



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 215958 Report

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

Pham number 215958 has 128 members, 34 are drafts.

Phages represented in each track:

- Track 1 : MaGuCo\_4
- Track 2 : Liebe\_4, Maureen\_4
- Track 3 : Tweety19\_5
- Track 4 : Snek\_5
- Track 5 : JasmineDragon\_4, ShakeltOph\_4, MiniMommy\_4
- Track 6 : Emotion\_4
- Track 7 : VroomVroom\_4
- Track 8 : LadyAstra\_4
- Track 9 : Gumpizza\_4, Beaupre\_4
- Track 10 : Giorgio\_4
- Track 11 : SpecialK\_4, Moss\_4, Halsey\_4, Ashes\_4, RockScotty\_4
- Track 12 : Sabourin\_4, Sooty\_4, Cappuccino\_4, Gambol\_4, Donkey\_4, Kalimba\_4
- Track 13 : Mysterium\_4
- Track 14 : Stuu\_4
- Track 15 : Honk\_4
- Track 16 : Cen1621\_4
- Track 17 : Zeta1847\_4
- Track 18 : Floof\_4
- Track 19 : SuMoo\_4
- Track 20 : Tyson\_6, Wyatt2\_6, Zaria\_6, CicholasNage\_6, LeBron\_6, AvadaKedavra\_6, JoeDirt\_6, UPIE\_6, Wamburggrxpress\_6, Appletree2\_6, Rose5\_6, Calm\_6, MAckerman\_6, Enceladus\_6, DirkDirk\_6, Poochiewood\_6, Silverleaf\_6, Halena\_6, Acquire49\_6, OhShagHennessy\_6
- Track 21 : Nicholasp3\_6, Underpass\_6, Vetrrix\_6, BobsGarage\_6, Kahlid\_6, Netyap\_6, Miley16\_6, Gabriela\_6, LilDestine\_6, Faith1\_6, Winky\_6, Itos\_6, BigCheese\_6, Finemlucis\_6, Zakai\_6, Lewan\_6, Gardann\_6, DrSeegs\_6, Wilder\_6, Breezona\_6, SoJulia\_6, MkaliMitinis3\_6, Crossroads\_6, Rumpelstiltskin\_6
- Track 22 : Soap141\_6, Sarshaun\_6, Loadrie\_6, Hafay\_6, Wigglewiggles\_6
- Track 23 : Tourach\_6
- Track 24 : DanBing\_5
- Track 25 : Bazzle\_6, Archie\_6
- Track 26 : GuuelaD\_6
- Track 27 : ZhongYanYuan\_5, Claus\_6, Baoshan\_5
- Track 28 : DHan\_6
- Track 29 : Krypton555\_7
- Track 30 : Bellis\_7, Kingsolomon\_7, Nicholas\_7, Lumos\_7, Moostard\_7, Red305\_7, TriFive\_7, Snenia\_7, MsGreen\_7, Finnry\_7, Jubie\_7, Samty\_7, Clautastrophe\_7,

Jobypre\_7

- Track 31 : MiniLon\_7, Lolly9\_7, MiniMac\_7
- Track 32 : Ellson\_7, BourbonZero\_6, DuncansLeg\_7, KirDoubleO7\_5, LiyuLake\_7
- Track 33 : Whirlwind\_8
- Track 34 : Douzhi\_6, PYPDinur\_6, Chaser\_6, Sheng711\_6
- Track 35 : BrainDrainer\_7
- Track 36 : Bromden\_6
- Track 37 : Kropertea\_6
- Track 38 : Douge\_6, Quby\_6, FarmResident\_6
- Track 39 : DyoEdafos\_7
- Track 40 : Baudelaire\_6, Aegeus\_6
- Track 41 : Footloose\_4

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

The start number called the most often in the published annotations is 2, it was called in 70 of the 94 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acquire49\_6, Aegeus\_6, Appletree2\_6, Archie\_6, AvadaKedavra\_6, Baoshan\_5, Baudelaire\_6, Bazzle\_6, Bellis\_7, BigCheese\_6, BobsGarage\_6, BourbonZero\_6, BrainDrainer\_7, Breezona\_6, Bromden\_6, Calm\_6, Chaser\_6, CicholasNage\_6, Claus\_6, Clautastrophe\_7, Crossroads\_6, DHan\_6, DanBing\_5, DirkDirk\_6, Douge\_6, Douzhi\_6, DrSeegs\_6, DuncansLeg\_7, DyoEdafos\_7, Ellson\_7, Enceladus\_6, Faith1\_6, FarmResident\_6, Finemlucis\_6, Finnry\_7, Gabriela\_6, Gardann\_6, GuuelaD\_6, Hafay\_6, Halena\_6, Itos\_6, Jobypre\_7, JoeDirt\_6, Jubie\_7, Kahlid\_6, Kingsolomon\_7, KirDoubleO7\_5, Kropertea\_6, Krypton555\_7, LeBron\_6, Lewan\_6, LilDestine\_6, LiyuLake\_7, Loadrie\_6, Lolly9\_7, Lumos\_7, MAckerman\_6, Miley16\_6, MiniLon\_7, MiniMac\_7, MkaliMitinis3\_6, Moostard\_7, MsGreen\_7, Netyap\_6, Nicholas\_7, Nicholasp3\_6, OhShagHennessy\_6, PYPDinur\_6, Poochiewood\_6, Quby\_6, Red305\_7, Rose5\_6, Rumpelstiltskin\_6, Samty\_7, Sarshaun\_6, Sheng711\_6, Silverleaf\_6, Snenia\_7, SoJulia\_6, Soap141\_6, Tourach\_6, TriFive\_7, Tyson\_6, UPIE\_6, Underpass\_6, Vetrix\_6, Wamburgxpress\_6, Whirlwind\_8, Wigglewiggle\_6, Wilder\_6, Winky\_6, Wyatt2\_6, Zakai\_6, Zaria\_6, ZhongYanYuan\_5,

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

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

- Ashes\_4, Beaupre\_4, Cappuccino\_4, Cen1621\_4, Donkey\_4, Emotion\_4, Floof\_4, Footloose\_4, Gambol\_4, Giorgio\_4, Gumpizza\_4, Halsey\_4, Honk\_4, JasmineDragon\_4, Kalimba\_4, LadyAstra\_4, Liebe\_4, MaGuCo\_4, Maureen\_4, MiniMommy\_4, Moss\_4, Mysterium\_4, RockScotty\_4, Sabourin\_4, ShakeltOph\_4, Snek\_5, Sooty\_4, SpecialK\_4, Stuu\_4, SuMoo\_4, Tweety19\_5, VroomVroom\_4, Zeta1847\_4,

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

Start 2:

- Found in 95 of 128 ( 74.2% ) of genes in pham
- Manual Annotations of this start: 70 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acquire49\_6 (L1), Aegeus\_6 (L5), Appletree2\_6 (L1), Archie\_6 (L2), AvadaKedavra\_6 (L1), Baoshan\_5 (L2), Baudelaire\_6 (L5), Bazzle\_6 (L2), Bellis\_7 (L3), BigCheese\_6 (L2), BobsGarage\_6 (L2), BourbonZero\_6 (L3), BrainDrainer\_7 (L4), Breezona\_6 (L2), Bromden\_6 (L4), Calm\_6 (L1), Chaser\_6 (L4), CicholasNage\_6 (L1), Claus\_6 (L2), Clautastrophe\_7 (L3), Crossroads\_6 (L2), DHan\_6 (L2), DanBing\_5 (L2), DirkDirk\_6 (L1), Douge\_6 (L4), Douzhi\_6 (L4), DrSeegs\_6 (L2), DuncansLeg\_7 (L3), DyoEdafos\_7 (L4), Ellson\_7 (L3), Enceladus\_6 (L1), Faith1\_6 (L2), FarmResident\_6 (L4), Finemlucis\_6 (L2), Finnry\_7 (L3), Gabriela\_6 (L2), Gardann\_6 (L2), GuuelaD\_6 (L2), Hafay\_6 (L2), Halena\_6 (L1), Itos\_6 (L2), Jobypre\_7 (L3), JoeDirt\_6 (L1), Jubie\_7 (L3), Kahlid\_6 (L2), Kingsolomon\_7 (L3), KirDoubleO7\_5 (L3), Kropertea\_6 (L4), Krypton555\_7 (L3), LeBron\_6 (L1), Lewan\_6 (L2), LilDestine\_6 (L2), LiyuLake\_7 (L3), Loadrie\_6 (L2), Lolly9\_7 (L3), Lumos\_7 (L3), MAckerman\_6 (L1), Miley16\_6 (L2), MiniLon\_7 (L3), MiniMac\_7 (L3), MkaliMitinis3\_6 (L2), Moostard\_7 (L3), MsGreen\_7 (L3), Netyap\_6 (L2), Nicholas\_7 (L3), Nicholasp3\_6 (L2), OhShagHennessy\_6 (L1), PYPDinur\_6 (L4), Poochiewood\_6 (L1), Quby\_6 (L4), Red305\_7 (L3), Rose5\_6 (L1), Rumpelstiltskin\_6 (L2), Samty\_7 (L3), Sarshaun\_6 (L2), Sheng711\_6 (L4), Silverleaf\_6 (L1), Snenia\_7 (L3), SoJulia\_6 (L2), Soap141\_6 (L2), Tourach\_6 (L2), TriFive\_7 (L3), Tyson\_6 (L1), UPIE\_6 (L1), Underpass\_6 (L2), Vetrix\_6 (L2), Wamburgrxpress\_6 (L1), Whirlwind\_8 (L3), Wigglewiggle\_6 (L2), Wilder\_6 (L2), Winky\_6 (L2), Wyatt2\_6 (L1), Zakai\_6 (L2), Zaria\_6 (L1), ZhongYanYuan\_5 (L2),

#### Start 4:

- Found in 1 of 128 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Honk\_4 (EH),

#### Start 5:

- Found in 39 of 128 ( 30.5% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 2.6% of time when present
- Phage (with cluster) where this start called: Floof\_4 (EH),

#### Start 6:

- Found in 18 of 128 ( 14.1% ) of genes in pham
- Manual Annotations of this start: 12 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ashes\_4 (AZ5), Beaupre\_4 (AZ5), Cappuccino\_4 (AZ5), Donkey\_4 (AZ5), Footloose\_4 (singleton), Gambol\_4 (AZ5), Giorgio\_4 (AZ5), Gumpizza\_4 (AZ5), Halsey\_4 (AZ5), Kalimba\_4 (AZ5), Moss\_4 (AZ5), Mysterium\_4 (AZ5), RockScotty\_4 (AZ5), Sabourin\_4 (AZ5), Sooty\_4 (AZ5), SpecialK\_4 (AZ5), Stuu\_4 (AZ5), SuMoo\_4 (EH),

#### Start 7:

- Found in 3 of 128 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 2 of 94
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Cen1621\_4 (EH), Zeta1847\_4 (EH),

Start 8:

- Found in 27 of 128 ( 21.1% ) of genes in pham
- Manual Annotations of this start: 3 of 94
- Called 11.1% of time when present
- Phage (with cluster) where this start called: Liebe\_4 (AZ2), MaGuCo\_4 (AZ2), Maureen\_4 (AZ2),

Start 9:

- Found in 8 of 128 ( 6.2% ) of genes in pham
- Manual Annotations of this start: 5 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Emotion\_4 (AZ4), JasmineDragon\_4 (AZ4), LadyAstra\_4 (AZ4), MiniMommy\_4 (AZ4), ShakeltOph\_4 (AZ4), Snek\_5 (AZ3), Tweety19\_5 (AZ3), VroomVroom\_4 (AZ4),

**Summary by clusters:**

There are 11 clusters represented in this pham: singleton, EH, L4, L5, L2, L3, L1, AZ2, AZ3, AZ4, AZ5,

Info for manual annotations of cluster AZ2:

- Start number 8 was manually annotated 3 times for cluster AZ2.

Info for manual annotations of cluster AZ3:

- Start number 9 was manually annotated 2 times for cluster AZ3.

Info for manual annotations of cluster AZ4:

- Start number 9 was manually annotated 3 times for cluster AZ4.

Info for manual annotations of cluster AZ5:

- Start number 6 was manually annotated 10 times for cluster AZ5.

Info for manual annotations of cluster EH:

- Start number 4 was manually annotated 1 time for cluster EH.
- Start number 5 was manually annotated 1 time for cluster EH.
- Start number 6 was manually annotated 1 time for cluster EH.
- Start number 7 was manually annotated 2 times for cluster EH.

Info for manual annotations of cluster L1:

- Start number 2 was manually annotated 19 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 2 was manually annotated 28 times for cluster L2.

Info for manual annotations of cluster L3:

- Start number 2 was manually annotated 17 times for cluster L3.

Info for manual annotations of cluster L4:

- Start number 2 was manually annotated 4 times for cluster L4.

Info for manual annotations of cluster L5:

- Start number 2 was manually annotated 2 times for cluster L5.

**Gene Information:**

Gene: Acquire49\_6 Start: 4320, Stop: 5375, Start Num: 2

Candidate Starts for Acquire49\_6:

(Start: 2 @4320 has 70 MA's), (21, 4458), (22, 4470), (34, 4575), (37, 4587), (42, 4626), (43, 4629), (49, 4665), (55, 4731), (58, 4746), (61, 4761), (67, 4803), (78, 4905), (88, 5040), (90, 5064), (103, 5205), (104, 5232), (105, 5241),

Gene: Aegeus\_6 Start: 3860, Stop: 4954, Start Num: 2

Candidate Starts for Aegeus\_6:

(Start: 2 @3860 has 70 MA's), (10, 3914), (13, 3941), (18, 3983), (19, 3986), (21, 3992), (33, 4094), (34, 4109), (39, 4130), (41, 4151), (48, 4193), (49, 4199), (56, 4274), (57, 4277), (61, 4307), (62, 4313), (64, 4325), (75, 4475), (77, 4508), (78, 4511), (80, 4535), (82, 4568), (85, 4598), (86, 4631), (94, 4694), (102, 4781),

Gene: Appletree2\_6 Start: 4294, Stop: 5349, Start Num: 2

Candidate Starts for Appletree2\_6:

(Start: 2 @4294 has 70 MA's), (21, 4432), (22, 4444), (34, 4549), (37, 4561), (42, 4600), (43, 4603), (49, 4639), (55, 4705), (58, 4720), (61, 4735), (67, 4777), (78, 4879), (88, 5014), (90, 5038), (103, 5179), (104, 5206), (105, 5215),

Gene: Archie\_6 Start: 4276, Stop: 5343, Start Num: 2

Candidate Starts for Archie\_6:

(Start: 2 @4276 has 70 MA's), (Start: 5 @4333 has 1 MA's), (21, 4429), (34, 4546), (37, 4558), (44, 4603), (49, 4636), (55, 4702), (61, 4732), (67, 4774), (69, 4783), (78, 4876), (79, 4894), (88, 5011), (90, 5035), (91, 5044), (103, 5176), (104, 5203),

Gene: Ashes\_4 Start: 3879, Stop: 4673, Start Num: 6

Candidate Starts for Ashes\_4:

(Start: 6 @3879 has 12 MA's), (13, 3921), (22, 3987), (23, 4017), (25, 4029), (59, 4248), (63, 4269), (70, 4311), (75, 4365), (77, 4398), (79, 4419), (97, 4611),

Gene: AvadaKedavra\_6 Start: 4320, Stop: 5375, Start Num: 2

Candidate Starts for AvadaKedavra\_6:

(Start: 2 @4320 has 70 MA's), (21, 4458), (22, 4470), (34, 4575), (37, 4587), (42, 4626), (43, 4629), (49, 4665), (55, 4731), (58, 4746), (61, 4761), (67, 4803), (78, 4905), (88, 5040), (90, 5064), (103, 5205), (104, 5232), (105, 5241),

Gene: Baoshan\_5 Start: 4143, Stop: 5198, Start Num: 2

Candidate Starts for Baoshan\_5:

(Start: 2 @4143 has 70 MA's), (Start: 5 @4191 has 1 MA's), (18, 4278), (34, 4404), (37, 4416), (44, 4461), (49, 4494), (55, 4560), (61, 4590), (67, 4632), (69, 4641), (78, 4734), (79, 4752), (88, 4869), (90, 4893), (91, 4902), (98, 4980), (103, 5031), (104, 5058), (105, 5067),

Gene: Baudelaire\_6 Start: 3860, Stop: 4954, Start Num: 2

Candidate Starts for Baudelaire\_6:

(Start: 2 @3860 has 70 MA's), (10, 3914), (13, 3941), (18, 3983), (19, 3986), (21, 3992), (33, 4094), (34, 4109), (39, 4130), (41, 4151), (48, 4193), (49, 4199), (56, 4274), (57, 4277), (61, 4307), (62, 4313), (64, 4325), (75, 4475), (77, 4508), (78, 4511), (80, 4535), (82, 4568), (85, 4598), (86, 4631), (94, 4694), (102, 4781),

Gene: Bazzle\_6 Start: 4252, Stop: 5319, Start Num: 2

Candidate Starts for Bazzle\_6:

(Start: 2 @4252 has 70 MA's), (Start: 5 @4309 has 1 MA's), (21, 4405), (34, 4522), (37, 4534), (44, 4579), (49, 4612), (55, 4678), (61, 4708), (67, 4750), (69, 4759), (78, 4852), (79, 4870), (88, 4987), (90, 5011), (91, 5020), (103, 5152), (104, 5179),

Gene: Beaupre\_4 Start: 3879, Stop: 4673, Start Num: 6

Candidate Starts for Beaupre\_4:

(Start: 6 @3879 has 12 MA's), (13, 3921), (22, 3987), (23, 4017), (25, 4029), (38, 4110), (55, 4230), (59, 4248), (63, 4269), (70, 4311), (75, 4365), (77, 4398), (79, 4419), (97, 4611),

Gene: Bellis\_7 Start: 4412, Stop: 5482, Start Num: 2

Candidate Starts for Bellis\_7:

(Start: 2 @4412 has 70 MA's), (Start: 8 @4460 has 3 MA's), (10, 4469), (13, 4496), (21, 4547), (29, 4625), (34, 4664), (37, 4676), (49, 4754), (51, 4778), (55, 4820), (61, 4850), (78, 5018), (79, 5036), (88, 5153), (90, 5177), (98, 5264), (104, 5345),

Gene: BigCheese\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for BigCheese\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: BobsGarage\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for BobsGarage\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: BourbonZero\_6 Start: 4417, Stop: 5487, Start Num: 2

Candidate Starts for BourbonZero\_6:

(Start: 2 @4417 has 70 MA's), (Start: 8 @4465 has 3 MA's), (10, 4474), (13, 4501), (21, 4552), (29, 4630), (34, 4669), (37, 4681), (49, 4759), (51, 4783), (55, 4825), (61, 4855), (79, 5041), (88, 5158), (90, 5182), (104, 5350),

Gene: BrainDrainer\_7 Start: 4133, Stop: 5182, Start Num: 2

Candidate Starts for BrainDrainer\_7:

(Start: 2 @4133 has 70 MA's), (20, 4268), (21, 4271), (34, 4388), (37, 4400), (49, 4478), (53, 4526), (55, 4544), (61, 4574), (67, 4616), (69, 4625), (73, 4649), (78, 4718), (79, 4736), (88, 4853), (90, 4877), (91, 4886), (103, 5015), (104, 5042), (106, 5102), (107, 5105),

Gene: Breezona\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Breezona\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Bromden\_6 Start: 4032, Stop: 5087, Start Num: 2

Candidate Starts for Bromden\_6:

(1, 4026), (Start: 2 @4032 has 70 MA's), (17, 4161), (34, 4293), (37, 4305), (49, 4383), (53, 4431), (55, 4449), (61, 4479), (67, 4521), (78, 4623), (79, 4641), (88, 4758), (90, 4782), (91, 4791), (103, 4920), (104, 4947), (106, 5007),

Gene: Calm\_6 Start: 4321, Stop: 5376, Start Num: 2

Candidate Starts for Calm\_6:

(Start: 2 @4321 has 70 MA's), (21, 4459), (22, 4471), (34, 4576), (37, 4588), (42, 4627), (43, 4630), (49, 4666), (55, 4732), (58, 4747), (61, 4762), (67, 4804), (78, 4906), (88, 5041), (90, 5065), (103, 5206), (104, 5233), (105, 5242),

Gene: Cappuccino\_4 Start: 3875, Stop: 4669, Start Num: 6

Candidate Starts for Cappuccino\_4:

(Start: 6 @3875 has 12 MA's), (13, 3917), (22, 3983), (23, 4013), (25, 4025), (59, 4244), (63, 4265), (70, 4307), (77, 4394), (79, 4415), (81, 4433), (97, 4607),

Gene: Cen1621\_4 Start: 3740, Stop: 4483, Start Num: 7

Candidate Starts for Cen1621\_4:

(Start: 7 @3740 has 2 MA's), (13, 3779), (28, 3908), (38, 3968), (44, 3998), (63, 4136), (66, 4160), (75, 4229), (77, 4262), (83, 4337), (84, 4346),

Gene: Chaser\_6 Start: 4033, Stop: 5088, Start Num: 2

Candidate Starts for Chaser\_6:

(1, 4027), (Start: 2 @4033 has 70 MA's), (17, 4162), (21, 4177), (34, 4294), (37, 4306), (49, 4384), (53, 4432), (55, 4450), (61, 4480), (67, 4522), (73, 4555), (78, 4624), (79, 4642), (88, 4759), (90, 4783), (91, 4792), (103, 4921), (104, 4948), (106, 5008), (107, 5011),

Gene: CicholasNage\_6 Start: 4321, Stop: 5376, Start Num: 2

Candidate Starts for CicholasNage\_6:

(Start: 2 @4321 has 70 MA's), (21, 4459), (22, 4471), (34, 4576), (37, 4588), (42, 4627), (43, 4630), (49, 4666), (55, 4732), (58, 4747), (61, 4762), (67, 4804), (78, 4906), (88, 5041), (90, 5065), (103, 5206), (104, 5233), (105, 5242),

Gene: Claus\_6 Start: 4323, Stop: 5378, Start Num: 2

Candidate Starts for Claus\_6:

(Start: 2 @4323 has 70 MA's), (Start: 5 @4371 has 1 MA's), (18, 4458), (34, 4584), (37, 4596), (44, 4641), (49, 4674), (55, 4740), (61, 4770), (67, 4812), (69, 4821), (78, 4914), (79, 4932), (88, 5049), (90, 5073), (91, 5082), (98, 5160), (103, 5211), (104, 5238), (105, 5247),

Gene: Clautastrophe\_7 Start: 4416, Stop: 5486, Start Num: 2

Candidate Starts for Clautastrophe\_7:

(Start: 2 @4416 has 70 MA's), (Start: 8 @4464 has 3 MA's), (10, 4473), (13, 4500), (21, 4551), (29, 4629), (34, 4668), (37, 4680), (49, 4758), (51, 4782), (55, 4824), (61, 4854), (78, 5022), (79, 5040), (88, 5157), (90, 5181), (98, 5268), (104, 5349),

Gene: Crossroads\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Crossroads\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: DHan\_6 Start: 4259, Stop: 5314, Start Num: 2

Candidate Starts for DHan\_6:

(Start: 2 @4259 has 70 MA's), (Start: 5 @4307 has 1 MA's), (34, 4520), (37, 4532), (49, 4610), (55, 4676), (61, 4706), (67, 4748), (69, 4757), (78, 4850), (88, 4985), (90, 5009), (91, 5018), (98, 5096), (103, 5147), (104, 5174), (105, 5183),

Gene: DanBing\_5 Start: 4143, Stop: 5198, Start Num: 2



Candidate Starts for DanBing\_5:

(Start: 2 @4143 has 70 MA's), (Start: 5 @4191 has 1 MA's), (34, 4404), (37, 4416), (44, 4461), (49, 4494), (55, 4560), (61, 4590), (67, 4632), (69, 4641), (78, 4734), (79, 4752), (88, 4869), (90, 4893), (91, 4902), (98, 4980), (103, 5031), (104, 5058), (105, 5067),

Gene: DirkDirk\_6 Start: 4322, Stop: 5377, Start Num: 2

Candidate Starts for DirkDirk\_6:

(Start: 2 @4322 has 70 MA's), (21, 4460), (22, 4472), (34, 4577), (37, 4589), (42, 4628), (43, 4631), (49, 4667), (55, 4733), (58, 4748), (61, 4763), (67, 4805), (78, 4907), (88, 5042), (90, 5066), (103, 5207), (104, 5234), (105, 5243),

Gene: Donkey\_4 Start: 3875, Stop: 4669, Start Num: 6

Candidate Starts for Donkey\_4:

(Start: 6 @3875 has 12 MA's), (13, 3917), (22, 3983), (23, 4013), (25, 4025), (59, 4244), (63, 4265), (70, 4307), (77, 4394), (79, 4415), (81, 4433), (97, 4607),

Gene: Douge\_6 Start: 3988, Stop: 5043, Start Num: 2

Candidate Starts for Douge\_6:

(1, 3982), (Start: 2 @3988 has 70 MA's), (20, 4129), (21, 4132), (34, 4249), (37, 4261), (49, 4339), (53, 4387), (55, 4405), (61, 4435), (67, 4477), (69, 4486), (73, 4510), (78, 4579), (79, 4597), (88, 4714), (90, 4738), (91, 4747), (103, 4876), (104, 4903), (106, 4963), (107, 4966),

Gene: Douzhi\_6 Start: 3988, Stop: 5043, Start Num: 2

Candidate Starts for Douzhi\_6:

(1, 3982), (Start: 2 @3988 has 70 MA's), (17, 4117), (21, 4132), (34, 4249), (37, 4261), (49, 4339), (53, 4387), (55, 4405), (61, 4435), (67, 4477), (73, 4510), (78, 4579), (79, 4597), (88, 4714), (90, 4738), (91, 4747), (103, 4876), (104, 4903), (106, 4963), (107, 4966),

Gene: DrSeegs\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for DrSeegs\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: DuncansLeg\_7 Start: 4419, Stop: 5489, Start Num: 2

Candidate Starts for DuncansLeg\_7:

(Start: 2 @4419 has 70 MA's), (Start: 8 @4467 has 3 MA's), (10, 4476), (13, 4503), (21, 4554), (29, 4632), (34, 4671), (37, 4683), (49, 4761), (51, 4785), (55, 4827), (61, 4857), (79, 5043), (88, 5160), (90, 5184), (104, 5352),

Gene: DyoEdafos\_7 Start: 4176, Stop: 5231, Start Num: 2

Candidate Starts for DyoEdafos\_7:

(1, 4170), (Start: 2 @4176 has 70 MA's), (17, 4305), (34, 4437), (37, 4449), (49, 4527), (53, 4575), (55, 4593), (61, 4623), (67, 4665), (73, 4698), (78, 4767), (79, 4785), (88, 4902), (90, 4926), (103, 5064), (104, 5091), (106, 5151),

Gene: Ellson\_7 Start: 4428, Stop: 5498, Start Num: 2

Candidate Starts for Ellson\_7:

(Start: 2 @4428 has 70 MA's), (Start: 8 @4476 has 3 MA's), (10, 4485), (13, 4512), (21, 4563), (29, 4641), (34, 4680), (37, 4692), (49, 4770), (51, 4794), (55, 4836), (61, 4866), (79, 5052), (88, 5169), (90, 5193), (104, 5361),

Gene: Emotion\_4 Start: 3677, Stop: 4474, Start Num: 9

Candidate Starts for Emotion\_4:

(Start: 9 @3677 has 5 MA's), (21, 3761), (35, 3884), (40, 3908), (46, 3935), (71, 4103), (77, 4187), (81, 4226), (87, 4319),

Gene: Enceladus\_6 Start: 4322, Stop: 5377, Start Num: 2

Candidate Starts for Enceladus\_6:

(Start: 2 @4322 has 70 MA's), (21, 4460), (22, 4472), (34, 4577), (37, 4589), (42, 4628), (43, 4631), (49, 4667), (55, 4733), (58, 4748), (61, 4763), (67, 4805), (78, 4907), (88, 5042), (90, 5066), (103, 5207), (104, 5234), (105, 5243),

Gene: Faith1\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Faith1\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: FarmResident\_6 Start: 4027, Stop: 5082, Start Num: 2

Candidate Starts for FarmResident\_6:

(1, 4021), (Start: 2 @4027 has 70 MA's), (20, 4168), (21, 4171), (34, 4288), (37, 4300), (49, 4378), (53, 4426), (55, 4444), (61, 4474), (67, 4516), (69, 4525), (73, 4549), (78, 4618), (79, 4636), (88, 4753), (90, 4777), (91, 4786), (103, 4915), (104, 4942), (106, 5002), (107, 5005),

Gene: Finemlucis\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Finemlucis\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Finnry\_7 Start: 4413, Stop: 5483, Start Num: 2

Candidate Starts for Finnry\_7:

(Start: 2 @4413 has 70 MA's), (Start: 8 @4461 has 3 MA's), (10, 4470), (13, 4497), (21, 4548), (29, 4626), (34, 4665), (37, 4677), (49, 4755), (51, 4779), (55, 4821), (61, 4851), (78, 5019), (79, 5037), (88, 5154), (90, 5178), (98, 5265), (104, 5346),

Gene: Floof\_4 Start: 4029, Stop: 4892, Start Num: 5

Candidate Starts for Floof\_4:

(Start: 5 @4029 has 1 MA's), (11, 4059), (26, 4191), (63, 4434), (77, 4563), (92, 4731), (100, 4815),

Gene: Footloose\_4 Start: 3515, Stop: 4273, Start Num: 6

Candidate Starts for Footloose\_4:

(3, 3503), (Start: 6 @3515 has 12 MA's), (29, 3680), (31, 3692), (44, 3767), (45, 3770), (55, 3851), (65, 3899), (67, 3917), (68, 3920), (77, 4019), (87, 4154), (95, 4232),

Gene: Gabriela\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Gabriela\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Gambol\_4 Start: 3875, Stop: 4669, Start Num: 6

Candidate Starts for Gambol\_4:

(Start: 6 @3875 has 12 MA's), (13, 3917), (22, 3983), (23, 4013), (25, 4025), (59, 4244), (63, 4265), (70, 4307), (77, 4394), (79, 4415), (81, 4433), (97, 4607),

Gene: Gardann\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Gardann\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Giorgio\_4 Start: 3880, Stop: 4674, Start Num: 6

Candidate Starts for Giorgio\_4:

(Start: 6 @3880 has 12 MA's), (13, 3922), (22, 3988), (23, 4018), (25, 4030), (55, 4231), (59, 4249), (63, 4270), (70, 4312), (75, 4366), (77, 4399), (79, 4420), (97, 4612),

Gene: Gumpizza\_4 Start: 3879, Stop: 4673, Start Num: 6

Candidate Starts for Gumpizza\_4:

(Start: 6 @3879 has 12 MA's), (13, 3921), (22, 3987), (23, 4017), (25, 4029), (38, 4110), (55, 4230), (59, 4248), (63, 4269), (70, 4311), (75, 4365), (77, 4398), (79, 4419), (97, 4611),

Gene: GuuelaD\_6 Start: 4356, Stop: 5411, Start Num: 2

Candidate Starts for GuuelaD\_6:

(Start: 2 @4356 has 70 MA's), (Start: 5 @4404 has 1 MA's), (18, 4491), (34, 4617), (37, 4629), (49, 4707), (55, 4773), (61, 4803), (67, 4845), (69, 4854), (78, 4947), (79, 4965), (88, 5082), (90, 5106), (91, 5115), (96, 5166), (99, 5196), (101, 5211), (104, 5271),

Gene: Hafay\_6 Start: 4350, Stop: 5402, Start Num: 2

Candidate Starts for Hafay\_6:

(Start: 2 @4350 has 70 MA's), (Start: 5 @4392 has 1 MA's), (34, 4605), (37, 4617), (44, 4662), (49, 4695), (55, 4761), (61, 4791), (67, 4833), (69, 4842), (78, 4935), (79, 4953), (88, 5070), (90, 5094), (91, 5103), (103, 5235), (104, 5262),

Gene: Halena\_6 Start: 4321, Stop: 5376, Start Num: 2

Candidate Starts for Halena\_6:

(Start: 2 @4321 has 70 MA's), (21, 4459), (22, 4471), (34, 4576), (37, 4588), (42, 4627), (43, 4630), (49, 4666), (55, 4732), (58, 4747), (61, 4762), (67, 4804), (78, 4906), (88, 5041), (90, 5065), (103, 5206), (104, 5233), (105, 5242),

Gene: Halsey\_4 Start: 3879, Stop: 4673, Start Num: 6

Candidate Starts for Halsey\_4:

(Start: 6 @3879 has 12 MA's), (13, 3921), (22, 3987), (23, 4017), (25, 4029), (59, 4248), (63, 4269), (70, 4311), (75, 4365), (77, 4398), (79, 4419), (97, 4611),

Gene: Honk\_4 Start: 3779, Stop: 4525, Start Num: 4

Candidate Starts for Honk\_4:

(Start: 4 @3779 has 1 MA's), (Start: 7 @3788 has 2 MA's), (11, 3812), (13, 3827), (14, 3839), (15, 3842), (28, 3953), (38, 4013), (49, 4076), (59, 4160), (63, 4181), (75, 4274), (77, 4307), (81, 4346), (92, 4469), (93, 4478),

Gene: Itos\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Itos\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: JasmineDragon\_4 Start: 3667, Stop: 4464, Start Num: 9

Candidate Starts for JasmineDragon\_4:

(Start: 9 @3667 has 5 MA's), (30, 3841), (35, 3874), (59, 4027), (71, 4093), (77, 4177), (87, 4309),

Gene: Jobypre\_7 Start: 4416, Stop: 5486, Start Num: 2

Candidate Starts for Jobypre\_7:

(Start: 2 @4416 has 70 MA's), (Start: 8 @4464 has 3 MA's), (10, 4473), (13, 4500), (21, 4551), (29, 4629), (34, 4668), (37, 4680), (49, 4758), (51, 4782), (55, 4824), (61, 4854), (78, 5022), (79, 5040), (88, 5157), (90, 5181), (98, 5268), (104, 5349),

Gene: JoeDirt\_6 Start: 4321, Stop: 5376, Start Num: 2

Candidate Starts for JoeDirt\_6:

(Start: 2 @4321 has 70 MA's), (21, 4459), (22, 4471), (34, 4576), (37, 4588), (42, 4627), (43, 4630), (49, 4666), (55, 4732), (58, 4747), (61, 4762), (67, 4804), (78, 4906), (88, 5041), (90, 5065), (103, 5206), (104, 5233), (105, 5242),

Gene: Jubie\_7 Start: 4416, Stop: 5486, Start Num: 2

Candidate Starts for Jubie\_7:

(Start: 2 @4416 has 70 MA's), (Start: 8 @4464 has 3 MA's), (10, 4473), (13, 4500), (21, 4551), (29, 4629), (34, 4668), (37, 4680), (49, 4758), (51, 4782), (55, 4824), (61, 4854), (78, 5022), (79, 5040), (88, 5157), (90, 5181), (98, 5268), (104, 5349),

Gene: Kahlid\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Kahlid\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Kalimba\_4 Start: 3875, Stop: 4669, Start Num: 6

Candidate Starts for Kalimba\_4:

(Start: 6 @3875 has 12 MA's), (13, 3917), (22, 3983), (23, 4013), (25, 4025), (59, 4244), (63, 4265), (70, 4307), (77, 4394), (79, 4415), (81, 4433), (97, 4607),

Gene: Kingsolomon\_7 Start: 4416, Stop: 5486, Start Num: 2

Candidate Starts for Kingsolomon\_7:

(Start: 2 @4416 has 70 MA's), (Start: 8 @4464 has 3 MA's), (10, 4473), (13, 4500), (21, 4551), (29, 4629), (34, 4668), (37, 4680), (49, 4758), (51, 4782), (55, 4824), (61, 4854), (78, 5022), (79, 5040), (88, 5157), (90, 5181), (98, 5268), (104, 5349),

Gene: KirDoubleO7\_5 Start: 4428, Stop: 5498, Start Num: 2

Candidate Starts for KirDoubleO7\_5:

(Start: 2 @4428 has 70 MA's), (Start: 8 @4476 has 3 MA's), (10, 4485), (13, 4512), (21, 4563), (29, 4641), (34, 4680), (37, 4692), (49, 4770), (51, 4794), (55, 4836), (61, 4866), (79, 5052), (88, 5169), (90, 5193), (104, 5361),

Gene: Kropertea\_6 Start: 3983, Stop: 5038, Start Num: 2

Candidate Starts for Kropertea\_6:

(1, 3977), (Start: 2 @3983 has 70 MA's), (17, 4112), (34, 4244), (37, 4256), (49, 4334), (53, 4382), (55, 4400), (61, 4430), (67, 4472), (73, 4505), (78, 4574), (79, 4592), (88, 4709), (90, 4733), (91, 4742), (103, 4871), (104, 4898), (106, 4958),

Gene: Krypton555\_7 Start: 4408, Stop: 5478, Start Num: 2

Candidate Starts for Krypton555\_7:

(Start: 2 @4408 has 70 MA's), (Start: 8 @4456 has 3 MA's), (10, 4465), (13, 4492), (21, 4543), (24, 4594), (29, 4621), (34, 4660), (37, 4672), (49, 4750), (51, 4774), (55, 4816), (61, 4846), (79, 5032), (88, 5149), (90, 5173), (104, 5341),

Gene: LadyAstra\_4 Start: 3658, Stop: 4455, Start Num: 9

Candidate Starts for LadyAstra\_4:

(Start: 9 @3658 has 5 MA's), (27, 3814), (30, 3832), (35, 3865), (59, 4018), (71, 4084), (72, 4090), (77, 4168), (87, 4300),

Gene: LeBron\_6 Start: 4321, Stop: 5376, Start Num: 2

Candidate Starts for LeBron\_6:

(Start: 2 @4321 has 70 MA's), (21, 4459), (22, 4471), (34, 4576), (37, 4588), (42, 4627), (43, 4630), (49, 4666), (55, 4732), (58, 4747), (61, 4762), (67, 4804), (78, 4906), (88, 5041), (90, 5065), (103, 5206), (104, 5233), (105, 5242),

Gene: Lewan\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Lewan\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Liebe\_4 Start: 3813, Stop: 4607, Start Num: 8

Candidate Starts for Liebe\_4:

(Start: 8 @3813 has 3 MA's), (21, 3897), (35, 4020), (36, 4026), (54, 4143), (55, 4155), (59, 4173), (66, 4218), (71, 4239), (77, 4323), (84, 4407),

Gene: LilDestine\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for LilDestine\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: LiyuLake\_7 Start: 4419, Stop: 5489, Start Num: 2

Candidate Starts for LiyuLake\_7:

(Start: 2 @4419 has 70 MA's), (Start: 8 @4467 has 3 MA's), (10, 4476), (13, 4503), (21, 4554), (29, 4632), (34, 4671), (37, 4683), (49, 4761), (51, 4785), (55, 4827), (61, 4857), (79, 5043), (88, 5160), (90, 5184), (104, 5352),

Gene: Loadrie\_6 Start: 4350, Stop: 5402, Start Num: 2

Candidate Starts for Loadrie\_6:

(Start: 2 @4350 has 70 MA's), (Start: 5 @4392 has 1 MA's), (34, 4605), (37, 4617), (44, 4662), (49, 4695), (55, 4761), (61, 4791), (67, 4833), (69, 4842), (78, 4935), (79, 4953), (88, 5070), (90, 5094), (91, 5103), (103, 5235), (104, 5262),

Gene: Lolly9\_7 Start: 4422, Stop: 5492, Start Num: 2

Candidate Starts for Lolly9\_7:

(Start: 2 @4422 has 70 MA's), (Start: 8 @4470 has 3 MA's), (10, 4479), (13, 4506), (21, 4557), (29, 4635), (34, 4674), (37, 4686), (49, 4764), (51, 4788), (55, 4830), (61, 4860), (79, 5046), (88, 5163), (90, 5187), (98, 5274), (104, 5355),

Gene: Lumos\_7 Start: 4416, Stop: 5486, Start Num: 2

Candidate Starts for Lumos\_7:

(Start: 2 @4416 has 70 MA's), (Start: 8 @4464 has 3 MA's), (10, 4473), (13, 4500), (21, 4551), (29, 4629), (34, 4668), (37, 4680), (49, 4758), (51, 4782), (55, 4824), (61, 4854), (78, 5022), (79, 5040), (88, 5157), (90, 5181), (98, 5268), (104, 5349),

Gene: MAckerman\_6 Start: 4320, Stop: 5375, Start Num: 2

Candidate Starts for MAckerman\_6:

(Start: 2 @4320 has 70 MA's), (21, 4458), (22, 4470), (34, 4575), (37, 4587), (42, 4626), (43, 4629), (49, 4665), (55, 4731), (58, 4746), (61, 4761), (67, 4803), (78, 4905), (88, 5040), (90, 5064), (103, 5205), (104, 5232), (105, 5241),

Gene: MaGuCo\_4 Start: 3672, Stop: 4466, Start Num: 8

Candidate Starts for MaGuCo\_4:

(Start: 8 @3672 has 3 MA's), (21, 3756), (35, 3879), (54, 4002), (55, 4014), (59, 4032), (66, 4077), (71, 4098), (77, 4182), (78, 4185), (84, 4266), (89, 4323),

Gene: Maureen\_4 Start: 3813, Stop: 4607, Start Num: 8

Candidate Starts for Maureen\_4:

(Start: 8 @3813 has 3 MA's), (21, 3897), (35, 4020), (36, 4026), (54, 4143), (55, 4155), (59, 4173), (66, 4218), (71, 4239), (77, 4323), (84, 4407),

Gene: Miley16\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Miley16\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: MiniLon\_7 Start: 4422, Stop: 5492, Start Num: 2

Candidate Starts for MiniLon\_7:

(Start: 2 @4422 has 70 MA's), (Start: 8 @4470 has 3 MA's), (10, 4479), (13, 4506), (21, 4557), (29, 4635), (34, 4674), (37, 4686), (49, 4764), (51, 4788), (55, 4830), (61, 4860), (79, 5046), (88, 5163), (90, 5187), (98, 5274), (104, 5355),

Gene: MiniMac\_7 Start: 4422, Stop: 5492, Start Num: 2

Candidate Starts for MiniMac\_7:

(Start: 2 @4422 has 70 MA's), (Start: 8 @4470 has 3 MA's), (10, 4479), (13, 4506), (21, 4557), (29, 4635), (34, 4674), (37, 4686), (49, 4764), (51, 4788), (55, 4830), (61, 4860), (79, 5046), (88, 5163), (90, 5187), (98, 5274), (104, 5355),

Gene: MiniMommy\_4 Start: 3667, Stop: 4464, Start Num: 9

Candidate Starts for MiniMommy\_4:

(Start: 9 @3667 has 5 MA's), (30, 3841), (35, 3874), (59, 4027), (71, 4093), (77, 4177), (87, 4309),

Gene: MkaliMitinis3\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for MkaliMitinis3\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Moostard\_7 Start: 4412, Stop: 5482, Start Num: 2

Candidate Starts for Moostard\_7:

(Start: 2 @4412 has 70 MA's), (Start: 8 @4460 has 3 MA's), (10, 4469), (13, 4496), (21, 4547), (29, 4625), (34, 4664), (37, 4676), (49, 4754), (51, 4778), (55, 4820), (61, 4850), (78, 5018), (79, 5036), (88, 5153), (90, 5177), (98, 5264), (104, 5345),

Gene: Moss\_4 Start: 3879, Stop: 4673, Start Num: 6

Candidate Starts for Moss\_4:

(Start: 6 @3879 has 12 MA's), (13, 3921), (22, 3987), (23, 4017), (25, 4029), (59, 4248), (63, 4269), (70, 4311), (75, 4365), (77, 4398), (79, 4419), (97, 4611),

Gene: MsGreen\_7 Start: 4416, Stop: 5486, Start Num: 2

Candidate Starts for MsGreen\_7:

(Start: 2 @4416 has 70 MA's), (Start: 8 @4464 has 3 MA's), (10, 4473), (13, 4500), (21, 4551), (29, 4629), (34, 4668), (37, 4680), (49, 4758), (51, 4782), (55, 4824), (61, 4854), (78, 5022), (79, 5040), (88, 5157), (90, 5181), (98, 5268), (104, 5349),

Gene: Mysterium\_4 Start: 3879, Stop: 4673, Start Num: 6

Candidate Starts for Mysterium\_4:

(Start: 6 @3879 has 12 MA's), (13, 3921), (22, 3987), (23, 4017), (25, 4029), (38, 4110), (59, 4248), (63, 4269), (70, 4311), (75, 4365), (77, 4398), (79, 4419), (97, 4611),

Gene: Netyap\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Netyap\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Nicholas\_7 Start: 4416, Stop: 5486, Start Num: 2

Candidate Starts for Nicholas\_7:

(Start: 2 @4416 has 70 MA's), (Start: 8 @4464 has 3 MA's), (10, 4473), (13, 4500), (21, 4551), (29, 4629), (34, 4668), (37, 4680), (49, 4758), (51, 4782), (55, 4824), (61, 4854), (78, 5022), (79, 5040), (88, 5157), (90, 5181), (98, 5268), (104, 5349),

Gene: Nicholasp3\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Nicholasp3\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: OhShagHennessy\_6 Start: 4294, Stop: 5349, Start Num: 2

Candidate Starts for OhShagHennessy\_6:

(Start: 2 @4294 has 70 MA's), (21, 4432), (22, 4444), (34, 4549), (37, 4561), (42, 4600), (43, 4603), (49, 4639), (55, 4705), (58, 4720), (61, 4735), (67, 4777), (78, 4879), (88, 5014), (90, 5038), (103, 5179), (104, 5206), (105, 5215),

Gene: PYPDinur\_6 Start: 3988, Stop: 5043, Start Num: 2

Candidate Starts for PYPDinur\_6:

(1, 3982), (Start: 2 @3988 has 70 MA's), (17, 4117), (21, 4132), (34, 4249), (37, 4261), (49, 4339), (53, 4387), (55, 4405), (61, 4435), (67, 4477), (73, 4510), (78, 4579), (79, 4597), (88, 4714), (90, 4738), (91, 4747), (103, 4876), (104, 4903), (106, 4963), (107, 4966),

Gene: Pochiewood\_6 Start: 4320, Stop: 5375, Start Num: 2

Candidate Starts for Pochiewood\_6:

(Start: 2 @4320 has 70 MA's), (21, 4458), (22, 4470), (34, 4575), (37, 4587), (42, 4626), (43, 4629), (49, 4665), (55, 4731), (58, 4746), (61, 4761), (67, 4803), (78, 4905), (88, 5040), (90, 5064), (103, 5205), (104, 5232), (105, 5241),

Gene: Quby\_6 Start: 3988, Stop: 5043, Start Num: 2

Candidate Starts for Quby\_6:

(1, 3982), (Start: 2 @3988 has 70 MA's), (20, 4129), (21, 4132), (34, 4249), (37, 4261), (49, 4339), (53, 4387), (55, 4405), (61, 4435), (67, 4477), (69, 4486), (73, 4510), (78, 4579), (79, 4597), (88, 4714), (90, 4738), (91, 4747), (103, 4876), (104, 4903), (106, 4963), (107, 4966),

Gene: Red305\_7 Start: 4416, Stop: 5486, Start Num: 2

Candidate Starts for Red305\_7:

(Start: 2 @4416 has 70 MA's), (Start: 8 @4464 has 3 MA's), (10, 4473), (13, 4500), (21, 4551), (29, 4629), (34, 4668), (37, 4680), (49, 4758), (51, 4782), (55, 4824), (61, 4854), (78, 5022), (79, 5040), (88, 5157), (90, 5181), (98, 5268), (104, 5349),

Gene: RockScotty\_4 Start: 3879, Stop: 4673, Start Num: 6

Candidate Starts for RockScotty\_4:

(Start: 6 @3879 has 12 MA's), (13, 3921), (22, 3987), (23, 4017), (25, 4029), (59, 4248), (63, 4269), (70, 4311), (75, 4365), (77, 4398), (79, 4419), (97, 4611),

Gene: Rose5\_6 Start: 4320, Stop: 5375, Start Num: 2

Candidate Starts for Rose5\_6:

(Start: 2 @4320 has 70 MA's), (21, 4458), (22, 4470), (34, 4575), (37, 4587), (42, 4626), (43, 4629), (49, 4665), (55, 4731), (58, 4746), (61, 4761), (67, 4803), (78, 4905), (88, 5040), (90, 5064), (103, 5205), (104, 5232), (105, 5241),

Gene: Rumpelstiltskin\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Rumpelstiltskin\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Sabourin\_4 Start: 3875, Stop: 4669, Start Num: 6

Candidate Starts for Sabourin\_4:

(Start: 6 @3875 has 12 MA's), (13, 3917), (22, 3983), (23, 4013), (25, 4025), (59, 4244), (63, 4265), (70, 4307), (77, 4394), (79, 4415), (81, 4433), (97, 4607),

Gene: Samty\_7 Start: 4412, Stop: 5482, Start Num: 2

Candidate Starts for Samty\_7:

(Start: 2 @4412 has 70 MA's), (Start: 8 @4460 has 3 MA's), (10, 4469), (13, 4496), (21, 4547), (29, 4625), (34, 4664), (37, 4676), (49, 4754), (51, 4778), (55, 4820), (61, 4850), (78, 5018), (79, 5036), (88, 5153), (90, 5177), (98, 5264), (104, 5345),

Gene: Sarshaun\_6 Start: 4350, Stop: 5402, Start Num: 2

Candidate Starts for Sarshaun\_6:

(Start: 2 @4350 has 70 MA's), (Start: 5 @4392 has 1 MA's), (34, 4605), (37, 4617), (44, 4662), (49, 4695), (55, 4761), (61, 4791), (67, 4833), (69, 4842), (78, 4935), (79, 4953), (88, 5070), (90, 5094), (91, 5103), (103, 5235), (104, 5262),

Gene: ShakeltOph\_4 Start: 3667, Stop: 4464, Start Num: 9

Candidate Starts for ShakeltOph\_4:

(Start: 9 @3667 has 5 MA's), (30, 3841), (35, 3874), (59, 4027), (71, 4093), (77, 4177), (87, 4309),

Gene: Sheng711\_6 Start: 3988, Stop: 5043, Start Num: 2

Candidate Starts for Sheng711\_6:



(1, 3982), (Start: 2 @3988 has 70 MA's), (17, 4117), (21, 4132), (34, 4249), (37, 4261), (49, 4339), (53, 4387), (55, 4405), (61, 4435), (67, 4477), (73, 4510), (78, 4579), (79, 4597), (88, 4714), (90, 4738), (91, 4747), (103, 4876), (104, 4903), (106, 4963), (107, 4966),

Gene: Silverleaf\_6 Start: 4320, Stop: 5375, Start Num: 2

Candidate Starts for Silverleaf\_6:

(Start: 2 @4320 has 70 MA's), (21, 4458), (22, 4470), (34, 4575), (37, 4587), (42, 4626), (43, 4629), (49, 4665), (55, 4731), (58, 4746), (61, 4761), (67, 4803), (78, 4905), (88, 5040), (90, 5064), (103, 5205), (104, 5232), (105, 5241),

Gene: Snek\_5 Start: 4503, Stop: 5270, Start Num: 9

Candidate Starts for Snek\_5:

(Start: 9 @4503 has 5 MA's), (14, 4548), (16, 4554), (27, 4659), (35, 4710), (47, 4770), (50, 4803), (52, 4821), (55, 4845), (71, 4929), (74, 4962), (77, 5013), (78, 5016), (94, 5175),

Gene: Snenia\_7 Start: 4416, Stop: 5486, Start Num: 2

Candidate Starts for Snenia\_7:

(Start: 2 @4416 has 70 MA's), (Start: 8 @4464 has 3 MA's), (10, 4473), (13, 4500), (21, 4551), (29, 4629), (34, 4668), (37, 4680), (49, 4758), (51, 4782), (55, 4824), (61, 4854), (78, 5022), (79, 5040), (88, 5157), (90, 5181), (98, 5268), (104, 5349),

Gene: SoJulia\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for SoJulia\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Soap141\_6 Start: 4350, Stop: 5402, Start Num: 2

Candidate Starts for Soap141\_6:

(Start: 2 @4350 has 70 MA's), (Start: 5 @4392 has 1 MA's), (34, 4605), (37, 4617), (44, 4662), (49, 4695), (55, 4761), (61, 4791), (67, 4833), (69, 4842), (78, 4935), (79, 4953), (88, 5070), (90, 5094), (91, 5103), (103, 5235), (104, 5262),

Gene: Sooty\_4 Start: 3875, Stop: 4669, Start Num: 6

Candidate Starts for Sooty\_4:

(Start: 6 @3875 has 12 MA's), (13, 3917), (22, 3983), (23, 4013), (25, 4025), (59, 4244), (63, 4265), (70, 4307), (77, 4394), (79, 4415), (81, 4433), (97, 4607),

Gene: SpecialK\_4 Start: 3879, Stop: 4673, Start Num: 6

Candidate Starts for SpecialK\_4:

(Start: 6 @3879 has 12 MA's), (13, 3921), (22, 3987), (23, 4017), (25, 4029), (59, 4248), (63, 4269), (70, 4311), (75, 4365), (77, 4398), (79, 4419), (97, 4611),

Gene: Stuu\_4 Start: 3879, Stop: 4673, Start Num: 6

Candidate Starts for Stuu\_4:

(Start: 6 @3879 has 12 MA's), (13, 3921), (22, 3987), (23, 4017), (55, 4230), (59, 4248), (63, 4269), (70, 4311), (75, 4365), (77, 4398), (79, 4419), (97, 4611),

Gene: SuMoo\_4 Start: 3785, Stop: 4639, Start Num: 6

Candidate Starts for SuMoo\_4:

(Start: 6 @3785 has 12 MA's), (12, 3821), (63, 4187), (74, 4265), (76, 4295), (77, 4316), (84, 4400), (92, 4484), (100, 4568),

Gene: Tourach\_6 Start: 4327, Stop: 5382, Start Num: 2

Candidate Starts for Tourach\_6:

(Start: 2 @4327 has 70 MA's), (Start: 5 @4375 has 1 MA's), (18, 4462), (29, 4549), (34, 4588), (37, 4600), (49, 4678), (55, 4744), (61, 4774), (67, 4816), (69, 4825), (78, 4918), (88, 5053), (90, 5077), (96, 5137), (99, 5167), (101, 5182), (104, 5242),

Gene: TriFive\_7 Start: 4416, Stop: 5486, Start Num: 2

Candidate Starts for TriFive\_7:

(Start: 2 @4416 has 70 MA's), (Start: 8 @4464 has 3 MA's), (10, 4473), (13, 4500), (21, 4551), (29, 4629), (34, 4668), (37, 4680), (49, 4758), (51, 4782), (55, 4824), (61, 4854), (78, 5022), (79, 5040), (88, 5157), (90, 5181), (98, 5268), (104, 5349),

Gene: Tweety19\_5 Start: 4503, Stop: 5270, Start Num: 9

Candidate Starts for Tweety19\_5:

(Start: 9 @4503 has 5 MA's), (14, 4548), (27, 4659), (32, 4689), (35, 4710), (47, 4770), (50, 4803), (52, 4821), (55, 4845), (60, 4869), (71, 4929), (74, 4962), (77, 5013), (78, 5016), (94, 5175),

Gene: Tyson\_6 Start: 4320, Stop: 5375, Start Num: 2

Candidate Starts for Tyson\_6:

(Start: 2 @4320 has 70 MA's), (21, 4458), (22, 4470), (34, 4575), (37, 4587), (42, 4626), (43, 4629), (49, 4665), (55, 4731), (58, 4746), (61, 4761), (67, 4803), (78, 4905), (88, 5040), (90, 5064), (103, 5205), (104, 5232), (105, 5241),

Gene: UPIE\_6 Start: 4318, Stop: 5373, Start Num: 2

Candidate Starts for UPIE\_6:

(Start: 2 @4318 has 70 MA's), (21, 4456), (22, 4468), (34, 4573), (37, 4585), (42, 4624), (43, 4627), (49, 4663), (55, 4729), (58, 4744), (61, 4759), (67, 4801), (78, 4903), (88, 5038), (90, 5062), (103, 5203), (104, 5230), (105, 5239),

Gene: Underpass\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Underpass\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Vetrix\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Vetrix\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: VroomVroom\_4 Start: 3676, Stop: 4473, Start Num: 9

Candidate Starts for VroomVroom\_4:

(Start: 9 @3676 has 5 MA's), (27, 3832), (30, 3850), (35, 3883), (59, 4036), (71, 4102), (77, 4186), (87, 4318),

Gene: Wamburgrxpress\_6 Start: 4320, Stop: 5375, Start Num: 2

Candidate Starts for Wamburgrxpress\_6:

(Start: 2 @4320 has 70 MA's), (21, 4458), (22, 4470), (34, 4575), (37, 4587), (42, 4626), (43, 4629), (49, 4665), (55, 4731), (58, 4746), (61, 4761), (67, 4803), (78, 4905), (88, 5040), (90, 5064), (103, 5205), (104, 5232), (105, 5241),

Gene: Whirlwind\_8 Start: 4408, Stop: 5478, Start Num: 2

Candidate Starts for Whirlwind\_8:

(Start: 2 @4408 has 70 MA's), (Start: 8 @4456 has 3 MA's), (10, 4465), (13, 4492), (21, 4543), (24, 4594), (29, 4621), (34, 4660), (37, 4672), (49, 4750), (51, 4774), (55, 4816), (61, 4846), (79, 5032), (88, 5149), (90, 5173), (103, 5314), (104, 5341),

Gene: Wigglewigggle\_6 Start: 4350, Stop: 5402, Start Num: 2

Candidate Starts for Wigglewigggle\_6:

(Start: 2 @4350 has 70 MA's), (Start: 5 @4392 has 1 MA's), (34, 4605), (37, 4617), (44, 4662), (49, 4695), (55, 4761), (61, 4791), (67, 4833), (69, 4842), (78, 4935), (79, 4953), (88, 5070), (90, 5094), (91, 5103), (103, 5235), (104, 5262),

Gene: Wilder\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Wilder\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Winky\_6 Start: 4311, Stop: 5369, Start Num: 2

Candidate Starts for Winky\_6:

(Start: 2 @4311 has 70 MA's), (Start: 5 @4359 has 1 MA's), (34, 4572), (37, 4584), (44, 4629), (49, 4662), (55, 4728), (61, 4758), (67, 4800), (69, 4809), (78, 4902), (79, 4920), (88, 5037), (90, 5061), (91, 5070), (103, 5202), (104, 5229),

Gene: Wyatt2\_6 Start: 4320, Stop: 5375, Start Num: 2

Candidate Starts for Wyatt2\_6:

(Start: 2 @4320 has 70 MA's), (21, 4458), (22, 4470), (34, 4575), (37, 4587), (42, 4626), (43, 4629), (49, 4665), (55, 4731), (58, 4746), (61, 4761), (67, 4803), (78, 4905), (88, 5040), (90, 5064), (103, 5205), (104, 5232), (105, 5241),

Gene: Zakai\_6 Start: 4299, Stop: 5357, Start Num: 2

Candidate Starts for Zakai\_6:

(Start: 2 @4299 has 70 MA's), (Start: 5 @4347 has 1 MA's), (34, 4560), (37, 4572), (44, 4617), (49, 4650), (55, 4716), (61, 4746), (67, 4788), (69, 4797), (78, 4890), (79, 4908), (88, 5025), (90, 5049), (91, 5058), (103, 5190), (104, 5217),

Gene: Zaria\_6 Start: 4321, Stop: 5376, Start Num: 2

Candidate Starts for Zaria\_6:

(Start: 2 @4321 has 70 MA's), (21, 4459), (22, 4471), (34, 4576), (37, 4588), (42, 4627), (43, 4630), (49, 4666), (55, 4732), (58, 4747), (61, 4762), (67, 4804), (78, 4906), (88, 5041), (90, 5065), (103, 5206), (104, 5233), (105, 5242),

Gene: Zeta1847\_4 Start: 3665, Stop: 4408, Start Num: 7

Candidate Starts for Zeta1847\_4:

(Start: 7 @3665 has 2 MA's), (13, 3704), (28, 3833), (36, 3884), (63, 4061), (66, 4085), (77, 4187), (81, 4226),

Gene: ZhongYanYuan\_5 Start: 4143, Stop: 5198, Start Num: 2

Candidate Starts for ZhongYanYuan\_5:

(Start: 2 @4143 has 70 MA's), (Start: 5 @4191 has 1 MA's), (18, 4278), (34, 4404), (37, 4416), (44, 4461), (49, 4494), (55, 4560), (61, 4590), (67, 4632), (69, 4641), (78, 4734), (79, 4752), (88, 4869), (90, 4893), (91, 4902), (98, 4980), (103, 5031), (104, 5058), (105, 5067),