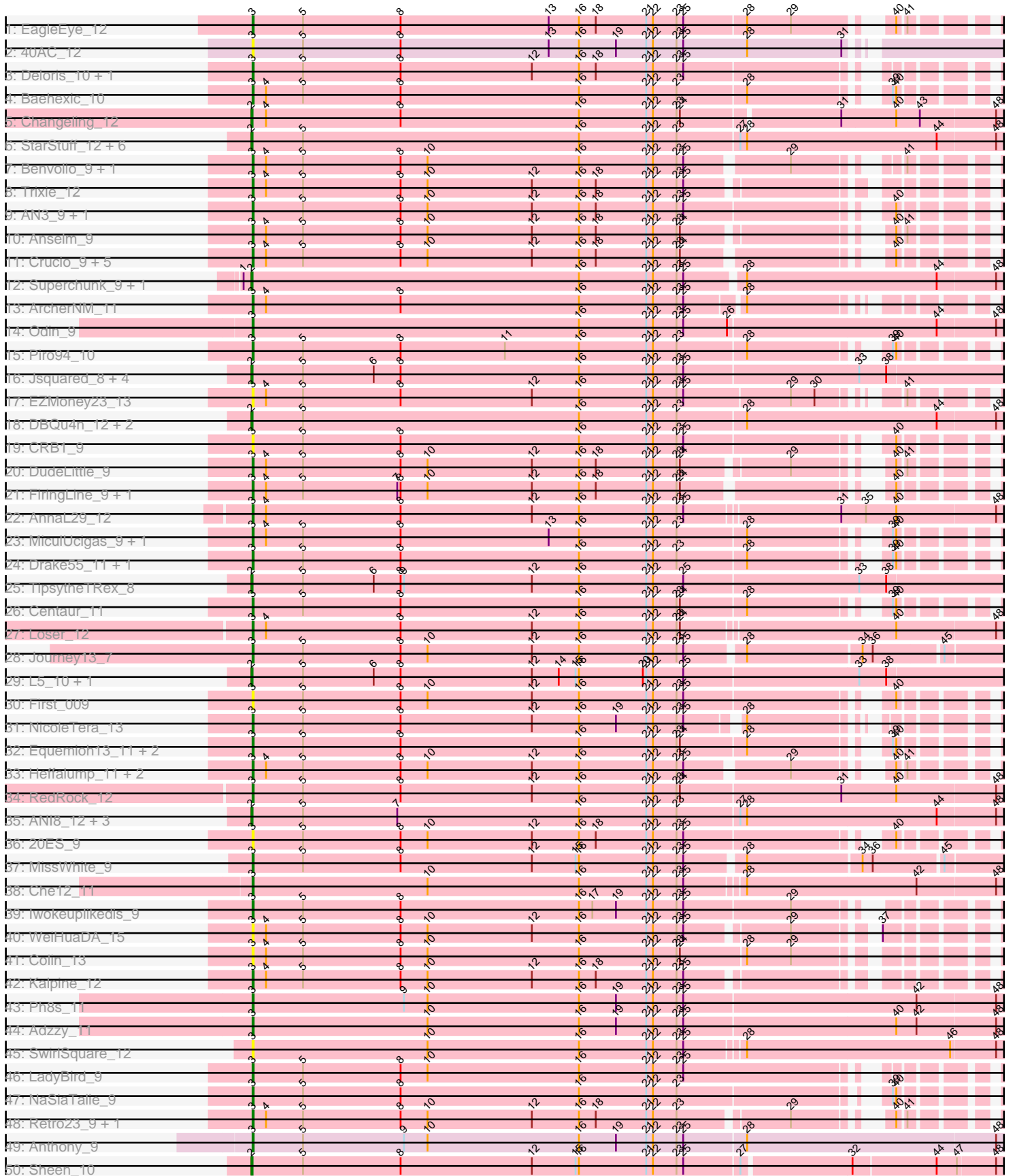


# Zoomed Pham 193936



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 193936 Report

This analysis was run 11/02/24 on database version 579.

Pham number 193936 has 83 members, 14 are drafts.

Phages represented in each track:

- Track 1 : EagleEye\_12
- Track 2 : 40AC\_12
- Track 3 : Deloris\_10, BengiVuitton\_10
- Track 4 : Baehexic\_10
- Track 5 : Changeling\_12
- Track 6 : StarStuff\_12, D32\_12, Tomathan\_12, D29\_10, Naji\_12, Duplo\_12, Travvers\_12
- Track 7 : Benvolio\_9, Echild\_9
- Track 8 : Trixie\_12
- Track 9 : AN3\_9, VA6\_9
- Track 10 : Anselm\_9
- Track 11 : Crucio\_9, SweetiePie\_9, SemperFi\_11, Georgie2\_9, SnapTap\_9, Power\_9
- Track 12 : Superchunk\_9, Caraxes\_9
- Track 13 : ArcherNM\_11
- Track 14 : Odin\_9
- Track 15 : Piro94\_10
- Track 16 : Jsquared\_8, Quokka\_7, MajorMajor\_8, Bradman\_8, Serenity\_8
- Track 17 : EZMoney23\_13
- Track 18 : DBQu4n\_12, Pomar16\_12, Kerberos\_12
- Track 19 : CRB1\_9
- Track 20 : DudeLittle\_9
- Track 21 : FiringLine\_9, QueenBeesly\_9
- Track 22 : AnnaL29\_12
- Track 23 : MiculUcigas\_9, Flare16\_9
- Track 24 : Drake55\_11, HarryHoudini\_11
- Track 25 : TopsytheTRex\_8
- Track 26 : Centaur\_11
- Track 27 : Loser\_12
- Track 28 : Journey13\_7
- Track 29 : L5\_10, Koduck\_9
- Track 30 : First\_009
- Track 31 : NicoleTera\_13
- Track 32 : Equemioh13\_11, WideWale\_11, Updawg\_11
- Track 33 : Heffalump\_11, Fameo\_9, QueenB2\_9
- Track 34 : RedRock\_12
- Track 35 : ANI8\_12, VC3\_12, AN9\_12, C3\_07

- Track 36 : 20ES\_9
- Track 37 : MissWhite\_9
- Track 38 : Che12\_11
- Track 39 : Iwokeuplikedis\_9
- Track 40 : WeiHuaDA\_15
- Track 41 : Colin\_13
- Track 42 : Kalpine\_12
- Track 43 : Ph8s\_11
- Track 44 : Adzzy\_11
- Track 45 : SwirlSquare\_12
- Track 46 : LadyBird\_9
- Track 47 : NaSiaTalie\_9
- Track 48 : Retro23\_9, Dalmatian\_9
- Track 49 : Anthony\_9
- Track 50 : Sheen\_10

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

The start number called the most often in the published annotations is 3, it was called in 49 of the 69 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 20ES\_9, 40AC\_12, AN3\_9, Adzzy\_11, AnnaL29\_12, Anselm\_9, Anthony\_9, ArcherNM\_11, Baehexic\_10, BengiVuitton\_10, Benvolio\_9, CRB1\_9, Centaur\_11, Che12\_11, Colin\_13, Crucio\_9, Dalmatian\_9, Deloris\_10, Drake55\_11, DudeLittle\_9, EZMoney23\_13, EagleEye\_12, Echild\_9, Equemioh13\_11, Fameo\_9, FiringLine\_9, First\_009, Flare16\_9, Georgie2\_9, HarryHoudini\_11, Heffalump\_11, Iwokeuplikedis\_9, Journey13\_7, Kalpine\_12, LadyBird\_9, Loser\_12, MiculUcigas\_9, MissWhite\_9, NaSiaTalie\_9, NicoleTera\_13, Odin\_9, Ph8s\_11, Piro94\_10, Power\_9, QueenB2\_9, QueenBeesly\_9, RedRock\_12, Retro23\_9, SemperFi\_11, SnapTap\_9, SweetiePie\_9, SwirlSquare\_12, Trixie\_12, Updawg\_11, VA6\_9, WeiHuaDA\_15, WideWale\_11,

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

- 

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

- AN9\_12, ANI8\_12, Bradman\_8, C3\_07, Caraxes\_9, Changeling\_12, D29\_10, D32\_12, DBQu4n\_12, Duplo\_12, Jsquared\_8, Kerberos\_12, Koduck\_9, L5\_10, MajorMajor\_8, Naji\_12, Pomar16\_12, Quokka\_7, Serenity\_8, Sheen\_10, StarStuff\_12, Superchunk\_9, TipsytheTRex\_8, Tomathan\_12, Travvers\_12, VC3\_12,

**Summary by start number:**

Start 2:

- Found in 26 of 83 ( 31.3% ) of genes in pham
- Manual Annotations of this start: 20 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AN9\_12 (A2), ANI8\_12 (A2), Bradman\_8 (A2), C3\_07 (A2), Caraxes\_9 (A2), Changeling\_12 (A2), D29\_10 (A2),

D32\_12 (A2), DBQu4n\_12 (A2), Duplo\_12 (A2), Jsquared\_8 (A2), Kerberos\_12 (A2), Koduck\_9 (A2), L5\_10 (A2), MajorMajor\_8 (A2), Naji\_12 (A2), Pomar16\_12 (A2), Quokka\_7 (A2), Serenity\_8 (A2), Sheen\_10 (A7), StarStuff\_12 (A2), Superchunk\_9 (A2), TopsytheTRex\_8 (A2), Tomathan\_12 (A2), Travvers\_12 (A2), VC3\_12 (A2),

Start 3:

- Found in 57 of 83 ( 68.7% ) of genes in pham
- Manual Annotations of this start: 49 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: 20ES\_9 (A2), 40AC\_12 (A17), AN3\_9 (A2), Adzzy\_11 (A2), AnnaL29\_12 (A2), Anselm\_9 (A2), Anthony\_9 (A20), ArcherNM\_11 (A2), Baehexic\_10 (A2), BengiVuitton\_10 (A2), Benvolio\_9 (A2), CRB1\_9 (A2), Centaur\_11 (A2), Che12\_11 (A2), Colin\_13 (A2), Crucio\_9 (A2), Dalmatian\_9 (A2), Deloris\_10 (A2), Drake55\_11 (A2), DudeLittle\_9 (A2), EZMoney23\_13 (A2), EagleEye\_12 (A16), Echild\_9 (A2), Equemioh13\_11 (A2), Fameo\_9 (A2), FiringLine\_9 (A2), First\_009 (A2), Flare16\_9 (A2), Georgie2\_9 (A2), HarryHoudini\_11 (A2), Heffalump\_11 (A2), Iwokeuplieddis\_9 (A2), Journey13\_7 (A2), Kalpine\_12 (A2), LadyBird\_9 (A2), Loser\_12 (A2), MiculUcigas\_9 (A2), MissWhite\_9 (A2), NaSiaTalie\_9 (A2), NicoleTera\_13 (A2), Odin\_9 (A2), Ph8s\_11 (A2), Piro94\_10 (A2), Power\_9 (A2), QueenB2\_9 (A2), QueenBeesly\_9 (A2), RedRock\_12 (A2), Retro23\_9 (A2), SemperFi\_11 (A2), SnapTap\_9 (A2), SweetiePie\_9 (A2), SwirlSquare\_12 (A2), Trixie\_12 (A2), Updawg\_11 (A2), VA6\_9 (A2), WeiHuaDA\_15 (A2), WideWale\_11 (A2),

### Summary by clusters:

There are 5 clusters represented in this pham: A20, A17, A2, A16, A7,

Info for manual annotations of cluster A16:

- Start number 3 was manually annotated 1 time for cluster A16.

Info for manual annotations of cluster A2:

- Start number 2 was manually annotated 19 times for cluster A2.
- Start number 3 was manually annotated 47 times for cluster A2.

Info for manual annotations of cluster A20:

- Start number 3 was manually annotated 1 time for cluster A20.

Info for manual annotations of cluster A7:

- Start number 2 was manually annotated 1 time for cluster A7.

### Gene Information:

Gene: 20ES\_9 Start: 4690, Stop: 5988, Start Num: 3

Candidate Starts for 20ES\_9:

(Start: 3 @4690 has 49 MA's), (5, 4735), (8, 4822), (10, 4846), (12, 4939), (16, 4981), (18, 4996), (21, 5041), (22, 5047), (23, 5068), (25, 5074), (40, 5230), (52, 5302), (60, 5350), (74, 5569), (78, 5602), (88, 5707),

Gene: 40AC\_12 Start: 6575, Stop: 8080, Start Num: 3

Candidate Starts for 40AC\_12:

(Start: 3 @6575 has 49 MA's), (5, 6620), (8, 6707), (13, 6839), (16, 6866), (19, 6899), (21, 6926), (22, 6932), (23, 6953), (25, 6959), (28, 7016), (31, 7100), (62, 7397), (65, 7421), (69, 7496), (72, 7637), (78, 7688), (83, 7733), (88, 7793), (93, 7829), (95, 7841), (100, 7901), (101, 7919), (110, 8009), (111, 8021),

Gene: AN3\_9 Start: 4672, Stop: 5973, Start Num: 3

Candidate Starts for AN3\_9:

(Start: 3 @4672 has 49 MA's), (5, 4717), (8, 4804), (10, 4828), (12, 4921), (16, 4963), (18, 4978), (21, 5023), (22, 5029), (23, 5050), (25, 5056), (40, 5212), (52, 5284), (60, 5332), (71, 5455), (74, 5551), (78, 5584), (88, 5689), (93, 5725), (101, 5815), (111, 5917),

Gene: AN9\_12 Start: 4696, Stop: 6177, Start Num: 2

Candidate Starts for AN9\_12:

(Start: 2 @4696 has 20 MA's), (5, 4741), (7, 4825), (16, 4987), (21, 5047), (22, 5053), (23, 5074), (27, 5128), (28, 5134), (44, 5302), (48, 5353), (58, 5503), (64, 5584), (77, 5815), (86, 5878), (96, 5977), (110, 6106),

Gene: ANI8\_12 Start: 4696, Stop: 6177, Start Num: 2

Candidate Starts for ANI8\_12:

(Start: 2 @4696 has 20 MA's), (5, 4741), (7, 4825), (16, 4987), (21, 5047), (22, 5053), (23, 5074), (27, 5128), (28, 5134), (44, 5302), (48, 5353), (58, 5503), (64, 5584), (77, 5815), (86, 5878), (96, 5977), (110, 6106),

Gene: Adzzy\_11 Start: 4473, Stop: 5846, Start Num: 3

Candidate Starts for Adzzy\_11:

(Start: 3 @4473 has 49 MA's), (10, 4629), (16, 4764), (19, 4797), (21, 4824), (22, 4830), (23, 4851), (25, 4857), (40, 5043), (42, 5061), (48, 5130), (62, 5292), (67, 5340), (70, 5403), (80, 5565), (81, 5568), (89, 5631), (90, 5634), (101, 5721),

Gene: AnnaL29\_12 Start: 6416, Stop: 7891, Start Num: 3

Candidate Starts for AnnaL29\_12:

(Start: 3 @6416 has 49 MA's), (4, 6428), (8, 6548), (12, 6665), (16, 6707), (21, 6767), (22, 6773), (23, 6794), (25, 6800), (31, 6932), (35, 6953), (40, 6980), (48, 7067), (56, 7214), (58, 7217), (64, 7298), (73, 7487), (77, 7529), (79, 7547), (80, 7553), (83, 7577), (96, 7691), (98, 7700), (110, 7820), (112, 7853),

Gene: Anselm\_9 Start: 4805, Stop: 6097, Start Num: 3

Candidate Starts for Anselm\_9:

(Start: 3 @4805 has 49 MA's), (4, 4817), (5, 4850), (8, 4937), (10, 4961), (12, 5054), (16, 5096), (18, 5111), (21, 5156), (22, 5162), (23, 5183), (24, 5186), (40, 5333), (41, 5339), (60, 5453), (74, 5672), (78, 5705), (83, 5750), (88, 5810), (101, 5936), (111, 6038),

Gene: Anthony\_9 Start: 3885, Stop: 5264, Start Num: 3

Candidate Starts for Anthony\_9:

(Start: 3 @3885 has 49 MA's), (5, 3930), (9, 4020), (10, 4041), (16, 4176), (19, 4209), (21, 4236), (22, 4242), (23, 4263), (25, 4269), (28, 4323), (48, 4542), (50, 4572), (62, 4704), (67, 4752), (81, 4983), (82, 4986), (89, 5046), (90, 5049),

Gene: ArcherNM\_11 Start: 6513, Stop: 7808, Start Num: 3

Candidate Starts for ArcherNM\_11:

(Start: 3 @6513 has 49 MA's), (4, 6525), (8, 6645), (16, 6804), (21, 6864), (22, 6870), (23, 6891), (25, 6897), (28, 6945), (60, 7167), (74, 7386), (78, 7419), (88, 7524), (94, 7569), (101, 7650), (110, 7740),

(111, 7752),

Gene: Baehexic\_10 Start: 5209, Stop: 6513, Start Num: 3

Candidate Starts for Baehexic\_10:

(Start: 3 @5209 has 49 MA's), (4, 5221), (5, 5254), (8, 5341), (16, 5500), (21, 5560), (22, 5566), (23, 5587), (28, 5647), (39, 5746), (40, 5749), (52, 5821), (74, 6088), (78, 6121), (85, 6175), (88, 6226), (94, 6271), (97, 6289), (107, 6406),

Gene: BengiVuitton\_10 Start: 5133, Stop: 6422, Start Num: 3

Candidate Starts for BengiVuitton\_10:

(Start: 3 @5133 has 49 MA's), (5, 5178), (8, 5265), (12, 5382), (16, 5424), (18, 5439), (21, 5484), (22, 5490), (23, 5511), (25, 5517), (52, 5742), (60, 5790), (74, 6009), (78, 6042), (88, 6147), (102, 6276),

Gene: Benvolio\_9 Start: 4797, Stop: 6086, Start Num: 3

Candidate Starts for Benvolio\_9:

(Start: 3 @4797 has 49 MA's), (4, 4809), (5, 4842), (8, 4929), (10, 4953), (16, 5088), (21, 5148), (22, 5154), (23, 5175), (25, 5181), (29, 5265), (41, 5331), (60, 5445), (74, 5664), (78, 5697), (88, 5802), (93, 5838), (101, 5928), (111, 6030),

Gene: Bradman\_8 Start: 4332, Stop: 5210, Start Num: 2

Candidate Starts for Bradman\_8:

(Start: 2 @4332 has 20 MA's), (5, 4377), (6, 4440), (8, 4464), (16, 4623), (21, 4683), (22, 4689), (23, 4710), (25, 4716), (33, 4869), (38, 4893), (49, 5010), (54, 5076), (55, 5079), (57, 5094), (59, 5100), (61, 5115), (63, 5172),

Gene: C3\_07 Start: 4696, Stop: 6177, Start Num: 2

Candidate Starts for C3\_07:

(Start: 2 @4696 has 20 MA's), (5, 4741), (7, 4825), (16, 4987), (21, 5047), (22, 5053), (23, 5074), (27, 5128), (28, 5134), (44, 5302), (48, 5353), (58, 5503), (64, 5584), (77, 5815), (86, 5878), (96, 5977), (110, 6106),

Gene: CRB1\_9 Start: 4679, Stop: 5974, Start Num: 3

Candidate Starts for CRB1\_9:

(Start: 3 @4679 has 49 MA's), (5, 4724), (8, 4811), (16, 4970), (21, 5030), (22, 5036), (23, 5057), (25, 5063), (40, 5219), (52, 5291), (60, 5339), (74, 5558), (78, 5591), (88, 5696), (95, 5744),

Gene: Caraxes\_9 Start: 4337, Stop: 5746, Start Num: 2

Candidate Starts for Caraxes\_9:

(1, 4331), (Start: 2 @4337 has 20 MA's), (16, 4628), (21, 4688), (22, 4694), (23, 4715), (25, 4721), (28, 4769), (44, 4937), (48, 4988), (75, 5417), (81, 5468), (82, 5471), (89, 5531), (90, 5534), (112, 5717),

Gene: Centaur\_11 Start: 5188, Stop: 6492, Start Num: 3

Candidate Starts for Centaur\_11:

(Start: 3 @5188 has 49 MA's), (5, 5233), (8, 5320), (16, 5479), (21, 5539), (22, 5545), (23, 5566), (24, 5569), (28, 5626), (39, 5725), (40, 5728), (52, 5800), (60, 5848), (74, 6067), (78, 6100), (85, 6154), (88, 6205), (94, 6250), (97, 6268),

Gene: Changeling\_12 Start: 6426, Stop: 7901, Start Num: 2

Candidate Starts for Changeling\_12:

(Start: 2 @6426 has 20 MA's), (4, 6438), (8, 6558), (16, 6717), (21, 6777), (22, 6783), (23, 6804), (24, 6807), (31, 6942), (40, 6990), (43, 7011), (48, 7077), (56, 7224), (58, 7227), (64, 7308), (73, 7497), (77, 7539), (83, 7587), (86, 7602), (96, 7701), (101, 7764), (110, 7830),

Gene: Che12\_11 Start: 4473, Stop: 5840, Start Num: 3

Candidate Starts for Che12\_11:

(Start: 3 @4473 has 49 MA's), (10, 4629), (16, 4764), (21, 4824), (22, 4830), (23, 4851), (25, 4857), (28, 4905), (42, 5055), (48, 5124), (62, 5286), (67, 5334), (70, 5397), (80, 5559), (81, 5562), (89, 5625), (90, 5628), (101, 5715),

Gene: Colin\_13 Start: 6391, Stop: 7695, Start Num: 3

Candidate Starts for Colin\_13:

(Start: 3 @6391 has 49 MA's), (4, 6403), (5, 6436), (8, 6523), (10, 6547), (16, 6682), (21, 6742), (22, 6748), (23, 6769), (24, 6772), (28, 6829), (29, 6868), (60, 7057), (74, 7276), (78, 7303), (83, 7348), (88, 7408), (101, 7534), (110, 7624), (111, 7636), (113, 7672),

Gene: Crucio\_9 Start: 4694, Stop: 5941, Start Num: 3

Candidate Starts for Crucio\_9:

(Start: 3 @4694 has 49 MA's), (4, 4706), (5, 4739), (8, 4826), (10, 4850), (12, 4943), (16, 4985), (18, 5000), (21, 5045), (22, 5051), (23, 5072), (24, 5075), (40, 5222), (60, 5342), (74, 5561), (77, 5591), (80, 5615), (83, 5639), (96, 5738), (102, 5804), (104, 5810), (110, 5867),

Gene: D29\_10 Start: 4697, Stop: 6178, Start Num: 2

Candidate Starts for D29\_10:

(Start: 2 @4697 has 20 MA's), (5, 4742), (16, 4988), (21, 5048), (22, 5054), (23, 5075), (27, 5129), (28, 5135), (44, 5303), (48, 5354), (58, 5504), (64, 5585), (73, 5774), (77, 5816), (86, 5879), (96, 5978), (110, 6107),

Gene: D32\_12 Start: 4697, Stop: 6178, Start Num: 2

Candidate Starts for D32\_12:

(Start: 2 @4697 has 20 MA's), (5, 4742), (16, 4988), (21, 5048), (22, 5054), (23, 5075), (27, 5129), (28, 5135), (44, 5303), (48, 5354), (58, 5504), (64, 5585), (73, 5774), (77, 5816), (86, 5879), (96, 5978), (110, 6107),

Gene: DBQu4n\_12 Start: 4697, Stop: 6178, Start Num: 2

Candidate Starts for DBQu4n\_12:

(Start: 2 @4697 has 20 MA's), (5, 4742), (16, 4988), (21, 5048), (22, 5054), (23, 5075), (28, 5135), (44, 5303), (48, 5354), (58, 5504), (64, 5585), (73, 5774), (77, 5816), (86, 5879), (96, 5978), (110, 6107),

Gene: Dalmatian\_9 Start: 4796, Stop: 6088, Start Num: 3

Candidate Starts for Dalmatian\_9:

(Start: 3 @4796 has 49 MA's), (4, 4808), (5, 4841), (8, 4928), (10, 4952), (12, 5045), (16, 5087), (18, 5102), (21, 5147), (22, 5153), (23, 5174), (29, 5264), (40, 5324), (41, 5330), (60, 5444), (74, 5663), (78, 5696), (83, 5741), (88, 5801), (94, 5846), (101, 5927), (111, 6029),

Gene: Deloris\_10 Start: 5133, Stop: 6422, Start Num: 3

Candidate Starts for Deloris\_10:

(Start: 3 @5133 has 49 MA's), (5, 5178), (8, 5265), (12, 5382), (16, 5424), (18, 5439), (21, 5484), (22, 5490), (23, 5511), (25, 5517), (52, 5742), (60, 5790), (74, 6009), (78, 6042), (88, 6147), (102, 6276),

Gene: Drake55\_11 Start: 5205, Stop: 6509, Start Num: 3

Candidate Starts for Drake55\_11:

(Start: 3 @5205 has 49 MA's), (5, 5250), (8, 5337), (16, 5496), (21, 5556), (22, 5562), (23, 5583), (28, 5643), (39, 5742), (40, 5745), (52, 5817), (74, 6084), (78, 6117), (85, 6171), (88, 6222), (94, 6267), (97, 6285),

Gene: DudeLittle\_9 Start: 4798, Stop: 6090, Start Num: 3

Candidate Starts for DudeLittle\_9:

(Start: 3 @4798 has 49 MA's), (4, 4810), (5, 4843), (8, 4930), (10, 4954), (12, 5047), (16, 5089), (18, 5104), (21, 5149), (22, 5155), (23, 5176), (24, 5179), (29, 5266), (40, 5326), (41, 5332), (60, 5446), (74, 5665), (78, 5698), (83, 5743), (88, 5803), (94, 5848), (101, 5929), (111, 6031),

Gene: Duplo\_12 Start: 4738, Stop: 6219, Start Num: 2

Candidate Starts for Duplo\_12:

(Start: 2 @4738 has 20 MA's), (5, 4783), (16, 5029), (21, 5089), (22, 5095), (23, 5116), (27, 5170), (28, 5176), (44, 5344), (48, 5395), (58, 5545), (64, 5626), (73, 5815), (77, 5857), (86, 5920), (96, 6019), (110, 6148),

Gene: EZMoney23\_13 Start: 6684, Stop: 7985, Start Num: 3

Candidate Starts for EZMoney23\_13:

(Start: 3 @6684 has 49 MA's), (4, 6696), (5, 6729), (8, 6816), (12, 6933), (16, 6975), (21, 7035), (22, 7041), (23, 7062), (25, 7068), (29, 7161), (30, 7182), (41, 7230), (52, 7296), (74, 7563), (78, 7596), (88, 7701), (94, 7746), (101, 7827), (111, 7929),

Gene: EagleEye\_12 Start: 5895, Stop: 7142, Start Num: 3

Candidate Starts for EagleEye\_12:

(Start: 3 @5895 has 49 MA's), (5, 5940), (8, 6027), (13, 6159), (16, 6186), (18, 6201), (21, 6246), (22, 6252), (23, 6273), (25, 6279), (28, 6333), (29, 6372), (40, 6435), (41, 6441), (52, 6507), (60, 6555), (74, 6774), (77, 6801), (80, 6825), (84, 6849), (96, 6942), (102, 7008), (105, 7026),

Gene: Echild\_9 Start: 4797, Stop: 6086, Start Num: 3

Candidate Starts for Echild\_9:

(Start: 3 @4797 has 49 MA's), (4, 4809), (5, 4842), (8, 4929), (10, 4953), (16, 5088), (21, 5148), (22, 5154), (23, 5175), (25, 5181), (29, 5265), (41, 5331), (60, 5445), (74, 5664), (78, 5697), (88, 5802), (93, 5838), (101, 5928), (111, 6030),

Gene: Equemioh13\_11 Start: 5191, Stop: 6495, Start Num: 3

Candidate Starts for Equemioh13\_11:

(Start: 3 @5191 has 49 MA's), (5, 5236), (8, 5323), (16, 5482), (21, 5542), (22, 5548), (23, 5569), (24, 5572), (28, 5629), (39, 5728), (40, 5731), (52, 5803), (60, 5851), (74, 6070), (78, 6103), (85, 6157), (88, 6208), (94, 6253), (97, 6271), (107, 6388),

Gene: Fameo\_9 Start: 4800, Stop: 6035, Start Num: 3

Candidate Starts for Fameo\_9:

(Start: 3 @4800 has 49 MA's), (4, 4812), (5, 4845), (8, 4932), (10, 4956), (12, 5049), (16, 5091), (21, 5151), (22, 5157), (23, 5178), (25, 5184), (29, 5268), (40, 5328), (41, 5334), (52, 5400), (60, 5448), (74, 5667), (77, 5697), (80, 5721), (96, 5835), (102, 5901), (106, 5925),

Gene: FiringLine\_9 Start: 4694, Stop: 5941, Start Num: 3

Candidate Starts for FiringLine\_9:

(Start: 3 @4694 has 49 MA's), (4, 4706), (5, 4739), (7, 4823), (8, 4826), (10, 4850), (12, 4943), (16, 4985), (18, 5000), (21, 5045), (22, 5051), (23, 5072), (24, 5075), (40, 5222), (60, 5342), (74, 5561), (77, 5591), (80, 5615), (83, 5639), (96, 5738), (102, 5804), (104, 5810), (110, 5867),

Gene: First\_009 Start: 4690, Stop: 5988, Start Num: 3

Candidate Starts for First\_009:

(Start: 3 @4690 has 49 MA's), (5, 4735), (8, 4822), (10, 4846), (12, 4939), (16, 4981), (21, 5041), (22, 5047), (23, 5068), (25, 5074), (40, 5230), (52, 5302), (60, 5350), (74, 5569), (78, 5602), (88, 5707),

Gene: Flare16\_9 Start: 4749, Stop: 6053, Start Num: 3



Candidate Starts for Flare16\_9:

(Start: 3 @4749 has 49 MA's), (4, 4761), (5, 4794), (8, 4881), (13, 5013), (16, 5040), (21, 5100), (22, 5106), (23, 5127), (28, 5187), (39, 5286), (40, 5289), (52, 5361), (60, 5409), (74, 5628), (78, 5661), (85, 5715), (88, 5766), (94, 5811), (97, 5829),

Gene: Georgie2\_9 Start: 4695, Stop: 5942, Start Num: 3

Candidate Starts for Georgie2\_9:

(Start: 3 @4695 has 49 MA's), (4, 4707), (5, 4740), (8, 4827), (10, 4851), (12, 4944), (16, 4986), (18, 5001), (21, 5046), (22, 5052), (23, 5073), (24, 5076), (40, 5223), (60, 5343), (74, 5562), (77, 5592), (80, 5616), (83, 5640), (96, 5739), (102, 5805), (104, 5811), (110, 5868),

Gene: HarryHoudini\_11 Start: 5205, Stop: 6509, Start Num: 3

Candidate Starts for HarryHoudini\_11:

(Start: 3 @5205 has 49 MA's), (5, 5250), (8, 5337), (16, 5496), (21, 5556), (22, 5562), (23, 5583), (28, 5643), (39, 5742), (40, 5745), (52, 5817), (74, 6084), (78, 6117), (85, 6171), (88, 6222), (94, 6267), (97, 6285),

Gene: Heffalump\_11 Start: 6599, Stop: 7834, Start Num: 3

Candidate Starts for Heffalump\_11:

(Start: 3 @6599 has 49 MA's), (4, 6611), (5, 6644), (8, 6731), (10, 6755), (12, 6848), (16, 6890), (21, 6950), (22, 6956), (23, 6977), (25, 6983), (29, 7067), (40, 7127), (41, 7133), (52, 7199), (60, 7247), (74, 7466), (77, 7496), (80, 7520), (96, 7634), (102, 7700), (106, 7724),

Gene: Iwokeuplikedis\_9 Start: 4489, Stop: 5760, Start Num: 3

Candidate Starts for Iwokeuplikedis\_9:

(Start: 3 @4489 has 49 MA's), (5, 4534), (8, 4621), (16, 4780), (17, 4792), (19, 4813), (21, 4840), (22, 4846), (23, 4867), (25, 4873), (29, 4966), (52, 5098), (60, 5146), (74, 5365), (77, 5398), (80, 5422), (96, 5560), (98, 5569),

Gene: Journey13\_7 Start: 4346, Stop: 5233, Start Num: 3

Candidate Starts for Journey13\_7:

(Start: 3 @4346 has 49 MA's), (5, 4391), (8, 4478), (10, 4502), (12, 4595), (16, 4637), (21, 4697), (22, 4703), (23, 4724), (25, 4730), (28, 4778), (34, 4877), (36, 4886), (45, 4943), (51, 5024), (53, 5033), (58, 5099),

Gene: Jsquared\_8 Start: 4286, Stop: 5164, Start Num: 2

Candidate Starts for Jsquared\_8:

(Start: 2 @4286 has 20 MA's), (5, 4331), (6, 4394), (8, 4418), (16, 4577), (21, 4637), (22, 4643), (23, 4664), (25, 4670), (33, 4823), (38, 4847), (49, 4964), (54, 5030), (55, 5033), (57, 5048), (59, 5054), (61, 5069), (63, 5126),

Gene: Kalpine\_12 Start: 6504, Stop: 7799, Start Num: 3

Candidate Starts for Kalpine\_12:

(Start: 3 @6504 has 49 MA's), (4, 6516), (5, 6549), (8, 6636), (10, 6660), (12, 6753), (16, 6795), (18, 6810), (21, 6855), (22, 6861), (23, 6882), (25, 6888), (60, 7161), (74, 7380), (78, 7407), (83, 7452), (87, 7494), (88, 7512), (94, 7557), (101, 7638), (110, 7728), (111, 7740),

Gene: Kerberos\_12 Start: 4697, Stop: 6178, Start Num: 2

Candidate Starts for Kerberos\_12:

(Start: 2 @4697 has 20 MA's), (5, 4742), (16, 4988), (21, 5048), (22, 5054), (23, 5075), (28, 5135), (44, 5303), (48, 5354), (58, 5504), (64, 5585), (73, 5774), (77, 5816), (86, 5879), (96, 5978), (110, 6107),

Gene: Koduck\_9 Start: 4573, Stop: 5451, Start Num: 2

Candidate Starts for Koduck\_9:

(Start: 2 @4573 has 20 MA's), (5, 4618), (6, 4681), (8, 4705), (12, 4822), (14, 4846), (15, 4861), (16, 4864), (20, 4921), (21, 4924), (22, 4930), (25, 4957), (33, 5110), (38, 5134), (49, 5251), (54, 5317), (55, 5320), (57, 5335), (59, 5341), (61, 5356),

Gene: L5\_10 Start: 4581, Stop: 5459, Start Num: 2

Candidate Starts for L5\_10:

(Start: 2 @4581 has 20 MA's), (5, 4626), (6, 4689), (8, 4713), (12, 4830), (14, 4854), (15, 4869), (16, 4872), (20, 4929), (21, 4932), (22, 4938), (25, 4965), (33, 5118), (38, 5142), (49, 5259), (54, 5325), (55, 5328), (57, 5343), (59, 5349), (61, 5364),

Gene: LadyBird\_9 Start: 4681, Stop: 5976, Start Num: 3

Candidate Starts for LadyBird\_9:

(Start: 3 @4681 has 49 MA's), (5, 4726), (8, 4813), (10, 4837), (16, 4972), (21, 5032), (22, 5038), (23, 5059), (25, 5065), (52, 5293), (60, 5341), (74, 5560), (78, 5593), (88, 5698), (95, 5746),

Gene: Loser\_12 Start: 6404, Stop: 7858, Start Num: 3

Candidate Starts for Loser\_12:

(Start: 3 @6404 has 49 MA's), (4, 6416), (8, 6536), (12, 6653), (16, 6695), (21, 6755), (22, 6761), (23, 6782), (24, 6785), (40, 6968), (48, 7055), (56, 7202), (58, 7205), (64, 7286), (73, 7475), (77, 7517), (79, 7535), (80, 7541), (96, 7658), (102, 7724), (108, 7763),

Gene: MajorMajor\_8 Start: 4332, Stop: 5210, Start Num: 2

Candidate Starts for MajorMajor\_8:

(Start: 2 @4332 has 20 MA's), (5, 4377), (6, 4440), (8, 4464), (16, 4623), (21, 4683), (22, 4689), (23, 4710), (25, 4716), (33, 4869), (38, 4893), (49, 5010), (54, 5076), (55, 5079), (57, 5094), (59, 5100), (61, 5115), (63, 5172),

Gene: MiculUcigas\_9 Start: 4749, Stop: 6053, Start Num: 3

Candidate Starts for MiculUcigas\_9:

(Start: 3 @4749 has 49 MA's), (4, 4761), (5, 4794), (8, 4881), (13, 5013), (16, 5040), (21, 5100), (22, 5106), (23, 5127), (28, 5187), (39, 5286), (40, 5289), (52, 5361), (60, 5409), (74, 5628), (78, 5661), (85, 5715), (88, 5766), (94, 5811), (97, 5829),

Gene: MissWhite\_9 Start: 4390, Stop: 5277, Start Num: 3

Candidate Starts for MissWhite\_9:

(Start: 3 @4390 has 49 MA's), (5, 4435), (8, 4522), (12, 4639), (15, 4678), (16, 4681), (21, 4741), (22, 4747), (23, 4768), (25, 4774), (28, 4822), (34, 4921), (36, 4930), (45, 4987), (51, 5068), (53, 5077),

Gene: NaSiaTalie\_9 Start: 4749, Stop: 6050, Start Num: 3

Candidate Starts for NaSiaTalie\_9:

(Start: 3 @4749 has 49 MA's), (5, 4794), (8, 4881), (16, 5040), (21, 5100), (22, 5106), (23, 5127), (39, 5283), (40, 5286), (52, 5358), (60, 5406), (74, 5625), (78, 5658), (85, 5712), (88, 5763), (94, 5808), (97, 5826),

Gene: Naji\_12 Start: 4697, Stop: 6178, Start Num: 2

Candidate Starts for Naji\_12:

(Start: 2 @4697 has 20 MA's), (5, 4742), (16, 4988), (21, 5048), (22, 5054), (23, 5075), (27, 5129), (28, 5135), (44, 5303), (48, 5354), (58, 5504), (64, 5585), (73, 5774), (77, 5816), (86, 5879), (96, 5978), (110, 6107),

Gene: NicoleTera\_13 Start: 6467, Stop: 7756, Start Num: 3

Candidate Starts for NicoleTera\_13:

(Start: 3 @6467 has 49 MA's), (5, 6512), (8, 6599), (12, 6716), (16, 6758), (19, 6791), (21, 6818), (22, 6824), (23, 6845), (25, 6851), (28, 6893), (52, 7064), (60, 7112), (74, 7331), (78, 7364), (88, 7469), (93, 7505), (95, 7517), (100, 7577), (101, 7595), (111, 7697),

Gene: Odin\_9 Start: 4473, Stop: 5888, Start Num: 3

Candidate Starts for Odin\_9:

(Start: 3 @4473 has 49 MA's), (16, 4764), (21, 4824), (22, 4830), (23, 4851), (25, 4857), (26, 4896), (44, 5079), (48, 5130), (75, 5559), (81, 5610), (82, 5613), (89, 5673), (90, 5676),

Gene: Ph8s\_11 Start: 4474, Stop: 5847, Start Num: 3

Candidate Starts for Ph8s\_11:

(Start: 3 @4474 has 49 MA's), (9, 4609), (10, 4630), (16, 4765), (19, 4798), (21, 4825), (22, 4831), (23, 4852), (25, 4858), (42, 5062), (48, 5131), (67, 5341), (70, 5404), (80, 5566), (81, 5569), (89, 5632), (90, 5635), (101, 5722),

Gene: Piro94\_10 Start: 5206, Stop: 6510, Start Num: 3

Candidate Starts for Piro94\_10:

(Start: 3 @5206 has 49 MA's), (5, 5251), (8, 5338), (11, 5431), (16, 5497), (21, 5557), (22, 5563), (23, 5584), (28, 5644), (39, 5743), (40, 5746), (52, 5818), (74, 6085), (78, 6118), (85, 6172), (88, 6223), (94, 6268), (97, 6286),

Gene: Pomar16\_12 Start: 4738, Stop: 6219, Start Num: 2

Candidate Starts for Pomar16\_12:

(Start: 2 @4738 has 20 MA's), (5, 4783), (16, 5029), (21, 5089), (22, 5095), (23, 5116), (28, 5176), (44, 5344), (48, 5395), (58, 5545), (64, 5626), (73, 5815), (77, 5857), (86, 5920), (96, 6019), (110, 6148),

Gene: Power\_9 Start: 4694, Stop: 5941, Start Num: 3

Candidate Starts for Power\_9:

(Start: 3 @4694 has 49 MA's), (4, 4706), (5, 4739), (8, 4826), (10, 4850), (12, 4943), (16, 4985), (18, 5000), (21, 5045), (22, 5051), (23, 5072), (24, 5075), (40, 5222), (60, 5342), (74, 5561), (77, 5591), (80, 5615), (83, 5639), (96, 5738), (102, 5804), (104, 5810), (110, 5867),

Gene: QueenB2\_9 Start: 4800, Stop: 6035, Start Num: 3

Candidate Starts for QueenB2\_9:

(Start: 3 @4800 has 49 MA's), (4, 4812), (5, 4845), (8, 4932), (10, 4956), (12, 5049), (16, 5091), (21, 5151), (22, 5157), (23, 5178), (25, 5184), (29, 5268), (40, 5328), (41, 5334), (52, 5400), (60, 5448), (74, 5667), (77, 5697), (80, 5721), (96, 5835), (102, 5901), (106, 5925),

Gene: QueenBeesly\_9 Start: 4694, Stop: 5941, Start Num: 3

Candidate Starts for QueenBeesly\_9:

(Start: 3 @4694 has 49 MA's), (4, 4706), (5, 4739), (7, 4823), (8, 4826), (10, 4850), (12, 4943), (16, 4985), (18, 5000), (21, 5045), (22, 5051), (23, 5072), (24, 5075), (40, 5222), (60, 5342), (74, 5561), (77, 5591), (80, 5615), (83, 5639), (96, 5738), (102, 5804), (104, 5810), (110, 5867),

Gene: Quokka\_7 Start: 4332, Stop: 5210, Start Num: 2

Candidate Starts for Quokka\_7:

(Start: 2 @4332 has 20 MA's), (5, 4377), (6, 4440), (8, 4464), (16, 4623), (21, 4683), (22, 4689), (23, 4710), (25, 4716), (33, 4869), (38, 4893), (49, 5010), (54, 5076), (55, 5079), (57, 5094), (59, 5100), (61, 5115), (63, 5172),

Gene: RedRock\_12 Start: 6487, Stop: 7968, Start Num: 3

Candidate Starts for RedRock\_12:

(Start: 3 @6487 has 49 MA's), (5, 6532), (8, 6619), (12, 6736), (16, 6778), (21, 6838), (22, 6844), (23, 6865), (24, 6868), (31, 7009), (40, 7057), (48, 7144), (56, 7291), (58, 7294), (64, 7375), (73, 7564), (77, 7606), (79, 7624), (80, 7630), (83, 7654), (96, 7768), (98, 7777), (110, 7897),

Gene: Retro23\_9 Start: 4797, Stop: 6089, Start Num: 3

Candidate Starts for Retro23\_9:

(Start: 3 @4797 has 49 MA's), (4, 4809), (5, 4842), (8, 4929), (10, 4953), (12, 5046), (16, 5088), (18, 5103), (21, 5148), (22, 5154), (23, 5175), (29, 5265), (40, 5325), (41, 5331), (60, 5445), (74, 5664), (78, 5697), (83, 5742), (88, 5802), (94, 5847), (101, 5928), (111, 6030),

Gene: SemperFi\_11 Start: 5122, Stop: 6369, Start Num: 3

Candidate Starts for SemperFi\_11:

(Start: 3 @5122 has 49 MA's), (4, 5134), (5, 5167), (8, 5254), (10, 5278), (12, 5371), (16, 5413), (18, 5428), (21, 5473), (22, 5479), (23, 5500), (24, 5503), (40, 5650), (60, 5770), (74, 5989), (77, 6019), (80, 6043), (83, 6067), (96, 6166), (102, 6232), (104, 6238), (110, 6295),

Gene: Serenity\_8 Start: 4332, Stop: 5210, Start Num: 2

Candidate Starts for Serenity\_8:

(Start: 2 @4332 has 20 MA's), (5, 4377), (6, 4440), (8, 4464), (16, 4623), (21, 4683), (22, 4689), (23, 4710), (25, 4716), (33, 4869), (38, 4893), (49, 5010), (54, 5076), (55, 5079), (57, 5094), (59, 5100), (61, 5115), (63, 5172),

Gene: Sheen\_10 Start: 5731, Stop: 7155, Start Num: 2

Candidate Starts for Sheen\_10:

(Start: 2 @5731 has 20 MA's), (5, 5776), (8, 5863), (12, 5980), (15, 6019), (16, 6022), (21, 6082), (22, 6088), (23, 6109), (25, 6115), (27, 6163), (32, 6256), (44, 6328), (47, 6346), (48, 6379), (62, 6550), (66, 6589), (75, 6790), (77, 6817), (80, 6838), (83, 6862), (91, 6922), (92, 6925), (96, 6955), (99, 6979), (102, 7021), (103, 7024), (108, 7060), (109, 7066), (114, 7138),

Gene: SnapTap\_9 Start: 4694, Stop: 5941, Start Num: 3

Candidate Starts for SnapTap\_9:

(Start: 3 @4694 has 49 MA's), (4, 4706), (5, 4739), (8, 4826), (10, 4850), (12, 4943), (16, 4985), (18, 5000), (21, 5045), (22, 5051), (23, 5072), (24, 5075), (40, 5222), (60, 5342), (74, 5561), (77, 5591), (80, 5615), (83, 5639), (96, 5738), (102, 5804), (104, 5810), (110, 5867),

Gene: StarStuff\_12 Start: 4697, Stop: 6178, Start Num: 2

Candidate Starts for StarStuff\_12:

(Start: 2 @4697 has 20 MA's), (5, 4742), (16, 4988), (21, 5048), (22, 5054), (23, 5075), (27, 5129), (28, 5135), (44, 5303), (48, 5354), (58, 5504), (64, 5585), (73, 5774), (77, 5816), (86, 5879), (96, 5978), (110, 6107),

Gene: Superchunk\_9 Start: 4337, Stop: 5746, Start Num: 2

Candidate Starts for Superchunk\_9:

(1, 4331), (Start: 2 @4337 has 20 MA's), (16, 4628), (21, 4688), (22, 4694), (23, 4715), (25, 4721), (28, 4769), (44, 4937), (48, 4988), (75, 5417), (81, 5468), (82, 5471), (89, 5531), (90, 5534), (112, 5717),

Gene: SweetiePie\_9 Start: 4694, Stop: 5941, Start Num: 3

Candidate Starts for SweetiePie\_9:

(Start: 3 @4694 has 49 MA's), (4, 4706), (5, 4739), (8, 4826), (10, 4850), (12, 4943), (16, 4985), (18, 5000), (21, 5045), (22, 5051), (23, 5072), (24, 5075), (40, 5222), (60, 5342), (74, 5561), (77, 5591), (80, 5615), (83, 5639), (96, 5738), (102, 5804), (104, 5810), (110, 5867),

Gene: SwirlSquare\_12 Start: 4508, Stop: 5878, Start Num: 3

Candidate Starts for SwirlSquare\_12:

(Start: 3 @4508 has 49 MA's), (10, 4664), (16, 4799), (21, 4859), (22, 4865), (23, 4886), (25, 4892), (28, 4940), (46, 5120), (48, 5159), (62, 5321), (68, 5408), (76, 5555), (81, 5600), (82, 5603), (89, 5663), (90, 5666), (112, 5849),

Gene: TopsytheTRex\_8 Start: 4285, Stop: 5163, Start Num: 2

Candidate Starts for TopsytheTRex\_8:

(Start: 2 @4285 has 20 MA's), (5, 4330), (6, 4393), (8, 4417), (9, 4420), (12, 4534), (16, 4576), (21, 4636), (22, 4642), (25, 4669), (33, 4822), (38, 4846), (49, 4963), (54, 5029), (57, 5047), (59, 5053), (61, 5068), (63, 5125),

Gene: Tomathan\_12 Start: 4697, Stop: 6178, Start Num: 2

Candidate Starts for Tomathan\_12:

(Start: 2 @4697 has 20 MA's), (5, 4742), (16, 4988), (21, 5048), (22, 5054), (23, 5075), (27, 5129), (28, 5135), (44, 5303), (48, 5354), (58, 5504), (64, 5585), (73, 5774), (77, 5816), (86, 5879), (96, 5978), (110, 6107),

Gene: Travvers\_12 Start: 4697, Stop: 6178, Start Num: 2

Candidate Starts for Travvers\_12:

(Start: 2 @4697 has 20 MA's), (5, 4742), (16, 4988), (21, 5048), (22, 5054), (23, 5075), (27, 5129), (28, 5135), (44, 5303), (48, 5354), (58, 5504), (64, 5585), (73, 5774), (77, 5816), (86, 5879), (96, 5978), (110, 6107),

Gene: Trixie\_12 Start: 6376, Stop: 7671, Start Num: 3

Candidate Starts for Trixie\_12:

(Start: 3 @6376 has 49 MA's), (4, 6388), (5, 6421), (8, 6508), (10, 6532), (12, 6625), (16, 6667), (18, 6682), (21, 6727), (22, 6733), (23, 6754), (25, 6760), (60, 7033), (74, 7252), (78, 7279), (83, 7324), (88, 7384), (101, 7510), (110, 7600), (111, 7612),

Gene: Updawg\_11 Start: 5191, Stop: 6495, Start Num: 3

Candidate Starts for Updawg\_11:

(Start: 3 @5191 has 49 MA's), (5, 5236), (8, 5323), (16, 5482), (21, 5542), (22, 5548), (23, 5569), (24, 5572), (28, 5629), (39, 5728), (40, 5731), (52, 5803), (60, 5851), (74, 6070), (78, 6103), (85, 6157), (88, 6208), (94, 6253), (97, 6271), (107, 6388),

Gene: VA6\_9 Start: 4672, Stop: 5973, Start Num: 3

Candidate Starts for VA6\_9:

(Start: 3 @4672 has 49 MA's), (5, 4717), (8, 4804), (10, 4828), (12, 4921), (16, 4963), (18, 4978), (21, 5023), (22, 5029), (23, 5050), (25, 5056), (40, 5212), (52, 5284), (60, 5332), (71, 5455), (74, 5551), (78, 5584), (88, 5689), (93, 5725), (101, 5815), (111, 5917),

Gene: VC3\_12 Start: 4696, Stop: 6177, Start Num: 2

Candidate Starts for VC3\_12:

(Start: 2 @4696 has 20 MA's), (5, 4741), (7, 4825), (16, 4987), (21, 5047), (22, 5053), (23, 5074), (27, 5128), (28, 5134), (44, 5302), (48, 5353), (58, 5503), (64, 5584), (77, 5815), (86, 5878), (96, 5977), (110, 6106),

Gene: WeiHuaDA\_15 Start: 6986, Stop: 8281, Start Num: 3

Candidate Starts for WeiHuaDA\_15:

(Start: 3 @6986 has 49 MA's), (4, 6998), (5, 7031), (8, 7118), (10, 7142), (12, 7235), (16, 7277), (21, 7337), (22, 7343), (23, 7364), (25, 7370), (29, 7454), (37, 7511), (60, 7643), (74, 7862), (78, 7889), (83, 7934), (87, 7976), (88, 7994), (94, 8039), (101, 8120), (109, 8192), (111, 8222),

Gene: WideWale\_11 Start: 5191, Stop: 6495, Start Num: 3

Candidate Starts for WideWale\_11:

(Start: 3 @5191 has 49 MA's), (5, 5236), (8, 5323), (16, 5482), (21, 5542), (22, 5548), (23, 5569), (24, 5572), (28, 5629), (39, 5728), (40, 5731), (52, 5803), (60, 5851), (74, 6070), (78, 6103), (85, 6157), (88, 6208), (94, 6253), (97, 6271), (107, 6388),