), (116, 29333), (125, 29411), (135, 29483), (137, 29489), (165, 29666),

Gene: Mask\_63 Start: 49866, Stop: 50870, Start Num: 38

Candidate Starts for Mask\_63:

(Start: 38 @49866 has 40 MA's), (48, 49989), (49, 50016), (55, 50067), (56, 50070), (61, 50094), (84, 50220), (87, 50271), (89, 50295), (91, 50307), (93, 50313), (95, 50337), (98, 50349), (119, 50529), (121, 50538), (126, 50559), (128, 50571), (138, 50634), (140, 50643), (153, 50700), (160, 50766), (162, 50781),

Gene: McKinley\_50 Start: 42099, Stop: 43259, Start Num: 32

Candidate Starts for McKinley\_50:

(Start: 32 @42099 has 60 MA's), (41, 42138), (46, 42231), (49, 42273), (50, 42279), (55, 42330), (63, 42363), (78, 42438), (80, 42459), (93, 42582), (97, 42615), (100, 42636), (109, 42711), (121, 42849), (141, 42963), (147, 43026), (154, 43086), (160, 43152), (162, 43167), (165, 43185),

Gene: MelBins\_48 Start: 40737, Stop: 41921, Start Num: 30

Candidate Starts for MelBins\_48:

(Start: 30 @40737 has 9 MA's), (43, 40821), (48, 40887), (49, 40920), (50, 40926), (55, 40974), (64, 41013), (70, 41043), (75, 41061), (76, 41064), (77, 41073), (91, 41223), (93, 41229), (97, 41262), (100, 41283), (108, 41346), (117, 41460), (120, 41502), (143, 41646), (145, 41667), (147, 41682), (162, 41823), (167, 41889),

Gene: Melville\_50 Start: 32443, Stop: 33453, Start Num: 38

Candidate Starts for Melville\_50:

(Start: 38 @32443 has 40 MA's), (44, 32518), (46, 32557), (48, 32566), (49, 32593), (55, 32644), (56, 32647), (61, 32671), (84, 32797), (87, 32848), (89, 32872), (91, 32884), (95, 32914), (119, 33106), (121, 33115), (124, 33133), (132, 33175), (139, 33223), (142, 33235), (162, 33364),

Gene: MoontowerMania\_48 Start: 41934, Stop: 43061, Start Num: 32

Candidate Starts for MoontowerMania\_48:

(Start: 32 @41934 has 60 MA's), (41, 41973), (46, 42066), (49, 42108), (50, 42114), (55, 42165), (63, 42198), (78, 42273), (80, 42294), (93, 42417), (97, 42450), (100, 42471), (109, 42546), (121, 42684), (141, 42798), (143, 42825), (154, 42885), (160, 42951), (162, 42966), (165, 42984),

Gene: NathanVaag\_32 Start: 28464, Stop: 29492, Start Num: 39

Candidate Starts for NathanVaag\_32:

(Start: 39 @28464 has 24 MA's), (47, 28581), (52, 28647), (55, 28665), (62, 28695), (68, 28725), (91, 28905), (101, 28968), (115, 29067), (137, 29232), (154, 29310),

Gene: Natkenzie\_50 Start: 42409, Stop: 43563, Start Num: 32

Candidate Starts for Natkenzie\_50:

(Start: 32 @42409 has 60 MA's), (41, 42448), (46, 42541), (48, 42550), (49, 42583), (50, 42589), (54, 42625), (55, 42640), (63, 42673), (64, 42679), (80, 42772), (97, 42928), (99, 42943), (108, 43012), (109, 43024), (110, 43042), (128, 43213), (141, 43288), (152, 43372), (159, 43444), (160, 43450), (167, 43531),

Gene: Nenae\_51 Start: 33350, Stop: 34360, Start Num: 38

Candidate Starts for Nenae\_51:

(Start: 38 @33350 has 40 MA's), (46, 33464), (48, 33473), (49, 33500), (55, 33551), (56, 33554), (71, 33620), (77, 33647), (87, 33755), (88, 33773), (91, 33791), (124, 34040), (139, 34130), (142, 34142), (153, 34190), (162, 34271),

Gene: Nordenberg\_43 Start: 40917, Stop: 42038, Start Num: 32

Candidate Starts for Nordenberg\_43:

(27, 40878), (Start: 32 @40917 has 60 MA's), (41, 40953), (46, 41046), (49, 41088), (50, 41094), (55, 41145), (63, 41178), (78, 41253), (80, 41274), (93, 41397), (97, 41430), (100, 41451), (109, 41526), (121, 41664), (141, 41778), (143, 41805), (154, 41865), (160, 41931), (162, 41946), (165, 41964),

Gene: Nostromo\_34 Start: 27783, Stop: 28817, Start Num: 39

Candidate Starts for Nostromo\_34:

(17, 27585), (Start: 39 @27783 has 24 MA's), (47, 27900), (49, 27933), (53, 27966), (55, 27984), (62, 28014), (67, 28038), (78, 28092), (91, 28224), (112, 28362), (115, 28386), (116, 28395), (136, 28545), (160, 28689), (162, 28704), (167, 28770),

Gene: Panchino\_44 Start: 32985, Stop: 33995, Start Num: 38

Candidate Starts for Panchino\_44:

(Start: 38 @32985 has 40 MA's), (44, 33060), (46, 33099), (48, 33108), (49, 33135), (55, 33186), (56, 33189), (71, 33255), (77, 33282), (87, 33390), (88, 33408), (91, 33426), (124, 33675), (139, 33765), (142, 33777), (153, 33825), (162, 33906),

Gene: Paries\_51 Start: 42388, Stop: 43509, Start Num: 32

Candidate Starts for Paries\_51:

(27, 42349), (Start: 32 @42388 has 60 MA's), (41, 42424), (46, 42517), (49, 42559), (50, 42565), (55, 42616), (63, 42649), (78, 42724), (80, 42745), (93, 42868), (97, 42901), (100, 42922), (109, 42997), (121, 43135), (141, 43249), (143, 43276), (154, 43336), (160, 43402), (162, 43417), (165, 43435),

Gene: Parmesanjohn\_47 Start: 32462, Stop: 33472, Start Num: 38

Candidate Starts for Parmesanjohn\_47:

(Start: 38 @32462 has 40 MA's), (44, 32537), (46, 32576), (48, 32585), (49, 32612), (55, 32663), (56, 32666), (61, 32690), (84, 32816), (87, 32867), (89, 32891), (91, 32903), (95, 32933), (119, 33125), (121, 33134), (124, 33152), (132, 33194), (139, 33242), (142, 33254), (162, 33383),

Gene: PhancyPhin\_51 Start: 33344, Stop: 34354, Start Num: 38

Candidate Starts for PhancyPhin\_51:

(Start: 38 @33344 has 40 MA's), (46, 33458), (48, 33467), (49, 33494), (55, 33545), (56, 33548), (71, 33614), (77, 33641), (87, 33749), (88, 33767), (91, 33785), (124, 34034), (139, 34124), (142, 34136), (153, 34184), (162, 34265),

Gene: Phauci\_40 Start: 37439, Stop: 38590, Start Num: 30

Candidate Starts for Phauci\_40:

(Start: 30 @37439 has 9 MA's), (43, 37523), (48, 37589), (49, 37622), (50, 37628), (55, 37676), (64, 37715), (70, 37745), (72, 37754), (75, 37763), (76, 37766), (77, 37775), (91, 37925), (93, 37931), (97, 37964), (100, 37985), (108, 38048), (117, 38162), (120, 38204), (162, 38492), (167, 38558),

Gene: Phinally\_47 Start: 40584, Stop: 41738, Start Num: 30

Candidate Starts for Phinally\_47:

(Start: 30 @40584 has 9 MA's), (34, 40599), (43, 40668), (46, 40725), (48, 40734), (49, 40767), (50, 40773), (55, 40821), (64, 40860), (70, 40890), (75, 40908), (76, 40911), (77, 40920), (86, 41028), (91, 41073), (93, 41079), (97, 41112), (100, 41133), (108, 41196), (117, 41310), (120, 41352), (121, 41358), (143, 41496), (162, 41640), (167, 41706),

Gene: Phloss\_45 Start: 31869, Stop: 32879, Start Num: 38

Candidate Starts for Phloss\_45:

(Start: 38 @31869 has 40 MA's), (44, 31944), (46, 31983), (48, 31992), (49, 32019), (55, 32070), (56, 32073), (61, 32097), (84, 32223), (87, 32274), (89, 32298), (91, 32310), (95, 32340), (119, 32532), (121, 32541), (124, 32559), (132, 32601), (139, 32649), (142, 32661), (162, 32790),

Gene: Phrann\_48 Start: 33627, Stop: 34637, Start Num: 38

Candidate Starts for Phrann\_48:

(Start: 38 @33627 has 40 MA's), (46, 33741), (48, 33750), (49, 33777), (55, 33828), (56, 33831), (71, 33897), (77, 33924), (87, 34032), (88, 34050), (91, 34068), (124, 34317), (139, 34407), (142, 34419), (153, 34467), (162, 34548),

Gene: Piccoletto\_32 Start: 28465, Stop: 29493, Start Num: 39

Candidate Starts for Piccoletto\_32:

(Start: 39 @28465 has 24 MA's), (47, 28582), (52, 28648), (55, 28666), (62, 28696), (68, 28726), (91, 28906), (101, 28969), (115, 29068), (137, 29233), (154, 29311),

Gene: Pippa\_34 Start: 28845, Stop: 29864, Start Num: 39

Candidate Starts for Pippa\_34:

(Start: 39 @28845 has 24 MA's), (55, 29046), (58, 29058), (62, 29076), (69, 29112), (87, 29250), (91, 29286), (101, 29349), (112, 29424), (115, 29448), (116, 29457), (165, 29790), (166, 29811), (167, 29838),

Gene: Pipsqueaks\_47 Start: 32439, Stop: 33449, Start Num: 38

Candidate Starts for Pipsqueaks\_47:

(Start: 38 @32439 has 40 MA's), (44, 32514), (46, 32553), (48, 32562), (49, 32589), (55, 32640), (56, 32643), (61, 32667), (84, 32793), (87, 32844), (89, 32868), (91, 32880), (95, 32910), (119, 33102), (121, 33111), (124, 33129), (132, 33171), (139, 33219), (142, 33231), (162, 33360),

Gene: Prairie\_36 Start: 28272, Stop: 29321, Start Num: 33

Candidate Starts for Prairie\_36:

(Start: 33 @28272 has 6 MA's), (55, 28482), (60, 28500), (78, 28590), (105, 28827), (106, 28830),

Gene: Purgamenstris\_51 Start: 33348, Stop: 34358, Start Num: 38

Candidate Starts for Purgamenstris\_51:

(Start: 38 @33348 has 40 MA's), (46, 33462), (48, 33471), (49, 33498), (55, 33549), (56, 33552), (71, 33618), (77, 33645), (87, 33753), (88, 33771), (91, 33789), (124, 34038), (139, 34128), (142, 34140), (153, 34188), (162, 34269),

Gene: Raymond7\_45 Start: 33136, Stop: 34146, Start Num: 38

Candidate Starts for Raymond7\_45:

(Start: 38 @33136 has 40 MA's), (46, 33250), (48, 33259), (49, 33286), (55, 33337), (56, 33340), (71, 33406), (77, 33433), (87, 33541), (88, 33559), (91, 33577), (124, 33826), (139, 33916), (142, 33928), (153, 33976), (162, 34057),

Gene: Rebel\_43 Start: 29478, Stop: 30488, Start Num: 38

Candidate Starts for Rebel\_43:

(Start: 38 @29478 has 40 MA's), (46, 29592), (48, 29601), (49, 29628), (55, 29679), (56, 29682), (71, 29748), (77, 29775), (87, 29883), (88, 29901), (91, 29919), (124, 30168), (139, 30258), (142, 30270), (153, 30318), (162, 30399),

Gene: Redi\_51 Start: 33347, Stop: 34357, Start Num: 38

Candidate Starts for Redi\_51:

(Start: 38 @33347 has 40 MA's), (46, 33461), (48, 33470), (49, 33497), (55, 33548), (56, 33551), (71, 33617), (77, 33644), (87, 33752), (88, 33770), (91, 33788), (124, 34037), (139, 34127), (142, 34139),

(153, 34187), (162, 34268),

Gene: Ribeye\_48 Start: 41766, Stop: 42890, Start Num: 32

Candidate Starts for Ribeye\_48:

(26, 41697), (Start: 32 @41766 has 60 MA's), (41, 41802), (46, 41895), (49, 41937), (50, 41943), (55, 41994), (64, 42033), (80, 42123), (97, 42279), (100, 42300), (104, 42333), (109, 42375), (121, 42513), (141, 42627), (143, 42654), (154, 42714), (160, 42780), (165, 42813),

Gene: RiverRaider\_49 Start: 40177, Stop: 41307, Start Num: 32

Candidate Starts for RiverRaider\_49:

(Start: 32 @40177 has 60 MA's), (46, 40315), (48, 40324), (49, 40357), (50, 40363), (55, 40414), (63, 40447), (64, 40453), (72, 40489), (80, 40543), (93, 40666), (97, 40699), (100, 40720), (109, 40795), (121, 40933), (130, 40987), (141, 41047), (152, 41122), (155, 41137), (159, 41194), (160, 41200), (165, 41233),

Gene: RoadKill\_43 Start: 37465, Stop: 38649, Start Num: 32

Candidate Starts for RoadKill\_43:

(18, 37324), (Start: 32 @37465 has 60 MA's), (46, 37594), (49, 37636), (50, 37642), (55, 37693), (80, 37822), (93, 37948), (97, 37981), (100, 38002), (120, 38221), (128, 38266), (133, 38290), (134, 38314), (143, 38365), (146, 38392), (154, 38464), (156, 38476), (158, 38515), (159, 38524), (160, 38530), (162, 38545), (163, 38554), (167, 38611),

Gene: Rofo\_48 Start: 41463, Stop: 42809, Start Num: 13

Candidate Starts for Rofo\_48:

(4, 40968), (10, 41394), (Start: 13 @41463 has 1 MA's), (16, 41526), (19, 41565), (22, 41592), (41, 41721), (46, 41814), (49, 41856), (50, 41862), (55, 41913), (63, 41946), (78, 42021), (80, 42042), (93, 42165), (97, 42198), (100, 42219), (109, 42294), (121, 42432), (141, 42546), (143, 42573), (154, 42633), (160, 42699), (162, 42714), (165, 42732),

Gene: Rubeelu\_50 Start: 33050, Stop: 34057, Start Num: 38

Candidate Starts for Rubeelu\_50:

(14, 32807), (15, 32819), (20, 32885), (25, 32930), (Start: 38 @33050 has 40 MA's), (46, 33161), (48, 33170), (49, 33197), (55, 33248), (56, 33251), (68, 33308), (71, 33317), (84, 33401), (87, 33452), (89, 33476), (91, 33488), (121, 33719), (124, 33737), (128, 33758), (130, 33773), (139, 33827), (140, 33830), (142, 33839), (143, 33857), (153, 33887), (162, 33968),

Gene: Sampson\_50 Start: 42354, Stop: 43508, Start Num: 32

Candidate Starts for Sampson\_50:

(Start: 32 @42354 has 60 MA's), (41, 42393), (46, 42486), (48, 42495), (49, 42528), (50, 42534), (54, 42570), (55, 42585), (63, 42618), (64, 42624), (80, 42717), (97, 42873), (99, 42888), (108, 42957), (109, 42969), (110, 42987), (128, 43158), (141, 43233), (152, 43317), (159, 43389), (160, 43395), (167, 43476),

Gene: Sanjuju\_47 Start: 42328, Stop: 43452, Start Num: 32

Candidate Starts for Sanjuju\_47:

(Start: 32 @42328 has 60 MA's), (41, 42364), (46, 42457), (49, 42499), (50, 42505), (55, 42556), (63, 42589), (78, 42664), (80, 42685), (87, 42766), (93, 42808), (97, 42841), (100, 42862), (109, 42937), (121, 43075), (141, 43189), (154, 43276), (160, 43342), (162, 43357), (165, 43375),

Gene: Saronaya\_47 Start: 40605, Stop: 41738, Start Num: 32

Candidate Starts for Saronaya\_47:

(26, 40536), (Start: 32 @40605 has 60 MA's), (46, 40743), (49, 40785), (50, 40791), (55, 40842), (63, 40875), (64, 40881), (65, 40884), (80, 40971), (97, 41127), (100, 41148), (109, 41223), (121, 41361),

(141, 41475), (143, 41502), (154, 41562), (160, 41628), (162, 41643), (165, 41661),

Gene: Schnauzer\_48 Start: 32462, Stop: 33472, Start Num: 38

Candidate Starts for Schnauzer\_48:

(Start: 38 @32462 has 40 MA's), (44, 32537), (46, 32576), (48, 32585), (49, 32612), (55, 32663), (56, 32666), (61, 32690), (84, 32816), (87, 32867), (89, 32891), (91, 32903), (95, 32933), (119, 33125), (121, 33134), (124, 33152), (132, 33194), (139, 33242), (142, 33254), (162, 33383),

Gene: SchottB\_46 Start: 41605, Stop: 42732, Start Num: 32

Candidate Starts for SchottB\_46:

(26, 41536), (Start: 32 @41605 has 60 MA's), (41, 41644), (46, 41737), (49, 41779), (50, 41785), (55, 41836), (64, 41875), (80, 41965), (97, 42121), (100, 42142), (104, 42175), (109, 42217), (121, 42355), (141, 42469), (143, 42496), (154, 42556), (160, 42622), (165, 42655),

Gene: Scioto\_51 Start: 42410, Stop: 43564, Start Num: 32

Candidate Starts for Scioto\_51:

(Start: 32 @42410 has 60 MA's), (41, 42449), (46, 42542), (48, 42551), (49, 42584), (50, 42590), (54, 42626), (55, 42641), (63, 42674), (64, 42680), (80, 42773), (97, 42929), (99, 42944), (108, 43013), (109, 43025), (110, 43043), (128, 43214), (141, 43289), (152, 43373), (159, 43445), (160, 43451), (167, 43532),

Gene: Scitech\_44 Start: 30478, Stop: 31488, Start Num: 38

Candidate Starts for Scitech\_44:

(Start: 38 @30478 has 40 MA's), (44, 30553), (46, 30592), (48, 30601), (49, 30628), (55, 30679), (56, 30682), (61, 30706), (84, 30832), (87, 30883), (89, 30907), (91, 30919), (95, 30949), (119, 31141), (121, 31150), (124, 31168), (132, 31210), (139, 31258), (142, 31270), (162, 31399),

Gene: Sedona\_48 Start: 41923, Stop: 43047, Start Num: 32

Candidate Starts for Sedona\_48:

(27, 41884), (Start: 32 @41923 has 60 MA's), (41, 41959), (46, 42052), (49, 42094), (50, 42100), (55, 42151), (63, 42184), (78, 42259), (80, 42280), (93, 42403), (97, 42436), (100, 42457), (109, 42532), (121, 42670), (141, 42784), (154, 42871), (160, 42937), (162, 42952), (165, 42970),

Gene: Shade\_34 Start: 28686, Stop: 29714, Start Num: 39

Candidate Starts for Shade\_34:

(Start: 39 @28686 has 24 MA's), (42, 28722), (55, 28887), (62, 28917), (66, 28932), (73, 28968), (89, 29115), (91, 29127), (97, 29166), (112, 29265), (115, 29289), (116, 29298), (118, 29313), (137, 29454), (144, 29496),

Gene: Shivanishola\_48 Start: 40593, Stop: 41753, Start Num: 32

Candidate Starts for Shivanishola\_48:

(27, 40554), (Start: 32 @40593 has 60 MA's), (41, 40629), (46, 40722), (49, 40764), (50, 40770), (55, 40821), (63, 40854), (78, 40929), (80, 40950), (93, 41073), (97, 41106), (100, 41127), (109, 41202), (121, 41340), (141, 41454), (145, 41502), (147, 41517), (154, 41577), (160, 41643), (162, 41658), (165, 41676),

Gene: ShrimpFriedEgg\_51 Start: 33347, Stop: 34357, Start Num: 38

Candidate Starts for ShrimpFriedEgg\_51:

(Start: 38 @33347 has 40 MA's), (46, 33461), (48, 33470), (49, 33497), (55, 33548), (56, 33551), (71, 33617), (77, 33644), (87, 33752), (88, 33770), (91, 33788), (124, 34037), (139, 34127), (142, 34139), (153, 34187), (162, 34268),

Gene: Shweta\_45 Start: 31406, Stop: 32416, Start Num: 38

Candidate Starts for Shweta\_45:

(Start: 38 @31406 has 40 MA's), (46, 31520), (48, 31529), (49, 31556), (55, 31607), (56, 31610), (61, 31634), (65, 31649), (82, 31742), (84, 31760), (87, 31811), (89, 31835), (91, 31847), (93, 31853), (95, 31877), (98, 31889), (124, 32096), (139, 32186), (142, 32198), (153, 32246), (162, 32327),

Gene: Sicarius2\_35 Start: 28313, Stop: 29347, Start Num: 36

Candidate Starts for Sicarius2\_35:

(Start: 36 @28313 has 2 MA's), (40, 28322), (42, 28352), (55, 28520), (62, 28550), (66, 28565), (85, 28685), (89, 28748), (91, 28760), (95, 28790), (112, 28898), (115, 28922), (118, 28946), (135, 29081), (137, 29087), (152, 29153), (154, 29165),

Gene: Silvafighter\_48 Start: 32435, Stop: 33445, Start Num: 38

Candidate Starts for Silvafighter\_48:

(Start: 38 @32435 has 40 MA's), (44, 32510), (46, 32549), (48, 32558), (49, 32585), (55, 32636), (56, 32639), (61, 32663), (84, 32789), (87, 32840), (89, 32864), (91, 32876), (95, 32906), (119, 33098), (121, 33107), (124, 33125), (132, 33167), (139, 33215), (142, 33227), (162, 33356),

Gene: Sitar\_48 Start: 42278, Stop: 43441, Start Num: 32

Candidate Starts for Sitar\_48:

(Start: 32 @42278 has 60 MA's), (41, 42317), (46, 42410), (49, 42452), (50, 42458), (55, 42509), (63, 42542), (78, 42617), (80, 42638), (93, 42761), (97, 42794), (100, 42815), (109, 42890), (121, 43028), (141, 43142), (145, 43190), (147, 43205), (154, 43265), (160, 43331), (162, 43346), (165, 43364),

Gene: Smurph\_47 Start: 32462, Stop: 33472, Start Num: 38

Candidate Starts for Smurph\_47:

(Start: 38 @32462 has 40 MA's), (44, 32537), (46, 32576), (48, 32585), (49, 32612), (55, 32663), (56, 32666), (61, 32690), (84, 32816), (87, 32867), (89, 32891), (91, 32903), (95, 32933), (119, 33125), (121, 33134), (124, 33152), (132, 33194), (139, 33242), (142, 33254), (162, 33383),

Gene: Snekmaggedon\_45 Start: 31639, Stop: 32649, Start Num: 38

Candidate Starts for Snekmaggedon\_45:

(Start: 38 @31639 has 40 MA's), (44, 31714), (46, 31753), (48, 31762), (49, 31789), (55, 31840), (56, 31843), (71, 31909), (77, 31936), (87, 32044), (88, 32062), (91, 32080), (124, 32329), (139, 32419), (142, 32431), (153, 32479), (162, 32560),

Gene: Sonny\_34 Start: 28716, Stop: 29744, Start Num: 39

Candidate Starts for Sonny\_34:

(Start: 39 @28716 has 24 MA's), (42, 28752), (55, 28917), (62, 28947), (66, 28962), (89, 29145), (91, 29157), (97, 29196), (112, 29295), (115, 29319), (116, 29328), (118, 29343), (131, 29442), (137, 29484),

Gene: SpongeBob\_45 Start: 31639, Stop: 32649, Start Num: 38

Candidate Starts for SpongeBob\_45:

(Start: 38 @31639 has 40 MA's), (44, 31714), (46, 31753), (48, 31762), (49, 31789), (55, 31840), (56, 31843), (71, 31909), (77, 31936), (87, 32044), (88, 32062), (91, 32080), (124, 32329), (139, 32419), (142, 32431), (153, 32479), (162, 32560),

Gene: StevieBAY\_34 Start: 28804, Stop: 29823, Start Num: 39

Candidate Starts for StevieBAY\_34:

(Start: 39 @28804 has 24 MA's), (47, 28921), (55, 29005), (58, 29017), (62, 29035), (69, 29071), (91, 29245), (93, 29251), (101, 29308), (106, 29347), (112, 29383), (114, 29395), (115, 29407), (154, 29650),



Gene: StorminNorm\_47 Start: 40696, Stop: 41823, Start Num: 32

Candidate Starts for StorminNorm\_47:

(26, 40627), (Start: 32 @40696 has 60 MA's), (41, 40735), (46, 40828), (49, 40870), (50, 40876), (55, 40927), (64, 40966), (80, 41056), (97, 41212), (100, 41233), (104, 41266), (109, 41308), (121, 41446), (141, 41560), (143, 41587), (154, 41647), (160, 41713), (165, 41746),

Gene: Stuck\_61 Start: 41880, Stop: 42890, Start Num: 38

Candidate Starts for Stuck\_61:

(Start: 38 @41880 has 40 MA's), (46, 41994), (48, 42003), (49, 42030), (55, 42081), (56, 42084), (61, 42108), (65, 42123), (82, 42216), (84, 42234), (87, 42285), (89, 42309), (91, 42321), (93, 42327), (95, 42351), (98, 42363), (124, 42570), (128, 42591), (139, 42660), (142, 42672), (162, 42801),

Gene: Stultus\_47 Start: 41231, Stop: 42394, Start Num: 32

Candidate Starts for Stultus\_47:

(Start: 32 @41231 has 60 MA's), (41, 41270), (46, 41363), (49, 41405), (50, 41411), (55, 41462), (63, 41495), (78, 41570), (80, 41591), (93, 41714), (97, 41747), (100, 41768), (109, 41843), (121, 41981), (141, 42095), (145, 42143), (147, 42158), (154, 42218), (160, 42284), (162, 42299), (165, 42317),

Gene: TaeYoung\_34 Start: 28721, Stop: 29740, Start Num: 39

Candidate Starts for TaeYoung\_34:

(Start: 39 @28721 has 24 MA's), (55, 28922), (58, 28934), (62, 28952), (68, 28982), (69, 28988), (91, 29162), (93, 29168), (101, 29225), (112, 29300), (115, 29324), (116, 29333), (125, 29411), (135, 29483), (137, 29489), (165, 29666),

Gene: Tangent\_49 Start: 41305, Stop: 42432, Start Num: 32

Candidate Starts for Tangent\_49:

(Start: 32 @41305 has 60 MA's), (41, 41344), (46, 41437), (49, 41479), (50, 41485), (55, 41536), (63, 41569), (78, 41644), (80, 41665), (93, 41788), (97, 41821), (100, 41842), (109, 41917), (121, 42055), (141, 42169), (143, 42196), (154, 42256), (160, 42322), (162, 42337), (165, 42355),

Gene: Tangerine\_47 Start: 40477, Stop: 41601, Start Num: 32

Candidate Starts for Tangerine\_47:

(26, 40408), (Start: 32 @40477 has 60 MA's), (41, 40513), (46, 40606), (49, 40648), (50, 40654), (55, 40705), (64, 40744), (80, 40834), (87, 40915), (97, 40990), (100, 41011), (109, 41086), (121, 41224), (141, 41338), (143, 41365), (150, 41404), (154, 41425), (160, 41491), (165, 41524),

Gene: Tapioca\_49 Start: 32428, Stop: 33438, Start Num: 38

Candidate Starts for Tapioca\_49:

(Start: 38 @32428 has 40 MA's), (44, 32503), (46, 32542), (48, 32551), (49, 32578), (55, 32629), (56, 32632), (61, 32656), (84, 32782), (87, 32833), (89, 32857), (91, 32869), (95, 32899), (119, 33091), (121, 33100), (124, 33118), (132, 33160), (139, 33208), (142, 33220), (162, 33349),

Gene: Tardus\_52 Start: 42085, Stop: 43260, Start Num: 32

Candidate Starts for Tardus\_52:

(Start: 32 @42085 has 60 MA's), (41, 42124), (46, 42217), (48, 42226), (49, 42259), (50, 42265), (55, 42316), (63, 42349), (64, 42355), (80, 42448), (81, 42457), (93, 42592), (97, 42625), (99, 42640), (100, 42646), (108, 42709), (110, 42739), (128, 42910), (141, 42985), (152, 43069), (159, 43141), (160, 43147), (167, 43228),

Gene: Thing3\_46 Start: 40534, Stop: 41661, Start Num: 32

Candidate Starts for Thing3\_46:

(Start: 32 @40534 has 60 MA's), (41, 40573), (46, 40666), (49, 40708), (50, 40714), (55, 40765), (63, 40798), (78, 40873), (80, 40894), (93, 41017), (97, 41050), (100, 41071), (109, 41146), (121, 41284),

(141, 41398), (143, 41425), (154, 41485), (160, 41551), (162, 41566), (165, 41584),

Gene: ThulaThula\_52 Start: 36104, Stop: 37114, Start Num: 38

Candidate Starts for ThulaThula\_52:

(Start: 38 @36104 has 40 MA's), (46, 36218), (48, 36227), (49, 36254), (55, 36305), (56, 36308), (61, 36332), (84, 36458), (87, 36509), (91, 36545), (95, 36575), (121, 36776), (124, 36794), (127, 36812), (139, 36884), (142, 36896), (160, 37010), (162, 37025),

Gene: Tiamoceli\_46 Start: 38786, Stop: 39940, Start Num: 32

Candidate Starts for Tiamoceli\_46:

(18, 38645), (Start: 32 @38786 has 60 MA's), (46, 38915), (49, 38957), (50, 38963), (55, 39014), (80, 39143), (82, 39149), (87, 39227), (93, 39269), (97, 39302), (100, 39323), (120, 39542), (128, 39587), (133, 39611), (134, 39635), (143, 39686), (154, 39755), (156, 39767), (158, 39806), (159, 39815), (160, 39821), (162, 39836), (163, 39845), (167, 39902),

Gene: Timinator\_34 Start: 28804, Stop: 29823, Start Num: 39

Candidate Starts for Timinator\_34:

(Start: 39 @28804 has 24 MA's), (47, 28921), (55, 29005), (58, 29017), (62, 29035), (69, 29071), (91, 29245), (93, 29251), (101, 29308), (106, 29347), (112, 29383), (114, 29395), (115, 29407), (154, 29650), (166, 29770),

Gene: Tortoise12\_47 Start: 31145, Stop: 32155, Start Num: 38

Candidate Starts for Tortoise12\_47:

(Start: 38 @31145 has 40 MA's), (44, 31220), (46, 31259), (48, 31268), (49, 31295), (55, 31346), (56, 31349), (61, 31373), (84, 31499), (87, 31550), (89, 31574), (91, 31586), (95, 31616), (119, 31808), (121, 31817), (124, 31835), (132, 31877), (139, 31925), (142, 31937), (162, 32066),

Gene: TripleJ\_54 Start: 32997, Stop: 33923, Start Num: 35

Candidate Starts for TripleJ\_54:

(21, 32865), (Start: 35 @32997 has 1 MA's), (37, 33003), (45, 33111), (55, 33207), (57, 33213), (61, 33234), (83, 33354), (90, 33441), (91, 33450), (97, 33489), (102, 33528), (107, 33567), (116, 33627), (128, 33711), (140, 33774), (149, 33819),

Gene: TurkishDelight\_59 Start: 49631, Stop: 50719, Start Num: 28

Candidate Starts for TurkishDelight\_59:

(Start: 28 @49631 has 2 MA's), (45, 49781), (48, 49799), (49, 49826), (55, 49874), (64, 49913), (79, 49991), (84, 50042), (91, 50150), (93, 50156), (95, 50180), (102, 50222), (103, 50240), (115, 50312), (123, 50384), (140, 50483), (161, 50621),

Gene: Twonlo\_43 Start: 37416, Stop: 38570, Start Num: 32

Candidate Starts for Twonlo\_43:

(18, 37275), (Start: 32 @37416 has 60 MA's), (46, 37545), (49, 37587), (50, 37593), (55, 37644), (80, 37773), (93, 37899), (97, 37932), (100, 37953), (120, 38172), (128, 38217), (133, 38241), (134, 38265), (143, 38316), (154, 38385), (156, 38397), (158, 38436), (159, 38445), (160, 38451), (162, 38466), (163, 38475), (167, 38532),

Gene: Tycho\_47 Start: 40564, Stop: 41691, Start Num: 32

Candidate Starts for Tycho\_47:

(26, 40495), (Start: 32 @40564 has 60 MA's), (41, 40603), (46, 40696), (49, 40738), (50, 40744), (55, 40795), (64, 40834), (80, 40924), (97, 41080), (100, 41101), (104, 41134), (109, 41176), (121, 41314), (141, 41428), (143, 41455), (154, 41515), (160, 41581), (165, 41614),

Gene: Verity\_50 Start: 43180, Stop: 44334, Start Num: 32

Candidate Starts for Verity\_50:

(Start: 32 @43180 has 60 MA's), (41, 43219), (46, 43312), (48, 43321), (49, 43354), (50, 43360), (55, 43411), (63, 43444), (64, 43450), (80, 43543), (93, 43666), (97, 43699), (99, 43714), (100, 43720), (108, 43783), (109, 43795), (110, 43813), (128, 43984), (152, 44143), (160, 44221), (167, 44302),

Gene: ViaConlectus\_50 Start: 41038, Stop: 42213, Start Num: 32

Candidate Starts for ViaConlectus\_50:

(Start: 32 @41038 has 60 MA's), (Start: 36 @41050 has 2 MA's), (41, 41077), (46, 41170), (48, 41179), (49, 41212), (50, 41218), (54, 41254), (55, 41269), (63, 41302), (64, 41308), (80, 41401), (81, 41410), (93, 41545), (97, 41578), (98, 41581), (99, 41593), (100, 41599), (108, 41662), (110, 41692), (128, 41863), (141, 41938), (152, 42022), (159, 42094), (160, 42100), (162, 42115),

Gene: Vivi2\_51 Start: 42332, Stop: 43459, Start Num: 32

Candidate Starts for Vivi2\_51:

(Start: 32 @42332 has 60 MA's), (41, 42371), (46, 42464), (49, 42506), (50, 42512), (55, 42563), (63, 42596), (78, 42671), (80, 42692), (93, 42815), (97, 42848), (100, 42869), (109, 42944), (121, 43082), (141, 43196), (143, 43223), (154, 43283), (160, 43349), (162, 43364), (165, 43382),

Gene: Wyborn\_35 Start: 28951, Stop: 29985, Start Num: 36

Candidate Starts for Wyborn\_35:

(Start: 36 @28951 has 2 MA's), (40, 28960), (42, 28990), (55, 29158), (62, 29188), (66, 29203), (89, 29386), (91, 29398), (95, 29428), (112, 29536), (115, 29560), (118, 29584), (135, 29719), (137, 29725), (152, 29791), (154, 29803),

Gene: Xerxes\_47 Start: 32459, Stop: 33469, Start Num: 38

Candidate Starts for Xerxes\_47:

(Start: 38 @32459 has 40 MA's), (44, 32534), (46, 32573), (48, 32582), (49, 32609), (55, 32660), (56, 32663), (61, 32687), (84, 32813), (87, 32864), (89, 32888), (91, 32900), (95, 32930), (119, 33122), (121, 33131), (124, 33149), (132, 33191), (139, 33239), (142, 33251), (162, 33380),

Gene: YorkOnyx\_48 Start: 40821, Stop: 41948, Start Num: 32

Candidate Starts for YorkOnyx\_48:

(26, 40752), (Start: 32 @40821 has 60 MA's), (41, 40860), (46, 40953), (49, 40995), (50, 41001), (55, 41052), (64, 41091), (80, 41181), (97, 41337), (100, 41358), (104, 41391), (109, 41433), (121, 41571), (129, 41616), (141, 41685), (152, 41760), (154, 41772), (160, 41838), (162, 41853), (165, 41871),

Gene: Zartrosa\_34 Start: 28629, Stop: 29648, Start Num: 39

Candidate Starts for Zartrosa\_34:

(Start: 39 @28629 has 24 MA's), (55, 28830), (58, 28842), (62, 28860), (68, 28890), (91, 29070), (93, 29076), (101, 29133), (112, 29208), (115, 29232), (125, 29319), (135, 29391), (137, 29397), (165, 29574),

Gene: Zipp\_51 Start: 43095, Stop: 44249, Start Num: 32

Candidate Starts for Zipp\_51:

(Start: 32 @43095 has 60 MA's), (41, 43134), (46, 43227), (48, 43236), (49, 43269), (50, 43275), (55, 43326), (63, 43359), (64, 43365), (80, 43458), (93, 43581), (97, 43614), (99, 43629), (100, 43635), (108, 43698), (109, 43710), (110, 43728), (128, 43899), (152, 44058), (160, 44136), (167, 44217),

Gene: Zitch\_53 Start: 41194, Stop: 42369, Start Num: 32

Candidate Starts for Zitch\_53:

(Start: 32 @41194 has 60 MA's), (Start: 36 @41206 has 2 MA's), (41, 41233), (46, 41326), (48, 41335), (49, 41368), (50, 41374), (55, 41425), (63, 41458), (64, 41464), (80, 41557), (81, 41566), (93, 41701), (97, 41734), (99, 41749), (100, 41755), (108, 41818), (110, 41848), (128, 42019), (141, 42094), (152,

42178), (159, 42250), (160, 42256), (167, 42337),