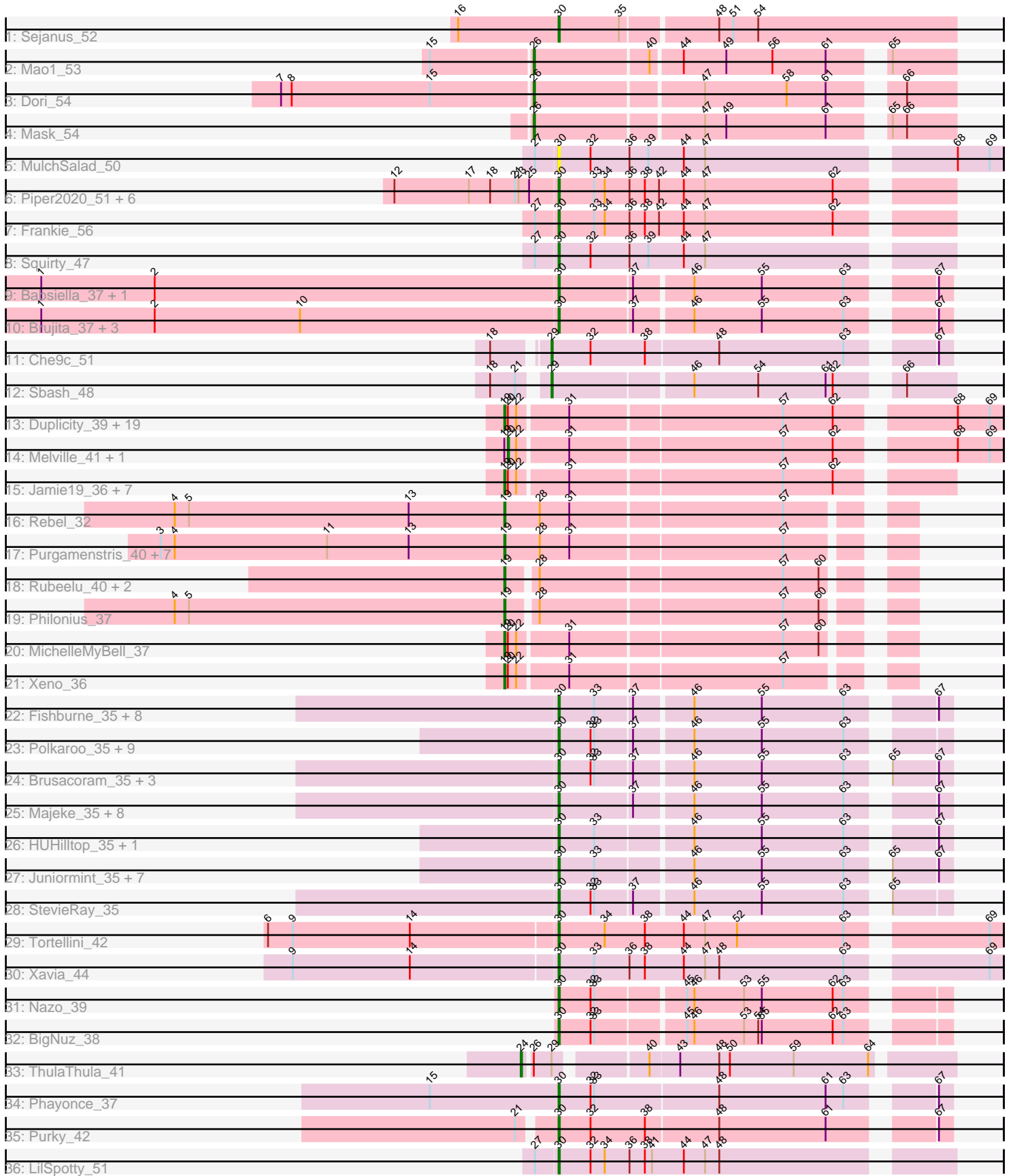


Pham 200103



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 200103 Report

This analysis was run 01/18/25 on database version 583.

Pham number 200103 has 118 members, 10 are drafts.

Phages represented in each track:

- Track 1 : Sejanus_52
- Track 2 : Mao1_53
- Track 3 : Dori_54
- Track 4 : Mask_54
- Track 5 : MulchSalad_50
- Track 6 : Piper2020_51, ChickenDinner_52, DocMcStuffins_50, TootsiePop_49, Misha28_49, Aloeri_52, 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, Bosection6_39, Phloss_37, Parmesanjohn_39, Silvy_37, Charlie_37, Smurph_39, Chewbacca_40, Gex_39, Journey_37, Aggie_37, Magsby_39, Silvafighter_40, Scitech_36, Pipsqueaks_39, Schnauzer_39, SkinnyPete_34, Carcharodon_39, Fulbright_38, Xerxes_39
- Track 14 : Melville_41, Tapioca_40
- Track 15 : Jamie19_36, Panchino_35, SpongeBob_36, Andies_36, EGUunicorn_40, Shweta_36, Phrann_40, Snekmaggedon_36
- Track 16 : Rebel_32
- Track 17 : Purgamenstris_40, Redi_40, Hanako_40, Raymond7_34, PhancyPhin_40, BabeRuth_41, Nenae_40, ShrimpFriedEgg_40
- Track 18 : Rubeelu_40, Kevin1_38, Butters_40
- Track 19 : Philonius_37
- Track 20 : MichelleMyBell_37
- Track 21 : Xeno_36
- Track 22 : Fishburne_35, Bartholomew_34, Venti_35, Dynamo_35, Vidya_35, Phineas_35, Kari_35, FirstPlacePfu_35, Zilizebeth_35
- Track 23 : Polkaroo_35, Jung_34, KilKor_35, Phalm_35, Willsammy_34, Gavriela_35, Megiddo_35, StressBall_35, CactusJack_35, Glaske_35
- Track 24 : Brusacoram_35, Atcoo_35, GreaseLightnin_35, Thespis_35
- Track 25 : Majeke_35, Langerak_35, Mangethe_35, Necropolis_35, Donovan_35, Arib1_35, Jebeks_36, Techage_35, Phegasus_35
- Track 26 : HUHilltop_35, Sonah_35
- Track 27 : Juniormint_35, Shipwreck_37, Pygmy_37, Bunnies_35, Camster_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 60 of the 108 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aloeri_52, 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_50, Donovan_35, Dynamo_35, FirstPlacePfu_35, Fishburne_35, Frankie_56, Gavriela_35, 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, Thespiis_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, EGUnicorn_40, Fulbright_38, Gex_39, Hanako_40, Jamie19_36, Journey_37, Kevin1_38, Magsby_39, Mao1_53, Mask_54, Melville_41, MichelleMyBell_37, Nенаe_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_37, SkinnyPete_34, Smurph_39, Snekmaggon_36, SpongeBob_36, Tapioca_40, ThulaThula_41, Xeno_36, Xerxes_39,

Summary by start number:

Start 19:

- Found in 45 of 118 (38.1%) of genes in pham
- Manual Annotations of this start: 40 of 108
- Called 95.6% 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), EGUunicorn_40 (N), Fulbright_38 (N), Gex_39 (N), Hanako_40 (N), Jamie19_36 (N), Journey_37 (N), Kevin1_38 (N), Magsby_39 (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_37 (N), SkinnyPete_34 (N), Smurph_39 (N), Snekmaggedon_36 (N), SpongeBob_36 (N), Xeno_36 (N), Xerxes_39 (N),

Start 20:

- Found in 32 of 118 (27.1%) of genes in pham
- Manual Annotations of this start: 2 of 108
- Called 6.2% of time when present
- Phage (with cluster) where this start called: Melville_41 (N), Tapioca_40 (N),

Start 24:

- Found in 1 of 118 (0.8%) of genes in pham
- Manual Annotations of this start: 1 of 108
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ThulaThula_41 (P5),

Start 26:

- Found in 4 of 118 (3.4%) of genes in pham
- Manual Annotations of this start: 3 of 108
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Dori_54 (AD), Mao1_53 (AD), Mask_54 (AD),

Start 29:

- Found in 3 of 118 (2.5%) of genes in pham
- Manual Annotations of this start: 2 of 108
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Che9c_51 (I2), Sbash_48 (I2),

Start 30:

- Found in 67 of 118 (56.8%) of genes in pham
- Manual Annotations of this start: 60 of 108
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aloeri_52 (F1), 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_50 (F1), Donovan_35 (P1), Dynamo_35 (P1), FirstPlacePfu_35 (P1), Fishburne_35 (P1), Frankie_56 (F1), Gavriela_35 (P1), 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), Ksquared_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 3 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 6 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 19 was manually annotated 40 times for cluster N.
- Start number 20 was manually annotated 2 times for cluster N.

Info for manual annotations of cluster P1:

- Start number 30 was manually annotated 39 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 24 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: 19

Candidate Starts for Aggie_37:

(Start: 19 @28130 has 40 MA's), (Start: 20 @28133 has 2 MA's), (22, 28139), (31, 28178), (57, 28352), (62, 28394), (68, 28478), (69, 28505),

Gene: Aloeri_52 Start: 36456, Stop: 36770, Start Num: 30

Candidate Starts for Aloeri_52:

(12, 36321), (17, 36384), (18, 36402), (21, 36423), (23, 36426), (25, 36435), (Start: 30 @36456 has 60 MA's), (33, 36486), (34, 36495), (36, 36516), (38, 36528), (42, 36540), (44, 36561), (47, 36579), (62, 36687),

Gene: Andies_36 Start: 28648, Stop: 28995, Start Num: 19

Candidate Starts for Andies_36:

(Start: 19 @28648 has 40 MA's), (Start: 20 @28651 has 2 MA's), (22, 28657), (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 60 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 60 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), (17, 35646), (18, 35664), (21, 35685), (23, 35688), (25, 35697), (Start: 30 @35718 has 60 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: 19

Candidate Starts for BabeRuth_41:

(3, 29482), (4, 29494), (11, 29623), (13, 29692), (Start: 19 @29773 has 40 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 60 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 60 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 60 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 60 MA's), (33, 30615), (46, 30690), (55, 30747), (63, 30816), (65, 30837), (67, 30873),

Gene: Bosection6_39 Start: 28151, Stop: 28537, Start Num: 19

Candidate Starts for Bosection6_39:

(Start: 19 @28151 has 40 MA's), (Start: 20 @28154 has 2 MA's), (22, 28160), (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 60 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 60 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 60 MA's), (33, 28846), (46, 28921), (55, 28978), (63, 29047), (65, 29068), (67, 29104),

Gene: Butters_40 Start: 30199, Stop: 30501, Start Num: 19

Candidate Starts for Butters_40:

(Start: 19 @30199 has 40 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 60 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 60 MA's), (33, 28862), (46, 28937), (55, 28994), (63, 29063), (65, 29084), (67, 29120),

Gene: Carcharodon_39 Start: 29459, Stop: 29845, Start Num: 19

Candidate Starts for Carcharodon_39:

(Start: 19 @29459 has 40 MA's), (Start: 20 @29462 has 2 MA's), (22, 29468), (31, 29507), (57, 29681), (62, 29723), (68, 29807), (69, 29834),

Gene: Charlie_37 Start: 28150, Stop: 28536, Start Num: 19

Candidate Starts for Charlie_37:

(Start: 19 @28150 has 40 MA's), (Start: 20 @28153 has 2 MA's), (22, 28159), (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:

(18, 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: 19

Candidate Starts for Chewbacca_40:

(Start: 19 @29459 has 40 MA's), (Start: 20 @29462 has 2 MA's), (22, 29468), (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), (17, 36384), (18, 36402), (21, 36423), (23, 36426), (25, 36435), (Start: 30 @36456 has 60 MA's), (33, 36486), (34, 36495), (36, 36516), (38, 36528), (42, 36540), (44, 36561), (47, 36579), (62, 36687),

Gene: DocMcStuffins_50 Start: 36456, Stop: 36770, Start Num: 30

Candidate Starts for DocMcStuffins_50:

(12, 36321), (17, 36384), (18, 36402), (21, 36423), (23, 36426), (25, 36435), (Start: 30 @36456 has 60 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 60 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 3 MA's), (47, 46321), (58, 46390), (61, 46423), (66, 46471),

Gene: Duplicity_39 Start: 29468, Stop: 29854, Start Num: 19

Candidate Starts for Duplicity_39:

(Start: 19 @29468 has 40 MA's), (Start: 20 @29471 has 2 MA's), (22, 29477), (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 60 MA's), (33, 29240), (37, 29270), (46, 29315), (55, 29372), (63, 29441), (67, 29498),

Gene: EGUunicorn_40 Start: 28151, Stop: 28498, Start Num: 19

Candidate Starts for EGUunicorn_40:

(Start: 19 @28151 has 40 MA's), (Start: 20 @28154 has 2 MA's), (22, 28160), (31, 28199), (57, 28373), (62, 28415),

Gene: FirstPlacePfu_35 Start: 28834, Stop: 29133, Start Num: 30

Candidate Starts for FirstPlacePfu_35:

(Start: 30 @28834 has 60 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 60 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 60 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: 19

Candidate Starts for Fulbright_38:

(Start: 19 @28548 has 40 MA's), (Start: 20 @28551 has 2 MA's), (22, 28557), (31, 28596), (57, 28770), (62, 28812), (68, 28896), (69, 28923),

Gene: Gavriela_35 Start: 29056, Stop: 29355, Start Num: 30

Candidate Starts for Gavriela_35:

(Start: 30 @29056 has 60 MA's), (32, 29083), (33, 29086), (37, 29116), (46, 29161), (55, 29218), (63, 29287),

Gene: Gex_39 Start: 29475, Stop: 29861, Start Num: 19

Candidate Starts for Gex_39:

(Start: 19 @29475 has 40 MA's), (Start: 20 @29478 has 2 MA's), (22, 29484), (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 60 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 60 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 60 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 60 MA's), (33, 28862), (46, 28937), (55, 28994), (63, 29063), (67, 29120),

Gene: Hanako_40 Start: 29772, Stop: 30083, Start Num: 19

Candidate Starts for Hanako_40:

(3, 29481), (4, 29493), (11, 29622), (13, 29691), (Start: 19 @29772 has 40 MA's), (28, 29802), (31, 29826), (57, 30000),

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 60 MA's), (37, 30701), (46, 30746), (55, 30803), (63, 30872), (67, 30929),

Gene: Jamie19_36 Start: 28529, Stop: 28876, Start Num: 19

Candidate Starts for Jamie19_36:

(Start: 19 @28529 has 40 MA's), (Start: 20 @28532 has 2 MA's), (22, 28538), (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 60 MA's), (37, 28847), (46, 28892), (55, 28949), (63, 29018), (67, 29075),

Gene: Journey_37 Start: 28150, Stop: 28536, Start Num: 19

Candidate Starts for Journey_37:

(Start: 19 @28150 has 40 MA's), (Start: 20 @28153 has 2 MA's), (22, 28159), (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 60 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 60 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 60 MA's), (33, 28829), (37, 28859), (46, 28904), (55, 28961), (63, 29030), (67, 29087),

Gene: Kevin1_38 Start: 29378, Stop: 29680, Start Num: 19

Candidate Starts for Kevin1_38:

(Start: 19 @29378 has 40 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 60 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 60 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 60 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 60 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: 19

Candidate Starts for Magsby_39:

(Start: 19 @29476 has 40 MA's), (Start: 20 @29479 has 2 MA's), (22, 29485), (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 60 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 60 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 60 MA's), (37, 28900), (46, 28945), (55, 29002), (63, 29071), (67, 29128),

Gene: Mao1_53 Start: 44475, Stop: 44801, Start Num: 26

Candidate Starts for Mao1_53:

(15, 44391), (Start: 26 @44475 has 3 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 3 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 60 MA's), (32, 29083), (33, 29086), (37, 29116), (46, 29161), (55, 29218), (63, 29287),

Gene: Melville_41 Start: 29463, Stop: 29846, Start Num: 20

Candidate Starts for Melville_41:

(Start: 19 @29460 has 40 MA's), (Start: 20 @29463 has 2 MA's), (22, 29469), (31, 29508), (57, 29682), (62, 29724), (68, 29808), (69, 29835),

Gene: MichelleMyBell_37 Start: 28467, Stop: 28772, Start Num: 19

Candidate Starts for MichelleMyBell_37:

(Start: 19 @28467 has 40 MA's), (Start: 20 @28470 has 2 MA's), (22, 28476), (31, 28515), (57, 28689), (60, 28719),

Gene: Misha28_49 Start: 35723, Stop: 36037, Start Num: 30

Candidate Starts for Misha28_49:

(12, 35588), (17, 35651), (18, 35669), (21, 35690), (23, 35693), (25, 35702), (Start: 30 @35723 has 60 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 60 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 60 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 60 MA's), (37, 28859), (46, 28904), (55, 28961), (63, 29030), (67, 29087),

Gene: Nенаe_40 Start: 29775, Stop: 30086, Start Num: 19

Candidate Starts for Nенаe_40:

(3, 29484), (4, 29496), (11, 29625), (13, 29694), (Start: 19 @29775 has 40 MA's), (28, 29805), (31, 29829), (57, 30003),

Gene: Panchino_35 Start: 29875, Stop: 30222, Start Num: 19

Candidate Starts for Panchino_35:

(Start: 19 @29875 has 40 MA's), (Start: 20 @29878 has 2 MA's), (22, 29884), (31, 29923), (57, 30097), (62, 30139),

Gene: Parmesanjohn_39 Start: 29479, Stop: 29865, Start Num: 19

Candidate Starts for Parmesanjohn_39:

(Start: 19 @29479 has 40 MA's), (Start: 20 @29482 has 2 MA's), (22, 29488), (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 60 MA's), (32, 29083), (33, 29086), (37, 29116), (46, 29161), (55, 29218), (63, 29287),

Gene: PhancyPhin_40 Start: 29769, Stop: 30080, Start Num: 19

Candidate Starts for PhancyPhin_40:

(3, 29478), (4, 29490), (11, 29619), (13, 29688), (Start: 19 @29769 has 40 MA's), (28, 29799), (31, 29823), (57, 29997),

Gene: Phayonce_37 Start: 30764, Stop: 31069, Start Num: 30

Candidate Starts for Phayonce_37:

(15, 30656), (Start: 30 @30764 has 60 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 60 MA's), (37, 28867), (46, 28912), (55, 28969), (63, 29038), (67, 29095),

Gene: Philonius_37 Start: 28138, Stop: 28440, Start Num: 19

Candidate Starts for Philonius_37:

(4, 27859), (5, 27871), (Start: 19 @28138 has 40 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 60 MA's), (33, 29200), (37, 29230), (46, 29275), (55, 29332), (63, 29401), (67, 29458),

Gene: Phloss_37 Start: 28886, Stop: 29272, Start Num: 19

Candidate Starts for Phloss_37:

(Start: 19 @28886 has 40 MA's), (Start: 20 @28889 has 2 MA's), (22, 28895), (31, 28934), (57, 29108), (62, 29150), (68, 29234), (69, 29261),

Gene: Phrann_40 Start: 30555, Stop: 30902, Start Num: 19

Candidate Starts for Phrann_40:

(Start: 19 @30555 has 40 MA's), (Start: 20 @30558 has 2 MA's), (22, 30564), (31, 30603), (57, 30777), (62, 30819),

Gene: Piper2020_51 Start: 36439, Stop: 36753, Start Num: 30

Candidate Starts for Piper2020_51:

(12, 36304), (17, 36367), (18, 36385), (21, 36406), (23, 36409), (25, 36418), (Start: 30 @36439 has 60 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: 19

Candidate Starts for Pipsqueaks_39:

(Start: 19 @29456 has 40 MA's), (Start: 20 @29459 has 2 MA's), (22, 29465), (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 60 MA's), (32, 28840), (33, 28843), (37, 28873), (46, 28918), (55, 28975), (63, 29044),

Gene: Purgamenstris_40 Start: 29773, Stop: 30084, Start Num: 19

Candidate Starts for Purgamenstris_40:

(3, 29482), (4, 29494), (11, 29623), (13, 29692), (Start: 19 @29773 has 40 MA's), (28, 29803), (31, 29827), (57, 30001),

Gene: Purky_42 Start: 31473, Stop: 31778, Start Num: 30

Candidate Starts for Purky_42:

(21, 31446), (Start: 30 @31473 has 60 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 60 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 60 MA's), (37, 28737), (46, 28782), (55, 28839), (63, 28908), (67, 28965),

Gene: Raymond7_34 Start: 29585, Stop: 29896, Start Num: 19

Candidate Starts for Raymond7_34:

(3, 29294), (4, 29306), (11, 29435), (13, 29504), (Start: 19 @29585 has 40 MA's), (28, 29615), (31, 29639), (57, 29813),

Gene: Rebel_32 Start: 25903, Stop: 26214, Start Num: 19

Candidate Starts for Rebel_32:

(4, 25624), (5, 25636), (13, 25822), (Start: 19 @25903 has 40 MA's), (28, 25933), (31, 25957), (57, 26131),

Gene: Redi_40 Start: 29772, Stop: 30083, Start Num: 19

Candidate Starts for Redi_40:

(3, 29481), (4, 29493), (11, 29622), (13, 29691), (Start: 19 @29772 has 40 MA's), (28, 29802), (31, 29826), (57, 30000),

Gene: Rubeelu_40 Start: 30199, Stop: 30501, Start Num: 19
Candidate Starts for Rubeelu_40:
(Start: 19 @30199 has 40 MA's), (28, 30220), (57, 30418), (60, 30448),

Gene: Sbash_48 Start: 37773, Stop: 38084, Start Num: 29
Candidate Starts for Sbash_48:
(18, 37734), (21, 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: 19
Candidate Starts for Schnauzer_39:
(Start: 19 @29479 has 40 MA's), (Start: 20 @29482 has 2 MA's), (22, 29488), (31, 29527), (57, 29701), (62, 29743), (68, 29827), (69, 29854),

Gene: Scitech_36 Start: 27327, Stop: 27713, Start Num: 19
Candidate Starts for Scitech_36:
(Start: 19 @27327 has 40 MA's), (Start: 20 @27330 has 2 MA's), (22, 27336), (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:
(16, 45880), (Start: 30 @45964 has 60 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 60 MA's), (33, 30646), (46, 30721), (55, 30778), (63, 30847), (65, 30868), (67, 30904),

Gene: ShrimpFriedEgg_40 Start: 29772, Stop: 30083, Start Num: 19
Candidate Starts for ShrimpFriedEgg_40:
(3, 29481), (4, 29493), (11, 29622), (13, 29691), (Start: 19 @29772 has 40 MA's), (28, 29802), (31, 29826), (57, 30000),

Gene: Shweta_36 Start: 28659, Stop: 29006, Start Num: 19
Candidate Starts for Shweta_36:
(Start: 19 @28659 has 40 MA's), (Start: 20 @28662 has 2 MA's), (22, 28668), (31, 28707), (57, 28881), (62, 28923),

Gene: Silvafighter_40 Start: 29452, Stop: 29838, Start Num: 19
Candidate Starts for Silvafighter_40:
(Start: 19 @29452 has 40 MA's), (Start: 20 @29455 has 2 MA's), (22, 29461), (31, 29500), (57, 29674), (62, 29716), (68, 29800), (69, 29827),

Gene: Silvy_37 Start: 28130, Stop: 28516, Start Num: 19
Candidate Starts for Silvy_37:
(Start: 19 @28130 has 40 MA's), (Start: 20 @28133 has 2 MA's), (22, 28139), (31, 28178), (57, 28352), (62, 28394), (68, 28478), (69, 28505),

Gene: SkinnyPete_34 Start: 27190, Stop: 27576, Start Num: 19
Candidate Starts for SkinnyPete_34:
(Start: 19 @27190 has 40 MA's), (Start: 20 @27193 has 2 MA's), (22, 27199), (31, 27238), (57, 27412), (62, 27454), (68, 27538), (69, 27565),

Gene: Smurph_39 Start: 29479, Stop: 29865, Start Num: 19

Candidate Starts for Smurph_39:

(Start: 19 @29479 has 40 MA's), (Start: 20 @29482 has 2 MA's), (22, 29488), (31, 29527), (57, 29701), (62, 29743), (68, 29827), (69, 29854),

Gene: Snekmaggedon_36 Start: 28529, Stop: 28876, Start Num: 19

Candidate Starts for Snekmaggedon_36:

(Start: 19 @28529 has 40 MA's), (Start: 20 @28532 has 2 MA's), (22, 28538), (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 60 MA's), (33, 28818), (46, 28893), (55, 28950), (63, 29019), (67, 29076),

Gene: SpongeBob_36 Start: 28529, Stop: 28876, Start Num: 19

Candidate Starts for SpongeBob_36:

(Start: 19 @28529 has 40 MA's), (Start: 20 @28532 has 2 MA's), (22, 28538), (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 60 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 60 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 60 MA's), (32, 29083), (33, 29086), (37, 29116), (46, 29161), (55, 29218), (63, 29287),

Gene: Tapioca_40 Start: 29448, Stop: 29831, Start Num: 20

Candidate Starts for Tapioca_40:

(Start: 19 @29445 has 40 MA's), (Start: 20 @29448 has 2 MA's), (22, 29454), (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 60 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 60 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: 24

Candidate Starts for ThulaThula_41:

(Start: 24 @32851 has 1 MA's), (Start: 26 @32857 has 3 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), (17, 35651), (18, 35669), (21, 35690), (23, 35693), (25, 35702), (Start: 30 @35723 has 60 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 60 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 60 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 60 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 60 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 60 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: 19

Candidate Starts for Xeno_36:

(Start: 19 @27916 has 40 MA's), (Start: 20 @27919 has 2 MA's), (22, 27925), (31, 27964), (57, 28138),

Gene: Xerxes_39 Start: 29476, Stop: 29862, Start Num: 19

Candidate Starts for Xerxes_39:

(Start: 19 @29476 has 40 MA's), (Start: 20 @29479 has 2 MA's), (22, 29485), (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 60 MA's), (37, 28261), (46, 28306), (55, 28363), (63, 28432), (67, 28489),

Gene: Zilizebeth_35 Start: 28834, Stop: 29133, Start Num: 30

Candidate Starts for Zilizebeth_35:

(Start: 30 @28834 has 60 MA's), (33, 28864), (37, 28894), (46, 28939), (55, 28996), (63, 29065), (67, 29122),