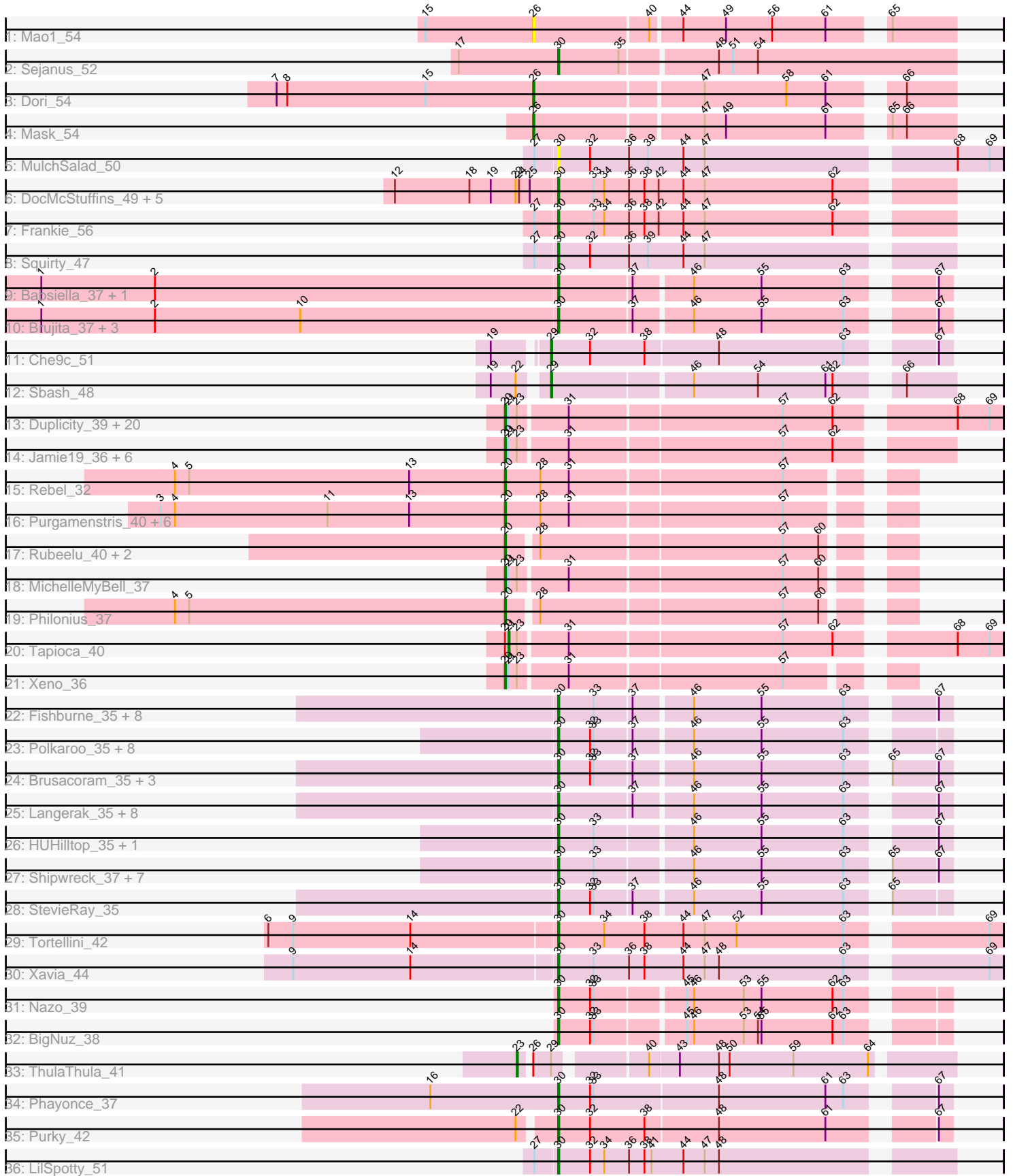


Pham 163462



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 163462 Report

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

Pham number 163462 has 114 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Mao1\_54
- Track 2 : Sejanus\_52
- Track 3 : Dori\_54
- Track 4 : Mask\_54
- Track 5 : MulchSalad\_50
- Track 6 : DocMcStuffins\_49, Piper2020\_51, ChickenDinner\_52, TootsiePop\_49, Misha28\_49, Awesomesauce\_51
- Track 7 : Frankie\_56
- Track 8 : Squirty\_47
- Track 9 : Babsiella\_37, HC\_35
- Track 10 : Brujita\_37, Island3\_37, QueenHazel\_33, Xula\_32
- Track 11 : Che9c\_51
- Track 12 : Sbash\_48
- Track 13 : Duplicity\_39, Melville\_43, Phloss\_37, Parmesanjohn\_39, Charlie\_37, Silvy\_39, Smurph\_39, Chewbacca\_40, Gex\_39, Journey\_40, Aggie\_37, Magsby\_39, Silvafighter\_40, Scitech\_36, Pipsqueaks\_39, Schnauzer\_39, SkinnyPete\_34, Carcharodon\_39, Bosection6\_39, Fulbright\_38, Xerxes\_39
- Track 14 : Jamie19\_36, Panchino\_35, SpongeBob\_36, Andies\_36, Shweta\_36, Phrann\_40, Snekmaggedon\_36
- Track 15 : Rebel\_32
- Track 16 : Purgamenstris\_40, Nenae\_40, Redi\_40, Raymond7\_34, PhancyPhin\_40, BabeRuth\_41, ShrimpFriedEgg\_40
- Track 17 : Rubeelu\_40, Kevin1\_38, Butters\_40
- Track 18 : MichelleMyBell\_37
- Track 19 : Philonius\_37
- Track 20 : Tapioca\_40
- Track 21 : Xeno\_36
- Track 22 : Fishburne\_35, Bartholomew\_34, Phineas\_35, Venti\_35, Dynamo\_35, Vidya\_35, Kari\_35, FirstPlacePfu\_35, Zilizebeth\_35
- Track 23 : Polkaroo\_35, KilKor\_35, Phalm\_35, Willsammy\_34, Jung\_34, Megiddo\_35, StressBall\_35, CactusJack\_35, Glaske\_35
- Track 24 : Brusacoram\_35, Atcoo\_35, GreaseLightnin\_35, Thespis\_35
- Track 25 : Langerak\_35, Mangethe\_35, Majeke\_35, Necropolis\_35, Donovan\_35, Arib1\_35, Jebeks\_36, Techage\_35, Phegasus\_35
- Track 26 : HUHilltop\_35, Sonah\_35
- Track 27 : Shipwreck\_37, Pygmy\_37, Bunnies\_35, Camster\_35, Juniormint\_35, Bogie\_37, Ksquared\_35, Malithi\_35

- Track 28 : StevieRay\_35
- Track 29 : Tortellini\_42
- Track 30 : Xavia\_44
- Track 31 : Nazo\_39
- Track 32 : BigNuz\_38
- Track 33 : ThulaThula\_41
- Track 34 : Phayonce\_37
- Track 35 : Purky\_42
- Track 36 : LilSpotty\_51

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

The start number called the most often in the published annotations is 30, it was called in 58 of the 101 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Arib1\_35, Atcoo\_35, Awesomesauce\_51, Babsiella\_37, Bartholomew\_34, BigNuz\_38, Bogie\_37, Brujita\_37, Brusacoram\_35, Bunnies\_35, CactusJack\_35, Camster\_35, ChickenDinner\_52, DocMcStuffins\_49, Donovan\_35, Dynamo\_35, FirstPlacePfu\_35, Fishburne\_35, Frankie\_56, Glaske\_35, GreaseLightnin\_35, HC\_35, HUHilltop\_35, Island3\_37, Jebeks\_36, Jung\_34, Juniormint\_35, Kari\_35, KilKor\_35, Ksquared\_35, Langerak\_35, LilSpotty\_51, Majeke\_35, Malithi\_35, Mangethe\_35, Megiddo\_35, Misha28\_49, MulchSalad\_50, Nazo\_39, Necropolis\_35, Phalm\_35, Phayonce\_37, Phegasus\_35, Phineas\_35, Piper2020\_51, Polkaroo\_35, Purky\_42, Pygmy\_37, QueenHazel\_33, Sejanus\_52, Shipwreck\_37, Sonah\_35, Squirty\_47, StevieRay\_35, StressBall\_35, Techage\_35, Thespis\_35, TootsiePop\_49, Tortellini\_42, Venti\_35, Vidya\_35, Willsammy\_34, Xavia\_44, Xula\_32, Zilizebeth\_35,

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

- 

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

- Aggie\_37, Andies\_36, BabeRuth\_41, Bosection6\_39, Butters\_40, Carcharodon\_39, Charlie\_37, Che9c\_51, Chewbacca\_40, Dori\_54, Duplicity\_39, Fulbright\_38, Gex\_39, Jamie19\_36, Journey\_40, Kevin1\_38, Magsby\_39, Mao1\_54, Mask\_54, Melville\_43, MichelleMyBell\_37, Nenae\_40, Panchino\_35, Parmesanjohn\_39, PhancyPhin\_40, Philonius\_37, Phloss\_37, Phrann\_40, Pipsqueaks\_39, Purgamenstris\_40, Raymond7\_34, Rebel\_32, Redi\_40, Rubeelu\_40, Sbash\_48, Schnauzer\_39, Scitech\_36, ShrimpFriedEgg\_40, Shweta\_36, Silvafighter\_40, Silvy\_39, SkinnyPete\_34, Smurph\_39, Snekmaggedon\_36, SpongeBob\_36, Tapioca\_40, ThulaThula\_41, Xeno\_36, Xerxes\_39,

**Summary by start number:**

Start 20:

- Found in 43 of 114 ( 37.7% ) of genes in pham
- Manual Annotations of this start: 37 of 101
- Called 97.7% of time when present
- Phage (with cluster) where this start called: Aggie\_37 (N), Andies\_36 (N), BabeRuth\_41 (N), Bosection6\_39 (N), Butters\_40 (N), Carcharodon\_39 (N),

Charlie\_37 (N), Chewbacca\_40 (N), Duplicity\_39 (N), Fulbright\_38 (N), Gex\_39 (N), Jamie19\_36 (N), Journey\_40 (N), Kevin1\_38 (N), Magsby\_39 (N), Melville\_43 (N), MichelleMyBell\_37 (N), Nenae\_40 (N), Panchino\_35 (N), Parmesanjohn\_39 (N), PhancyPhin\_40 (N), Philonius\_37 (N), Phloss\_37 (N), Phrann\_40 (N), Pipsqueaks\_39 (N), Purgamenstris\_40 (N), Raymond7\_34 (N), Rebel\_32 (N), Redi\_40 (N), Rubeelu\_40 (N), Schnauzer\_39 (N), Scitech\_36 (N), ShrimpFriedEgg\_40 (N), Shweta\_36 (N), Silvafighter\_40 (N), Silvy\_39 (N), SkinnyPete\_34 (N), Smurph\_39 (N), Snekmaggedon\_36 (N), SpongeBob\_36 (N), Xeno\_36 (N), Xerxes\_39 (N),

#### Start 21:

- Found in 31 of 114 ( 27.2% ) of genes in pham
- Manual Annotations of this start: 1 of 101
- Called 3.2% of time when present
- Phage (with cluster) where this start called: Tapioca\_40 (N),

#### Start 23:

- Found in 32 of 114 ( 28.1% ) of genes in pham
- Manual Annotations of this start: 1 of 101
- Called 3.1% of time when present
- Phage (with cluster) where this start called: ThulaThula\_41 (P5),

#### Start 26:

- Found in 4 of 114 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 2 of 101
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Dori\_54 (AD), Mao1\_54 (AD), Mask\_54 (AD),

#### Start 29:

- Found in 3 of 114 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 2 of 101
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Che9c\_51 (I2), Sbash\_48 (I2),

#### Start 30:

- Found in 65 of 114 ( 57.0% ) of genes in pham
- Manual Annotations of this start: 58 of 101
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Arib1\_35 (P1), Atcoo\_35 (P1), Awesomesauce\_51 (F1), Babsiella\_37 (I1), Bartholomew\_34 (P1), BigNuz\_38 (P4), Bogie\_37 (P1), Brujita\_37 (I1), Brusacoram\_35 (P1), Bunnies\_35 (P1), CactusJack\_35 (P1), Camster\_35 (P1), ChickenDinner\_52 (F1), DocMcStuffins\_49 (F1), Donovan\_35 (P1), Dynamo\_35 (P1), FirstPlacePfu\_35 (P1), Fishburne\_35 (P1), Frankie\_56 (F1), Glaske\_35 (P1), GreaseLightnin\_35 (P1), HC\_35 (I1), HUHilltop\_35 (P1), Island3\_37 (I1), Jebeks\_36 (P1), Jung\_34 (P1), Juniormint\_35 (P1), Kari\_35 (P1), KilKor\_35 (P1), Ksquard\_35 (P1), Langerak\_35 (P1), LilSpotty\_51 (singleton), Majeke\_35 (P1), Malithi\_35 (P1), Mangethe\_35 (P1), Megiddo\_35 (P1), Misha28\_49 (F1), MulchSalad\_50 (F), Nazo\_39 (P4), Necropolis\_35 (P1), Phalm\_35 (P1), Phayonce\_37 (P5), Phegasus\_35 (P1), Phineas\_35 (P1), Piper2020\_51 (F1), Polkaroo\_35 (P1), Purky\_42 (P6), Pygmy\_37 (P1), QueenHazel\_33 (I1), Sejanus\_52 (AD), Shipwreck\_37 (P1), Sonah\_35 (P1), Squirty\_47 (F3), StevieRay\_35 (P1), StressBall\_35 (P1), Techage\_35 (P1), Thespis\_35 (P1), TootsiePop\_49 (F1),

Tortellini\_42 (P2), Venti\_35 (P1), Vidya\_35 (P1), Willsammy\_34 (P1), Xavia\_44 (P3), Xula\_32 (I1), Zilizebeth\_35 (P1),

### **Summary by clusters:**

There are 14 clusters represented in this pham: P2, F1, singleton, P1, P6, AD, P4, P5, I1, P3, I2, N, F3, F,

Info for manual annotations of cluster AD:

- Start number 26 was manually annotated 2 times for cluster AD.
- Start number 30 was manually annotated 1 time for cluster AD.

Info for manual annotations of cluster F1:

- Start number 30 was manually annotated 5 times for cluster F1.

Info for manual annotations of cluster F3:

- Start number 30 was manually annotated 1 time for cluster F3.

Info for manual annotations of cluster I1:

- Start number 30 was manually annotated 6 times for cluster I1.

Info for manual annotations of cluster I2:

- Start number 29 was manually annotated 2 times for cluster I2.

Info for manual annotations of cluster N:

- Start number 20 was manually annotated 37 times for cluster N.
- Start number 21 was manually annotated 1 time for cluster N.

Info for manual annotations of cluster P1:

- Start number 30 was manually annotated 38 times for cluster P1.

Info for manual annotations of cluster P2:

- Start number 30 was manually annotated 1 time for cluster P2.

Info for manual annotations of cluster P3:

- Start number 30 was manually annotated 1 time for cluster P3.

Info for manual annotations of cluster P4:

- Start number 30 was manually annotated 2 times for cluster P4.

Info for manual annotations of cluster P5:

- Start number 23 was manually annotated 1 time for cluster P5.
- Start number 30 was manually annotated 1 time for cluster P5.

Info for manual annotations of cluster P6:

- Start number 30 was manually annotated 1 time for cluster P6.

### **Gene Information:**

Gene: Aggie\_37 Start: 28130, Stop: 28516, Start Num: 20

Candidate Starts for Aggie\_37:

(Start: 20 @28130 has 37 MA's), (Start: 21 @28133 has 1 MA's), (Start: 23 @28139 has 1 MA's), (31, 28178), (57, 28352), (62, 28394), (68, 28478), (69, 28505),

Gene: Andies\_36 Start: 28648, Stop: 28995, Start Num: 20

Candidate Starts for Andies\_36:

(Start: 20 @28648 has 37 MA's), (Start: 21 @28651 has 1 MA's), (Start: 23 @28657 has 1 MA's), (31, 28696), (57, 28870), (62, 28912),

Gene: Arib1\_35 Start: 28805, Stop: 29104, Start Num: 30

Candidate Starts for Arib1\_35:

(Start: 30 @28805 has 58 MA's), (37, 28865), (46, 28910), (55, 28967), (63, 29036), (67, 29093),

Gene: Atcoo\_35 Start: 29289, Stop: 29588, Start Num: 30

Candidate Starts for Atcoo\_35:

(Start: 30 @29289 has 58 MA's), (32, 29316), (33, 29319), (37, 29349), (46, 29394), (55, 29451), (63, 29520), (65, 29541), (67, 29577),

Gene: Awesomesauce\_51 Start: 35718, Stop: 36032, Start Num: 30

Candidate Starts for Awesomesauce\_51:

(12, 35583), (18, 35646), (19, 35664), (22, 35685), (24, 35688), (25, 35697), (Start: 30 @35718 has 58 MA's), (33, 35748), (34, 35757), (36, 35778), (38, 35790), (42, 35802), (44, 35823), (47, 35841), (62, 35949),

Gene: BabeRuth\_41 Start: 29773, Stop: 30084, Start Num: 20

Candidate Starts for BabeRuth\_41:

(3, 29482), (4, 29494), (11, 29623), (13, 29692), (Start: 20 @29773 has 37 MA's), (28, 29803), (31, 29827), (57, 30001),

Gene: Babsiella\_37 Start: 29743, Stop: 30042, Start Num: 30

Candidate Starts for Babsiella\_37:

(1, 29308), (2, 29404), (Start: 30 @29743 has 58 MA's), (37, 29803), (46, 29848), (55, 29905), (63, 29974), (67, 30031),

Gene: Bartholomew\_34 Start: 28802, Stop: 29101, Start Num: 30

Candidate Starts for Bartholomew\_34:

(Start: 30 @28802 has 58 MA's), (33, 28832), (37, 28862), (46, 28907), (55, 28964), (63, 29033), (67, 29090),

Gene: BigNuz\_38 Start: 30860, Stop: 31159, Start Num: 30

Candidate Starts for BigNuz\_38:

(Start: 30 @30860 has 58 MA's), (32, 30887), (33, 30890), (45, 30959), (46, 30965), (53, 31007), (54, 31019), (55, 31022), (62, 31082), (63, 31091),

Gene: Bogie\_37 Start: 30585, Stop: 30884, Start Num: 30

Candidate Starts for Bogie\_37:

(Start: 30 @30585 has 58 MA's), (33, 30615), (46, 30690), (55, 30747), (63, 30816), (65, 30837), (67, 30873),

Gene: Bosection6\_39 Start: 28151, Stop: 28537, Start Num: 20

Candidate Starts for Bosection6\_39:

(Start: 20 @28151 has 37 MA's), (Start: 21 @28154 has 1 MA's), (Start: 23 @28160 has 1 MA's), (31, 28199), (57, 28373), (62, 28415), (68, 28499), (69, 28526),

Gene: Brujita\_37 Start: 30641, Stop: 30940, Start Num: 30

Candidate Starts for Brujita\_37:

(1, 30206), (2, 30302), (10, 30425), (Start: 30 @30641 has 58 MA's), (37, 30701), (46, 30746), (55, 30803), (63, 30872), (67, 30929),

Gene: Brusacoram\_35 Start: 28795, Stop: 29094, Start Num: 30

Candidate Starts for Brusacoram\_35:

(Start: 30 @28795 has 58 MA's), (32, 28822), (33, 28825), (37, 28855), (46, 28900), (55, 28957), (63, 29026), (65, 29047), (67, 29083),

Gene: Bunnies\_35 Start: 28816, Stop: 29115, Start Num: 30

Candidate Starts for Bunnies\_35:

(Start: 30 @28816 has 58 MA's), (33, 28846), (46, 28921), (55, 28978), (63, 29047), (65, 29068), (67, 29104),

Gene: Butters\_40 Start: 30199, Stop: 30501, Start Num: 20

Candidate Starts for Butters\_40:

(Start: 20 @30199 has 37 MA's), (28, 30220), (57, 30418), (60, 30448),

Gene: CactusJack\_35 Start: 29056, Stop: 29355, Start Num: 30

Candidate Starts for CactusJack\_35:

(Start: 30 @29056 has 58 MA's), (32, 29083), (33, 29086), (37, 29116), (46, 29161), (55, 29218), (63, 29287),

Gene: Camster\_35 Start: 28832, Stop: 29131, Start Num: 30

Candidate Starts for Camster\_35:

(Start: 30 @28832 has 58 MA's), (33, 28862), (46, 28937), (55, 28994), (63, 29063), (65, 29084), (67, 29120),

Gene: Carcharodon\_39 Start: 29459, Stop: 29845, Start Num: 20

Candidate Starts for Carcharodon\_39:

(Start: 20 @29459 has 37 MA's), (Start: 21 @29462 has 1 MA's), (Start: 23 @29468 has 1 MA's), (31, 29507), (57, 29681), (62, 29723), (68, 29807), (69, 29834),

Gene: Charlie\_37 Start: 28150, Stop: 28536, Start Num: 20

Candidate Starts for Charlie\_37:

(Start: 20 @28150 has 37 MA's), (Start: 21 @28153 has 1 MA's), (Start: 23 @28159 has 1 MA's), (31, 28198), (57, 28372), (62, 28414), (68, 28498), (69, 28525),

Gene: Che9c\_51 Start: 40069, Stop: 40380, Start Num: 29

Candidate Starts for Che9c\_51:

(19, 40030), (Start: 29 @40069 has 2 MA's), (32, 40102), (38, 40147), (48, 40207), (63, 40312), (67, 40369),

Gene: Chewbacca\_40 Start: 29459, Stop: 29845, Start Num: 20

Candidate Starts for Chewbacca\_40:

(Start: 20 @29459 has 37 MA's), (Start: 21 @29462 has 1 MA's), (Start: 23 @29468 has 1 MA's), (31, 29507), (57, 29681), (62, 29723), (68, 29807), (69, 29834),

Gene: ChickenDinner\_52 Start: 36456, Stop: 36770, Start Num: 30

Candidate Starts for ChickenDinner\_52:

(12, 36321), (18, 36384), (19, 36402), (22, 36423), (24, 36426), (25, 36435), (Start: 30 @36456 has 58 MA's), (33, 36486), (34, 36495), (36, 36516), (38, 36528), (42, 36540), (44, 36561), (47, 36579), (62, 36687),

Gene: DocMcStuffins\_49 Start: 36456, Stop: 36770, Start Num: 30

Candidate Starts for DocMcStuffins\_49:

(12, 36321), (18, 36384), (19, 36402), (22, 36423), (24, 36426), (25, 36435), (Start: 30 @36456 has 58 MA's), (33, 36486), (34, 36495), (36, 36516), (38, 36528), (42, 36540), (44, 36561), (47, 36579), (62, 36687),

Gene: Donovan\_35 Start: 28821, Stop: 29120, Start Num: 30

Candidate Starts for Donovan\_35:

(Start: 30 @28821 has 58 MA's), (37, 28881), (46, 28926), (55, 28983), (63, 29052), (67, 29109),

Gene: Dori\_54 Start: 46186, Stop: 46512, Start Num: 26

Candidate Starts for Dori\_54:

(7, 45976), (8, 45985), (15, 46102), (Start: 26 @46186 has 2 MA's), (47, 46321), (58, 46390), (61, 46423), (66, 46471),

Gene: Duplicity\_39 Start: 29468, Stop: 29854, Start Num: 20

Candidate Starts for Duplicity\_39:

(Start: 20 @29468 has 37 MA's), (Start: 21 @29471 has 1 MA's), (Start: 23 @29477 has 1 MA's), (31, 29516), (57, 29690), (62, 29732), (68, 29816), (69, 29843),

Gene: Dynamo\_35 Start: 29210, Stop: 29509, Start Num: 30

Candidate Starts for Dynamo\_35:

(Start: 30 @29210 has 58 MA's), (33, 29240), (37, 29270), (46, 29315), (55, 29372), (63, 29441), (67, 29498),

Gene: FirstPlacePfu\_35 Start: 28834, Stop: 29133, Start Num: 30

Candidate Starts for FirstPlacePfu\_35:

(Start: 30 @28834 has 58 MA's), (33, 28864), (37, 28894), (46, 28939), (55, 28996), (63, 29065), (67, 29122),

Gene: Fishburne\_35 Start: 28802, Stop: 29101, Start Num: 30

Candidate Starts for Fishburne\_35:

(Start: 30 @28802 has 58 MA's), (33, 28832), (37, 28862), (46, 28907), (55, 28964), (63, 29033), (67, 29090),

Gene: Frankie\_56 Start: 38493, Stop: 38807, Start Num: 30

Candidate Starts for Frankie\_56:

(27, 38475), (Start: 30 @38493 has 58 MA's), (33, 38523), (34, 38532), (36, 38553), (38, 38565), (42, 38577), (44, 38598), (47, 38616), (62, 38724),

Gene: Fulbright\_38 Start: 28548, Stop: 28934, Start Num: 20

Candidate Starts for Fulbright\_38:

(Start: 20 @28548 has 37 MA's), (Start: 21 @28551 has 1 MA's), (Start: 23 @28557 has 1 MA's), (31, 28596), (57, 28770), (62, 28812), (68, 28896), (69, 28923),

Gene: Gex\_39 Start: 29475, Stop: 29861, Start Num: 20

Candidate Starts for Gex\_39:

(Start: 20 @29475 has 37 MA's), (Start: 21 @29478 has 1 MA's), (Start: 23 @29484 has 1 MA's), (31, 29523), (57, 29697), (62, 29739), (68, 29823), (69, 29850),



Gene: Glaske\_35 Start: 29056, Stop: 29355, Start Num: 30

Candidate Starts for Glaske\_35:

(Start: 30 @29056 has 58 MA's), (32, 29083), (33, 29086), (37, 29116), (46, 29161), (55, 29218), (63, 29287),

Gene: GreaseLightnin\_35 Start: 29042, Stop: 29341, Start Num: 30

Candidate Starts for GreaseLightnin\_35:

(Start: 30 @29042 has 58 MA's), (32, 29069), (33, 29072), (37, 29102), (46, 29147), (55, 29204), (63, 29273), (65, 29294), (67, 29330),

Gene: HC\_35 Start: 28524, Stop: 28823, Start Num: 30

Candidate Starts for HC\_35:

(1, 28089), (2, 28185), (Start: 30 @28524 has 58 MA's), (37, 28584), (46, 28629), (55, 28686), (63, 28755), (67, 28812),

Gene: HUHilltop\_35 Start: 28832, Stop: 29131, Start Num: 30

Candidate Starts for HUHilltop\_35:

(Start: 30 @28832 has 58 MA's), (33, 28862), (46, 28937), (55, 28994), (63, 29063), (67, 29120),

Gene: Island3\_37 Start: 30641, Stop: 30940, Start Num: 30

Candidate Starts for Island3\_37:

(1, 30206), (2, 30302), (10, 30425), (Start: 30 @30641 has 58 MA's), (37, 30701), (46, 30746), (55, 30803), (63, 30872), (67, 30929),

Gene: Jamie19\_36 Start: 28529, Stop: 28876, Start Num: 20

Candidate Starts for Jamie19\_36:

(Start: 20 @28529 has 37 MA's), (Start: 21 @28532 has 1 MA's), (Start: 23 @28538 has 1 MA's), (31, 28577), (57, 28751), (62, 28793),

Gene: Jebeks\_36 Start: 28787, Stop: 29086, Start Num: 30

Candidate Starts for Jebeks\_36:

(Start: 30 @28787 has 58 MA's), (37, 28847), (46, 28892), (55, 28949), (63, 29018), (67, 29075),

Gene: Journey\_40 Start: 28150, Stop: 28536, Start Num: 20

Candidate Starts for Journey\_40:

(Start: 20 @28150 has 37 MA's), (Start: 21 @28153 has 1 MA's), (Start: 23 @28159 has 1 MA's), (31, 28198), (57, 28372), (62, 28414), (68, 28498), (69, 28525),

Gene: Jung\_34 Start: 28763, Stop: 29062, Start Num: 30

Candidate Starts for Jung\_34:

(Start: 30 @28763 has 58 MA's), (32, 28790), (33, 28793), (37, 28823), (46, 28868), (55, 28925), (63, 28994),

Gene: Juniormint\_35 Start: 28838, Stop: 29137, Start Num: 30

Candidate Starts for Juniormint\_35:

(Start: 30 @28838 has 58 MA's), (33, 28868), (46, 28943), (55, 29000), (63, 29069), (65, 29090), (67, 29126),

Gene: Kari\_35 Start: 28799, Stop: 29098, Start Num: 30

Candidate Starts for Kari\_35:

(Start: 30 @28799 has 58 MA's), (33, 28829), (37, 28859), (46, 28904), (55, 28961), (63, 29030), (67, 29087),

Gene: Kevin1\_38 Start: 29378, Stop: 29680, Start Num: 20  
Candidate Starts for Kevin1\_38:  
(Start: 20 @29378 has 37 MA's), (28, 29399), (57, 29597), (60, 29627),

Gene: KilKor\_35 Start: 29056, Stop: 29355, Start Num: 30  
Candidate Starts for KilKor\_35:  
(Start: 30 @29056 has 58 MA's), (32, 29083), (33, 29086), (37, 29116), (46, 29161), (55, 29218), (63, 29287),

Gene: Ksquared\_35 Start: 28816, Stop: 29115, Start Num: 30  
Candidate Starts for Ksquared\_35:  
(Start: 30 @28816 has 58 MA's), (33, 28846), (46, 28921), (55, 28978), (63, 29047), (65, 29068), (67, 29104),

Gene: Langerak\_35 Start: 28815, Stop: 29114, Start Num: 30  
Candidate Starts for Langerak\_35:  
(Start: 30 @28815 has 58 MA's), (37, 28875), (46, 28920), (55, 28977), (63, 29046), (67, 29103),

Gene: LilSpotty\_51 Start: 34951, Stop: 35265, Start Num: 30  
Candidate Starts for LilSpotty\_51:  
(27, 34933), (Start: 30 @34951 has 58 MA's), (32, 34978), (34, 34990), (36, 35011), (38, 35023), (41, 35029), (44, 35056), (47, 35074), (48, 35086),

Gene: Magsby\_39 Start: 29476, Stop: 29862, Start Num: 20  
Candidate Starts for Magsby\_39:  
(Start: 20 @29476 has 37 MA's), (Start: 21 @29479 has 1 MA's), (Start: 23 @29485 has 1 MA's), (31, 29524), (57, 29698), (62, 29740), (68, 29824), (69, 29851),

Gene: Majeke\_35 Start: 28840, Stop: 29139, Start Num: 30  
Candidate Starts for Majeke\_35:  
(Start: 30 @28840 has 58 MA's), (37, 28900), (46, 28945), (55, 29002), (63, 29071), (67, 29128),

Gene: Malithi\_35 Start: 28725, Stop: 29024, Start Num: 30  
Candidate Starts for Malithi\_35:  
(Start: 30 @28725 has 58 MA's), (33, 28755), (46, 28830), (55, 28887), (63, 28956), (65, 28977), (67, 29013),

Gene: Mangethe\_35 Start: 28840, Stop: 29139, Start Num: 30  
Candidate Starts for Mangethe\_35:  
(Start: 30 @28840 has 58 MA's), (37, 28900), (46, 28945), (55, 29002), (63, 29071), (67, 29128),

Gene: Mao1\_54 Start: 44475, Stop: 44801, Start Num: 26  
Candidate Starts for Mao1\_54:  
(15, 44391), (Start: 26 @44475 has 2 MA's), (40, 44568), (44, 44592), (49, 44628), (56, 44667), (61, 44712), (65, 44748),

Gene: Mask\_54 Start: 47033, Stop: 47359, Start Num: 26  
Candidate Starts for Mask\_54:  
(Start: 26 @47033 has 2 MA's), (47, 47168), (49, 47186), (61, 47270), (65, 47306), (66, 47318),

Gene: Megiddo\_35 Start: 29056, Stop: 29355, Start Num: 30  
Candidate Starts for Megiddo\_35:

(Start: 30 @29056 has 58 MA's), (32, 29083), (33, 29086), (37, 29116), (46, 29161), (55, 29218), (63, 29287),

Gene: Melville\_43 Start: 29460, Stop: 29846, Start Num: 20

Candidate Starts for Melville\_43:

(Start: 20 @29460 has 37 MA's), (Start: 21 @29463 has 1 MA's), (Start: 23 @29469 has 1 MA's), (31, 29508), (57, 29682), (62, 29724), (68, 29808), (69, 29835),

Gene: MichelleMyBell\_37 Start: 28467, Stop: 28772, Start Num: 20

Candidate Starts for MichelleMyBell\_37:

(Start: 20 @28467 has 37 MA's), (Start: 21 @28470 has 1 MA's), (Start: 23 @28476 has 1 MA's), (31, 28515), (57, 28689), (60, 28719),

Gene: Misha28\_49 Start: 35723, Stop: 36037, Start Num: 30

Candidate Starts for Misha28\_49:

(12, 35588), (18, 35651), (19, 35669), (22, 35690), (24, 35693), (25, 35702), (Start: 30 @35723 has 58 MA's), (33, 35753), (34, 35762), (36, 35783), (38, 35795), (42, 35807), (44, 35828), (47, 35846), (62, 35954),

Gene: MulchSalad\_50 Start: 34298, Stop: 34651, Start Num: 30

Candidate Starts for MulchSalad\_50:

(27, 34280), (Start: 30 @34298 has 58 MA's), (32, 34325), (36, 34358), (39, 34373), (44, 34403), (47, 34421), (68, 34613), (69, 34640),

Gene: Nazo\_39 Start: 30862, Stop: 31161, Start Num: 30

Candidate Starts for Nazo\_39:

(Start: 30 @30862 has 58 MA's), (32, 30889), (33, 30892), (45, 30961), (46, 30967), (53, 31009), (55, 31024), (62, 31084), (63, 31093),

Gene: Necropolis\_35 Start: 28799, Stop: 29098, Start Num: 30

Candidate Starts for Necropolis\_35:

(Start: 30 @28799 has 58 MA's), (37, 28859), (46, 28904), (55, 28961), (63, 29030), (67, 29087),

Gene: Nenae\_40 Start: 29775, Stop: 30086, Start Num: 20

Candidate Starts for Nenae\_40:

(3, 29484), (4, 29496), (11, 29625), (13, 29694), (Start: 20 @29775 has 37 MA's), (28, 29805), (31, 29829), (57, 30003),

Gene: Panchino\_35 Start: 29875, Stop: 30222, Start Num: 20

Candidate Starts for Panchino\_35:

(Start: 20 @29875 has 37 MA's), (Start: 21 @29878 has 1 MA's), (Start: 23 @29884 has 1 MA's), (31, 29923), (57, 30097), (62, 30139),

Gene: Parmesanjohn\_39 Start: 29479, Stop: 29865, Start Num: 20

Candidate Starts for Parmesanjohn\_39:

(Start: 20 @29479 has 37 MA's), (Start: 21 @29482 has 1 MA's), (Start: 23 @29488 has 1 MA's), (31, 29527), (57, 29701), (62, 29743), (68, 29827), (69, 29854),

Gene: Phalm\_35 Start: 29056, Stop: 29355, Start Num: 30

Candidate Starts for Phalm\_35:

(Start: 30 @29056 has 58 MA's), (32, 29083), (33, 29086), (37, 29116), (46, 29161), (55, 29218), (63, 29287),

Gene: PhancyPhin\_40 Start: 29769, Stop: 30080, Start Num: 20

Candidate Starts for PhancyPhin\_40:

(3, 29478), (4, 29490), (11, 29619), (13, 29688), (Start: 20 @29769 has 37 MA's), (28, 29799), (31, 29823), (57, 29997),

Gene: Phayonce\_37 Start: 30764, Stop: 31069, Start Num: 30

Candidate Starts for Phayonce\_37:

(16, 30656), (Start: 30 @30764 has 58 MA's), (32, 30791), (33, 30794), (48, 30896), (61, 30986), (63, 31001), (67, 31058),

Gene: Phegasus\_35 Start: 28807, Stop: 29106, Start Num: 30

Candidate Starts for Phegasus\_35:

(Start: 30 @28807 has 58 MA's), (37, 28867), (46, 28912), (55, 28969), (63, 29038), (67, 29095),

Gene: Philonius\_37 Start: 28138, Stop: 28440, Start Num: 20

Candidate Starts for Philonius\_37:

(4, 27859), (5, 27871), (Start: 20 @28138 has 37 MA's), (28, 28159), (57, 28357), (60, 28387),

Gene: Phineas\_35 Start: 29170, Stop: 29469, Start Num: 30

Candidate Starts for Phineas\_35:

(Start: 30 @29170 has 58 MA's), (33, 29200), (37, 29230), (46, 29275), (55, 29332), (63, 29401), (67, 29458),

Gene: Phloss\_37 Start: 28886, Stop: 29272, Start Num: 20

Candidate Starts for Phloss\_37:

(Start: 20 @28886 has 37 MA's), (Start: 21 @28889 has 1 MA's), (Start: 23 @28895 has 1 MA's), (31, 28934), (57, 29108), (62, 29150), (68, 29234), (69, 29261),

Gene: Phrann\_40 Start: 30555, Stop: 30902, Start Num: 20

Candidate Starts for Phrann\_40:

(Start: 20 @30555 has 37 MA's), (Start: 21 @30558 has 1 MA's), (Start: 23 @30564 has 1 MA's), (31, 30603), (57, 30777), (62, 30819),

Gene: Piper2020\_51 Start: 36439, Stop: 36753, Start Num: 30

Candidate Starts for Piper2020\_51:

(12, 36304), (18, 36367), (19, 36385), (22, 36406), (24, 36409), (25, 36418), (Start: 30 @36439 has 58 MA's), (33, 36469), (34, 36478), (36, 36499), (38, 36511), (42, 36523), (44, 36544), (47, 36562), (62, 36670),

Gene: Pipsqueaks\_39 Start: 29456, Stop: 29842, Start Num: 20

Candidate Starts for Pipsqueaks\_39:

(Start: 20 @29456 has 37 MA's), (Start: 21 @29459 has 1 MA's), (Start: 23 @29465 has 1 MA's), (31, 29504), (57, 29678), (62, 29720), (68, 29804), (69, 29831),

Gene: Polkaroo\_35 Start: 28813, Stop: 29112, Start Num: 30

Candidate Starts for Polkaroo\_35:

(Start: 30 @28813 has 58 MA's), (32, 28840), (33, 28843), (37, 28873), (46, 28918), (55, 28975), (63, 29044),

Gene: Purgamenstris\_40 Start: 29773, Stop: 30084, Start Num: 20

Candidate Starts for Purgamenstris\_40:

(3, 29482), (4, 29494), (11, 29623), (13, 29692), (Start: 20 @29773 has 37 MA's), (28, 29803), (31, 29827), (57, 30001),

Gene: Purky\_42 Start: 31473, Stop: 31778, Start Num: 30

Candidate Starts for Purky\_42:

(22, 31446), (Start: 30 @31473 has 58 MA's), (32, 31500), (38, 31545), (48, 31605), (61, 31695), (67, 31767),

Gene: Pygmy\_37 Start: 30641, Stop: 30940, Start Num: 30

Candidate Starts for Pygmy\_37:

(Start: 30 @30641 has 58 MA's), (33, 30671), (46, 30746), (55, 30803), (63, 30872), (65, 30893), (67, 30929),

Gene: QueenHazel\_33 Start: 28677, Stop: 28976, Start Num: 30

Candidate Starts for QueenHazel\_33:

(1, 28242), (2, 28338), (10, 28461), (Start: 30 @28677 has 58 MA's), (37, 28737), (46, 28782), (55, 28839), (63, 28908), (67, 28965),

Gene: Raymond7\_34 Start: 29585, Stop: 29896, Start Num: 20

Candidate Starts for Raymond7\_34:

(3, 29294), (4, 29306), (11, 29435), (13, 29504), (Start: 20 @29585 has 37 MA's), (28, 29615), (31, 29639), (57, 29813),

Gene: Rebel\_32 Start: 25903, Stop: 26214, Start Num: 20

Candidate Starts for Rebel\_32:

(4, 25624), (5, 25636), (13, 25822), (Start: 20 @25903 has 37 MA's), (28, 25933), (31, 25957), (57, 26131),

Gene: Redi\_40 Start: 29772, Stop: 30083, Start Num: 20

Candidate Starts for Redi\_40:

(3, 29481), (4, 29493), (11, 29622), (13, 29691), (Start: 20 @29772 has 37 MA's), (28, 29802), (31, 29826), (57, 30000),

Gene: Rubeelu\_40 Start: 30199, Stop: 30501, Start Num: 20

Candidate Starts for Rubeelu\_40:

(Start: 20 @30199 has 37 MA's), (28, 30220), (57, 30418), (60, 30448),

Gene: Sbash\_48 Start: 37773, Stop: 38084, Start Num: 29

Candidate Starts for Sbash\_48:

(19, 37734), (22, 37755), (Start: 29 @37773 has 2 MA's), (46, 37884), (54, 37938), (61, 37995), (62, 38001), (66, 38043),

Gene: Schnauzer\_39 Start: 29479, Stop: 29865, Start Num: 20

Candidate Starts for Schnauzer\_39:

(Start: 20 @29479 has 37 MA's), (Start: 21 @29482 has 1 MA's), (Start: 23 @29488 has 1 MA's), (31, 29527), (57, 29701), (62, 29743), (68, 29827), (69, 29854),

Gene: Scitech\_36 Start: 27327, Stop: 27713, Start Num: 20

Candidate Starts for Scitech\_36:

(Start: 20 @27327 has 37 MA's), (Start: 21 @27330 has 1 MA's), (Start: 23 @27336 has 1 MA's), (31, 27375), (57, 27549), (62, 27591), (68, 27675), (69, 27702),

Gene: Sejanus\_52 Start: 45964, Stop: 46290, Start Num: 30

Candidate Starts for Sejanus\_52:

(17, 45880), (Start: 30 @45964 has 58 MA's), (35, 46015), (48, 46090), (51, 46102), (54, 46123),

Gene: Shipwreck\_37 Start: 30616, Stop: 30915, Start Num: 30

Candidate Starts for Shipwreck\_37:

(Start: 30 @30616 has 58 MA's), (33, 30646), (46, 30721), (55, 30778), (63, 30847), (65, 30868), (67, 30904),

Gene: ShrimpFriedEgg\_40 Start: 29772, Stop: 30083, Start Num: 20

Candidate Starts for ShrimpFriedEgg\_40:

(3, 29481), (4, 29493), (11, 29622), (13, 29691), (Start: 20 @29772 has 37 MA's), (28, 29802), (31, 29826), (57, 30000),

Gene: Shweta\_36 Start: 28659, Stop: 29006, Start Num: 20

Candidate Starts for Shweta\_36:

(Start: 20 @28659 has 37 MA's), (Start: 21 @28662 has 1 MA's), (Start: 23 @28668 has 1 MA's), (31, 28707), (57, 28881), (62, 28923),

Gene: Silvafighter\_40 Start: 29452, Stop: 29838, Start Num: 20

Candidate Starts for Silvafighter\_40:

(Start: 20 @29452 has 37 MA's), (Start: 21 @29455 has 1 MA's), (Start: 23 @29461 has 1 MA's), (31, 29500), (57, 29674), (62, 29716), (68, 29800), (69, 29827),

Gene: Silvy\_39 Start: 28130, Stop: 28516, Start Num: 20

Candidate Starts for Silvy\_39:

(Start: 20 @28130 has 37 MA's), (Start: 21 @28133 has 1 MA's), (Start: 23 @28139 has 1 MA's), (31, 28178), (57, 28352), (62, 28394), (68, 28478), (69, 28505),

Gene: SkinnyPete\_34 Start: 27190, Stop: 27576, Start Num: 20

Candidate Starts for SkinnyPete\_34:

(Start: 20 @27190 has 37 MA's), (Start: 21 @27193 has 1 MA's), (Start: 23 @27199 has 1 MA's), (31, 27238), (57, 27412), (62, 27454), (68, 27538), (69, 27565),

Gene: Smurph\_39 Start: 29479, Stop: 29865, Start Num: 20

Candidate Starts for Smurph\_39:

(Start: 20 @29479 has 37 MA's), (Start: 21 @29482 has 1 MA's), (Start: 23 @29488 has 1 MA's), (31, 29527), (57, 29701), (62, 29743), (68, 29827), (69, 29854),

Gene: Snekmaggedon\_36 Start: 28529, Stop: 28876, Start Num: 20

Candidate Starts for Snekmaggedon\_36:

(Start: 20 @28529 has 37 MA's), (Start: 21 @28532 has 1 MA's), (Start: 23 @28538 has 1 MA's), (31, 28577), (57, 28751), (62, 28793),

Gene: Sonah\_35 Start: 28788, Stop: 29087, Start Num: 30

Candidate Starts for Sonah\_35:

(Start: 30 @28788 has 58 MA's), (33, 28818), (46, 28893), (55, 28950), (63, 29019), (67, 29076),

Gene: SpongeBob\_36 Start: 28529, Stop: 28876, Start Num: 20

Candidate Starts for SpongeBob\_36:

(Start: 20 @28529 has 37 MA's), (Start: 21 @28532 has 1 MA's), (Start: 23 @28538 has 1 MA's), (31, 28577), (57, 28751), (62, 28793),

Gene: Squirty\_47 Start: 34608, Stop: 34922, Start Num: 30

Candidate Starts for Squirty\_47:

(27, 34590), (Start: 30 @34608 has 58 MA's), (32, 34635), (36, 34668), (39, 34683), (44, 34713), (47, 34731),

Gene: StevieRay\_35 Start: 28755, Stop: 29054, Start Num: 30

Candidate Starts for StevieRay\_35:

(Start: 30 @28755 has 58 MA's), (32, 28782), (33, 28785), (37, 28815), (46, 28860), (55, 28917), (63, 28986), (65, 29007),

Gene: StressBall\_35 Start: 29056, Stop: 29355, Start Num: 30

Candidate Starts for StressBall\_35:

(Start: 30 @29056 has 58 MA's), (32, 29083), (33, 29086), (37, 29116), (46, 29161), (55, 29218), (63, 29287),

Gene: Tapioca\_40 Start: 29448, Stop: 29831, Start Num: 21

Candidate Starts for Tapioca\_40:

(Start: 20 @29445 has 37 MA's), (Start: 21 @29448 has 1 MA's), (Start: 23 @29454 has 1 MA's), (31, 29493), (57, 29667), (62, 29709), (68, 29793), (69, 29820),

Gene: Techage\_35 Start: 28825, Stop: 29124, Start Num: 30

Candidate Starts for Techage\_35:

(Start: 30 @28825 has 58 MA's), (37, 28885), (46, 28930), (55, 28987), (63, 29056), (67, 29113),

Gene: Thespis\_35 Start: 28795, Stop: 29094, Start Num: 30

Candidate Starts for Thespis\_35:

(Start: 30 @28795 has 58 MA's), (32, 28822), (33, 28825), (37, 28855), (46, 28900), (55, 28957), (63, 29026), (65, 29047), (67, 29083),

Gene: ThulaThula\_41 Start: 32851, Stop: 33183, Start Num: 23

Candidate Starts for ThulaThula\_41:

(Start: 23 @32851 has 1 MA's), (Start: 26 @32857 has 2 MA's), (Start: 29 @32872 has 2 MA's), (40, 32938), (43, 32962), (48, 32995), (50, 33004), (59, 33058), (64, 33121),

Gene: TootsiePop\_49 Start: 35723, Stop: 36037, Start Num: 30

Candidate Starts for TootsiePop\_49:

(12, 35588), (18, 35651), (19, 35669), (22, 35690), (24, 35693), (25, 35702), (Start: 30 @35723 has 58 MA's), (33, 35753), (34, 35762), (36, 35783), (38, 35795), (42, 35807), (44, 35828), (47, 35846), (62, 35954),

Gene: Tortellini\_42 Start: 35456, Stop: 35809, Start Num: 30

Candidate Starts for Tortellini\_42:

(6, 35216), (9, 35237), (14, 35336), (Start: 30 @35456 has 58 MA's), (34, 35495), (38, 35528), (44, 35561), (47, 35579), (52, 35606), (63, 35696), (69, 35798),

Gene: Venti\_35 Start: 28802, Stop: 29101, Start Num: 30

Candidate Starts for Venti\_35:

(Start: 30 @28802 has 58 MA's), (33, 28832), (37, 28862), (46, 28907), (55, 28964), (63, 29033), (67, 29090),

Gene: Vidya\_35 Start: 28835, Stop: 29134, Start Num: 30

Candidate Starts for Vidya\_35:

(Start: 30 @28835 has 58 MA's), (33, 28865), (37, 28895), (46, 28940), (55, 28997), (63, 29066), (67, 29123),

Gene: Willsammy\_34 Start: 28539, Stop: 28838, Start Num: 30

Candidate Starts for Willsammy\_34:

(Start: 30 @28539 has 58 MA's), (32, 28566), (33, 28569), (37, 28599), (46, 28644), (55, 28701), (63, 28770),

Gene: Xavia\_44 Start: 36039, Stop: 36392, Start Num: 30

Candidate Starts for Xavia\_44:

(9, 35820), (14, 35919), (Start: 30 @36039 has 58 MA's), (33, 36069), (36, 36099), (38, 36111), (44, 36144), (47, 36162), (48, 36174), (63, 36279), (69, 36381),

Gene: Xeno\_36 Start: 27916, Stop: 28221, Start Num: 20

Candidate Starts for Xeno\_36:

(Start: 20 @27916 has 37 MA's), (Start: 21 @27919 has 1 MA's), (Start: 23 @27925 has 1 MA's), (31, 27964), (57, 28138),

Gene: Xerxes\_39 Start: 29476, Stop: 29862, Start Num: 20

Candidate Starts for Xerxes\_39:

(Start: 20 @29476 has 37 MA's), (Start: 21 @29479 has 1 MA's), (Start: 23 @29485 has 1 MA's), (31, 29524), (57, 29698), (62, 29740), (68, 29824), (69, 29851),

Gene: Xula\_32 Start: 28201, Stop: 28500, Start Num: 30

Candidate Starts for Xula\_32:

(1, 27766), (2, 27862), (10, 27985), (Start: 30 @28201 has 58 MA's), (37, 28261), (46, 28306), (55, 28363), (63, 28432), (67, 28489),

Gene: Zilizabeth\_35 Start: 28834, Stop: 29133, Start Num: 30

Candidate Starts for Zilizabeth\_35:

(Start: 30 @28834 has 58 MA's), (33, 28864), (37, 28894), (46, 28939), (55, 28996), (63, 29065), (67, 29122),