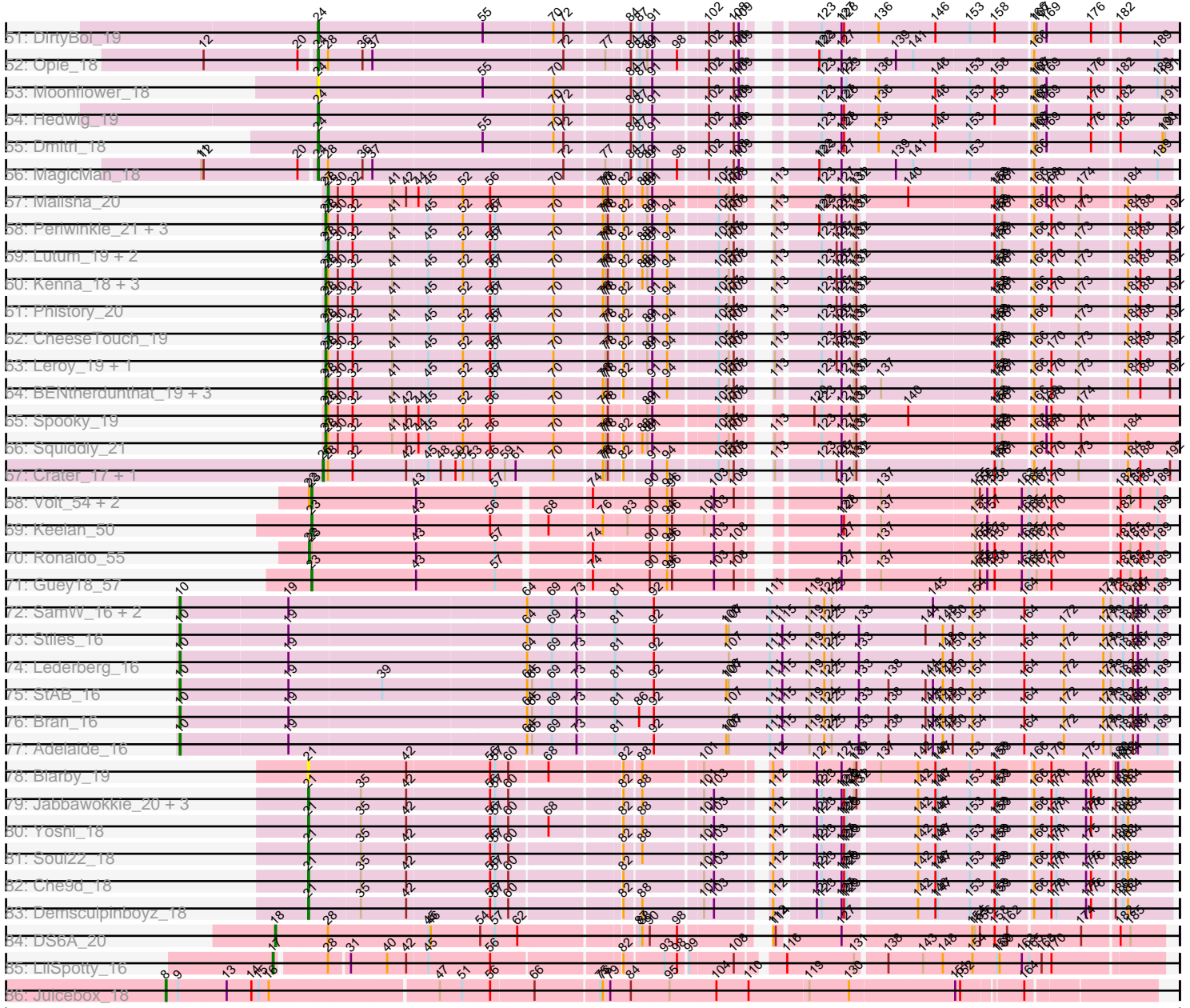




Pham 224375



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 224375 Report

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

Pham number 224375 has 141 members, 27 are drafts.

Phages represented in each track:

- Track 1 : Elliott\_17, Cozz\_17, PsychoKiller\_17, GoldHunter\_18, Sopespian\_17, Burnsey\_17
- Track 2 : AikoCarson\_16, Emalyn\_16
- Track 3 : Agatha\_17, Quasar\_17, Starburst\_18, Carsonalex\_18, Typhonomachy\_18, RedBaron\_18, Socotra\_18, Axym\_17, Nina\_18
- Track 4 : Bavidard\_17, Vine\_18, Yucky\_19
- Track 5 : Nodigi\_19
- Track 6 : Yakult\_18
- Track 7 : Orla\_19
- Track 8 : ChocoMunchkin\_17, CanesSauce\_17
- Track 9 : Gibbous\_17, Dre3\_17
- Track 10 : Feastonyeet\_16, BigChungus\_16
- Track 11 : Amok\_16
- Track 12 : Mayweather\_18, Pons\_17
- Track 13 : SweatNTears\_19, Biskit\_18, Buttrmlkdreams\_17, SketchMex\_16, Blondies\_17
- Track 14 : Margaret\_20
- Track 15 : Jamzy\_20
- Track 16 : CherryonLim\_18
- Track 17 : Yummy\_18, Troje\_17, Horseradish\_18
- Track 18 : Tolls\_19, SteamedHams\_19, BillDoor\_19, Yarn\_16, AndPeggy\_16
- Track 19 : Button\_18
- Track 20 : PotPie\_17, SummitAcademy\_16, Lauer\_16
- Track 21 : ChickenTender\_19
- Track 22 : KayGee\_17, Elinal\_18
- Track 23 : Survivors\_19, Zareef\_21, MaVan\_19
- Track 24 : Hexbug\_19
- Track 25 : MunkgeeRoachy\_17
- Track 26 : HippoPololi\_19
- Track 27 : Cleo\_17
- Track 28 : MAnor\_17
- Track 29 : Nibbles\_19
- Track 30 : SheckWes\_16
- Track 31 : RanchParmCat\_20
- Track 32 : GiKK\_20
- Track 33 : Fribs8\_18
- Track 34 : MScarn\_19

- Track 35 : GTE2\_15
- Track 36 : Azira\_19
- Track 37 : Bowser\_18
- Track 38 : BackstagePass\_18
- Track 39 : Eyes\_18
- Track 40 : Doggs\_17
- Track 41 : GEazy\_18
- Track 42 : BBQValindra\_18
- Track 43 : Kiko\_19
- Track 44 : Coriander\_18
- Track 45 : Schnabeltier\_18
- Track 46 : TaronosaurusRx\_18
- Track 47 : ZAYM\_18
- Track 48 : RayTheFireFly\_18
- Track 49 : Bunker\_18
- Track 50 : HannahD\_18
- Track 51 : DirtyBoi\_19
- Track 52 : Opie\_18
- Track 53 : Moonflower\_18
- Track 54 : Hedwig\_19
- Track 55 : Dmitri\_18
- Track 56 : MagicMan\_18
- Track 57 : Malisha\_20
- Track 58 : Periwinkle\_21, Getalong\_20, Horus\_19, Whitney\_20
- Track 59 : Lutum\_19, Phabuloso\_19, Holliday\_19
- Track 60 : Kenna\_18, Budski\_19, LitninMcQueen\_19, Kamaru\_19
- Track 61 : Phistory\_20
- Track 62 : CheeseTouch\_19
- Track 63 : Leroy\_19, ShawBrad\_19
- Track 64 : BENtherdunthat\_19, Frickyeah\_19, Asapag\_19, BotCity\_20
- Track 65 : Spooky\_19
- Track 66 : Squiddly\_21
- Track 67 : Crater\_17, Apricot\_18
- Track 68 : Volt\_54, Fryberger\_52, Ziko\_55
- Track 69 : Keelan\_50
- Track 70 : Ronaldo\_55
- Track 71 : Guey18\_57
- Track 72 : SamW\_16, Dina\_16, Troy\_16
- Track 73 : Stiles\_16
- Track 74 : Lederberg\_16
- Track 75 : StAB\_16
- Track 76 : Bran\_16
- Track 77 : Adelaide\_16
- Track 78 : Blarby\_19
- Track 79 : Jabbawokkie\_20, Avani\_18, SilverChicken\_18, Zapner\_19
- Track 80 : Yoshi\_18
- Track 81 : Soul22\_18
- Track 82 : Che9d\_18
- Track 83 : Demsculpinboyz\_18
- Track 84 : DS6A\_20
- Track 85 : LilSpotty\_16
- Track 86 : Juicebox\_18

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

The start number called the most often in the published annotations is 25, it was called in 54 of the 114 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Agatha\_17, AikoCarson\_16, Amok\_16, AndPeggy\_16, Axym\_17, Azira\_19, Bavidard\_17, BigChungus\_16, BillDoor\_19, Biskit\_18, Blondies\_17, Burnsey\_17, Button\_18, Buttrmlkdreams\_17, CanesSauce\_17, Carsonalex\_18, CherryonLim\_18, ChickenTender\_19, ChocoMunchkin\_17, Cleo\_17, Cozz\_17, Dre3\_17, Elinal\_18, Elliott\_17, Emalyn\_16, Feastonyeet\_16, Fribs8\_18, GiKK\_20, Gibbous\_17, GoldHunter\_18, Hexbug\_19, HippoPololi\_19, Horseradish\_18, Jamzy\_20, KayGee\_17, Lauer\_16, MAnor\_17, MScarn\_19, MaVan\_19, Margaret\_20, Mayweather\_18, MunkgeeRoachy\_17, Nibbles\_19, Nina\_18, Nodigi\_19, Orla\_19, Pons\_17, PotPie\_17, PsychoKiller\_17, Quasar\_17, RanchParmCat\_20, RedBaron\_18, SheckWes\_16, SketchMex\_16, Socotra\_18, Sopespian\_17, Starburst\_18, SteamedHams\_19, SummitAcademy\_16, Survivors\_19, SweatNTears\_19, Tolls\_19, Troje\_17, Typhonomachy\_18, Vine\_18, Yakult\_18, Yarn\_16, Yucky\_19, Yummy\_18, Zareef\_21,

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

- GTE2\_15,

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

- Adelaide\_16, Apricot\_18, Asapag\_19, Avani\_18, BBQValindra\_18, BENtherdunthat\_19, BackstagePass\_18, Blarby\_19, BotCity\_20, Bowser\_18, Bran\_16, Budski\_19, Bunker\_18, Che9d\_18, CheeseTouch\_19, Coriander\_18, Crater\_17, DS6A\_20, Demsculpinboyz\_18, Dina\_16, DirtyBoi\_19, Dmitri\_18, Doggs\_17, Eyes\_18, Frickyeah\_19, Fryberger\_52, GEazy\_18, Getalong\_20, Guey18\_57, HannahD\_18, Hedwig\_19, Holliday\_19, Horus\_19, Jabbawokkie\_20, Juicebox\_18, Kamaru\_19, Keelan\_50, Kenna\_18, Kiko\_19, Lederberg\_16, Leroy\_19, LilSpotty\_16, LitninMcQueen\_19, Lutum\_19, MagicMan\_18, Malisha\_20, Moonflower\_18, Opie\_18, Periwinkle\_21, Phabuloso\_19, Phistory\_20, RayTheFireFly\_18, Ronaldo\_55, SamW\_16, Schnabeltier\_18, ShawBrad\_19, SilverChicken\_18, Soul22\_18, Spooky\_19, Squiddly\_21, StAB\_16, Stiles\_16, TaronosaurusRx\_18, Troy\_16, Volt\_54, Whitney\_20, Yoshi\_18, ZAYM\_18, Zapner\_19, Ziko\_55,

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

Start 8:

- Found in 1 of 141 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 114
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Juicebox\_18 (singleton),

Start 10:

- Found in 8 of 141 ( 5.7% ) of genes in pham
- Manual Annotations of this start: 8 of 114
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Adelaide\_16 (EP), Bran\_16 (EP), Dina\_16 (EP), Lederberg\_16 (EP), SamW\_16 (EP), StAB\_16 (EP), Stiles\_16 (EP), Troy\_16 (EP),

#### Start 17:

- Found in 1 of 141 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 114
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LilSpotty\_16 (singleton),

#### Start 18:

- Found in 1 of 141 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 114
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DS6A\_20 (singleton),

#### Start 21:

- Found in 9 of 141 ( 6.4% ) of genes in pham
- Manual Annotations of this start: 7 of 114
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Avani\_18 (F2), Blarby\_19 (F), Che9d\_18 (F2), Demsculpinboyz\_18 (F2), Jabbawokkie\_20 (F2), SilverChicken\_18 (F2), Soul22\_18 (F2), Yoshi\_18 (F2), Zapner\_19 (F2),

#### Start 22:

- Found in 4 of 141 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 1 of 114
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Ronaldo\_55 (DP),

#### Start 23:

- Found in 6 of 141 ( 4.3% ) of genes in pham
- Manual Annotations of this start: 5 of 114
- Called 83.3% of time when present
- Phage (with cluster) where this start called: Fryberger\_52 (DP), Guey18\_57 (DP), Keelan\_50 (DP), Volt\_54 (DP), Ziko\_55 (DP),

#### Start 24:

- Found in 20 of 141 ( 14.2% ) of genes in pham
- Manual Annotations of this start: 13 of 114
- Called 85.0% of time when present
- Phage (with cluster) where this start called: BBQValindra\_18 (DB), BackstagePass\_18 (DB), Bowser\_18 (DB), Bunker\_18 (DB), Coriander\_18 (DB), DirtyBoi\_19 (DB), Dmitri\_18 (DB), Doggs\_17 (DB), Eyes\_18 (DB), HannahD\_18 (DB), Hedwig\_19 (DB), Kiko\_19 (DB), MagicMan\_18 (DB), Moonflower\_18 (DB), Opie\_18 (DB), RayTheFireFly\_18 (DB), TaronosaurusRx\_18 (DB),

#### Start 25:

- Found in 71 of 141 ( 50.4% ) of genes in pham
- Manual Annotations of this start: 54 of 114
- Called 98.6% of time when present
- Phage (with cluster) where this start called: Agatha\_17 (CT), AikoCarson\_16 (CT), Amok\_16 (CT), AndPeggy\_16 (CT), Axym\_17 (CT), Azira\_19 (CT), Bavidard\_17 (CT),

BigChungus\_16 (CT), BillDoor\_19 (CT), Biskit\_18 (CT), Blondies\_17 (CT), Burnsey\_17 (CT), Button\_18 (CT), Buttrmlkdreams\_17 (CT), CanesSauce\_17 (CT), Carsonalex\_18 (CT), CherryonLim\_18 (CT), ChickenTender\_19 (CT), ChocoMunchkin\_17 (CT), Cleo\_17 (CT), Cozz\_17 (CT), Dre3\_17 (CT), Elinal\_18 (CT), Elliott\_17 (CT), Emalyn\_16 (CT), Feastonyeet\_16 (CT), Fribs8\_18 (CT), GiKK\_20 (CT), Gibbous\_17 (CT), GoldHunter\_18 (CT), Hexbug\_19 (CT), HippoPololi\_19 (CT), Horseradish\_18 (CT), Jamzy\_20 (CT), KayGee\_17 (CT), Lauer\_16 (CT), MAnor\_17 (CT), MScarn\_19 (CT), MaVan\_19 (CT), Margaret\_20 (CT), Mayweather\_18 (CT), MunkgeeRoachy\_17 (CT), Nibbles\_19 (CT), Nina\_18 (CT), Nodigi\_19 (CT), Orla\_19 (CT), Pons\_17 (CT), PotPie\_17 (CT), PsychoKiller\_17 (CT), Quasar\_17 (CT), RanchParmCat\_20 (CT), RedBaron\_18 (CT), SheckWes\_16 (CT), SketchMex\_16 (CT), Socotra\_18 (CT), Sopespian\_17 (CT), Starburst\_18 (CT), SteamedHams\_19 (CT), SummitAcademy\_16 (CT), Survivors\_19 (CT), SweatNTears\_19 (CT), Tolls\_19 (CT), Troje\_17 (CT), Typhonmachy\_18 (CT), Vine\_18 (CT), Yakult\_18 (CT), Yarn\_16 (CT), Yucky\_19 (CT), Yummy\_18 (CT), Zareef\_21 (CT),

#### Start 26:

- Found in 2 of 141 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 114
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Apricot\_18 (DN3), Crater\_17 (DN3),

#### Start 27:

- Found in 22 of 141 ( 15.6% ) of genes in pham
- Manual Annotations of this start: 14 of 114
- Called 77.3% of time when present
- Phage (with cluster) where this start called: Asapag\_19 (DN1), BENtherdunthat\_19 (DN1), BotCity\_20 (DN), Budski\_19 (DN), Frickyeah\_19 (DN1), Getalong\_20 (DN1), Horus\_19 (DN1), Kamaru\_19 (DN1), Kenna\_18 (DN1), Leroy\_19 (DN1), LitninMcQueen\_19 (DN1), Periwinkle\_21 (DN1), Phistory\_20 (DN1), ShawBrad\_19 (DN1), Spooky\_19 (DN2), Squiddly\_21 (DN2), Whitney\_20 (DN1),

#### Start 28:

- Found in 38 of 141 ( 27.0% ) of genes in pham
- Manual Annotations of this start: 6 of 114
- Called 15.8% of time when present
- Phage (with cluster) where this start called: CheeseTouch\_19 (DN1), GEazy\_18 (DB), Holliday\_19 (DN1), Lutum\_19 (DN1), Malisha\_20 (DN), Phabuloso\_19 (DN1),

#### Start 33:

- Found in 63 of 141 ( 44.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 1.6% of time when present
- Phage (with cluster) where this start called: GTE2\_15 (CT),

#### Start 37:

- Found in 10 of 141 ( 7.1% ) of genes in pham
- Manual Annotations of this start: 1 of 114
- Called 20.0% of time when present
- Phage (with cluster) where this start called: Schnabeltier\_18 (DB), ZAYM\_18 (DB),

### Summary by clusters:

There are 11 clusters represented in this pham: DN, singleton, F, DB, F2, DN1, DN3, DN2, EP, DP, CT,

Info for manual annotations of cluster CT:

- Start number 25 was manually annotated 54 times for cluster CT.

Info for manual annotations of cluster DB:

- Start number 24 was manually annotated 13 times for cluster DB.
- Start number 28 was manually annotated 1 time for cluster DB.
- Start number 37 was manually annotated 1 time for cluster DB.

Info for manual annotations of cluster DN:

- Start number 27 was manually annotated 1 time for cluster DN.
- Start number 28 was manually annotated 1 time for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 27 was manually annotated 11 times for cluster DN1.
- Start number 28 was manually annotated 4 times for cluster DN1.

Info for manual annotations of cluster DN2:

- Start number 27 was manually annotated 2 times for cluster DN2.

Info for manual annotations of cluster DN3:

- Start number 26 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster DP:

- Start number 22 was manually annotated 1 time for cluster DP.
- Start number 23 was manually annotated 5 times for cluster DP.

Info for manual annotations of cluster EP:

- Start number 10 was manually annotated 8 times for cluster EP.

Info for manual annotations of cluster F2:

- Start number 21 was manually annotated 7 times for cluster F2.

### ***Gene Information:***

Gene: Adelaide\_16 Start: 15151, Stop: 16317, Start Num: 10

Candidate Starts for Adelaide\_16:

(Start: 10 @15151 has 8 MA's), (19, 15280), (64, 15562), (65, 15568), (69, 15592), (73, 15619), (81, 15661), (92, 15706), (106, 15793), (107, 15796), (111, 15844), (115, 15859), (119, 15892), (124, 15910), (125, 15919), (133, 15952), (138, 15985), (144, 16030), (145, 16039), (148, 16051), (150, 16063), (154, 16087), (164, 16144), (172, 16192), (178, 16240), (179, 16249), (183, 16264), (186, 16276), (187, 16282), (189, 16306),

Gene: Agatha\_17 Start: 14764, Stop: 15735, Start Num: 25

Candidate Starts for Agatha\_17:

(Start: 25 @14764 has 54 MA's), (33, 14809), (38, 14830), (45, 14893), (49, 14917), (53, 14947), (59, 14986), (67, 15025), (70, 15034), (71, 15037), (80, 15103), (91, 15151), (100, 15193), (108, 15241),



(117, 15292), (127, 15352), (131, 15367), (132, 15370), (134, 15388), (135, 15394), (141, 15439), (146, 15466), (149, 15484), (158, 15535), (159, 15538), (163, 15568), (165, 15577), (168, 15592), (176, 15649), (187, 15697), (189, 15721), (190, 15727),

Gene: AikoCarson\_16 Start: 14069, Stop: 15040, Start Num: 25

Candidate Starts for AikoCarson\_16:

(Start: 25 @14069 has 54 MA's), (33, 14114), (38, 14135), (42, 14171), (53, 14252), (67, 14330), (70, 14339), (71, 14342), (76, 14396), (80, 14408), (91, 14456), (100, 14498), (108, 14546), (117, 14597), (121, 14627), (127, 14657), (131, 14672), (132, 14675), (146, 14771), (149, 14789), (159, 14843), (160, 14846), (163, 14873), (165, 14882), (168, 14897), (176, 14954), (187, 15002), (189, 15026), (190, 15032),

Gene: Amok\_16 Start: 14066, Stop: 15037, Start Num: 25

Candidate Starts for Amok\_16:

(Start: 25 @14066 has 54 MA's), (33, 14111), (38, 14132), (42, 14168), (53, 14249), (67, 14327), (70, 14336), (71, 14339), (76, 14393), (80, 14405), (91, 14453), (100, 14495), (108, 14543), (117, 14594), (121, 14624), (127, 14654), (131, 14669), (132, 14672), (146, 14768), (149, 14786), (159, 14840), (160, 14843), (163, 14870), (165, 14879), (168, 14894), (170, 14903), (176, 14951), (187, 14999), (189, 15023), (190, 15029),

Gene: AndPeggy\_16 Start: 14429, Stop: 15400, Start Num: 25

Candidate Starts for AndPeggy\_16:

(Start: 25 @14429 has 54 MA's), (33, 14474), (38, 14495), (40, 14510), (42, 14531), (49, 14582), (53, 14612), (57, 14639), (67, 14690), (70, 14699), (71, 14702), (76, 14756), (80, 14768), (91, 14816), (108, 14906), (117, 14957), (121, 14987), (127, 15017), (132, 15035), (146, 15131), (149, 15149), (158, 15200), (159, 15203), (163, 15233), (165, 15242), (168, 15257), (176, 15314), (187, 15362), (189, 15386), (190, 15392),

Gene: Apricot\_18 Start: 15047, Stop: 15973, Start Num: 26

Candidate Starts for Apricot\_18:

(Start: 26 @15047 has 2 MA's), (Start: 28 @15053 has 6 MA's), (32, 15083), (42, 15143), (45, 15167), (48, 15182), (50, 15197), (52, 15206), (53, 15218), (56, 15239), (59, 15257), (61, 15269), (70, 15314), (76, 15368), (77, 15371), (78, 15374), (82, 15386), (91, 15416), (94, 15434), (105, 15488), (107, 15500), (108, 15506), (113, 15527), (123, 15575), (126, 15593), (127, 15599), (131, 15614), (132, 15617), (158, 15770), (159, 15773), (161, 15779), (166, 15812), (170, 15830), (173, 15863), (184, 15914), (188, 15929), (192, 15965),

Gene: Asapag\_19 Start: 15508, Stop: 16431, Start Num: 27

Candidate Starts for Asapag\_19:

(Start: 27 @15508 has 14 MA's), (Start: 28 @15511 has 6 MA's), (30, 15523), (32, 15541), (41, 15586), (45, 15625), (52, 15664), (56, 15697), (57, 15703), (70, 15772), (76, 15826), (77, 15829), (78, 15832), (82, 15844), (91, 15874), (94, 15892), (105, 15946), (107, 15958), (108, 15964), (113, 15985), (123, 16033), (127, 16057), (131, 16072), (132, 16075), (137, 16096), (158, 16228), (159, 16231), (161, 16237), (166, 16270), (170, 16288), (173, 16321), (184, 16372), (188, 16387), (192, 16423),

Gene: Avani\_18 Start: 12813, Stop: 13742, Start Num: 21

Candidate Starts for Avani\_18:

(Start: 21 @12813 has 7 MA's), (35, 12873), (42, 12924), (56, 13023), (57, 13029), (60, 13044), (82, 13164), (88, 13182), (101, 13248), (103, 13260), (112, 13305), (121, 13344), (123, 13350), (127, 13374), (128, 13377), (129, 13380), (131, 13389), (132, 13392), (142, 13458), (146, 13479), (147, 13482), (153, 13518), (158, 13545), (159, 13548), (166, 13587), (170, 13605), (171, 13611), (175, 13647), (176, 13653), (180, 13677), (183, 13683), (184, 13689),

Gene: Axym\_17 Start: 14764, Stop: 15735, Start Num: 25

Candidate Starts for Axym\_17:

(Start: 25 @14764 has 54 MA's), (33, 14809), (38, 14830), (45, 14893), (49, 14917), (53, 14947), (59, 14986), (67, 15025), (70, 15034), (71, 15037), (80, 15103), (91, 15151), (100, 15193), (108, 15241), (117, 15292), (127, 15352), (131, 15367), (132, 15370), (134, 15388), (135, 15394), (141, 15439), (146, 15466), (149, 15484), (158, 15535), (159, 15538), (163, 15568), (165, 15577), (168, 15592), (176, 15649), (187, 15697), (189, 15721), (190, 15727),

Gene: Azira\_19 Start: 15745, Stop: 16710, Start Num: 25

Candidate Starts for Azira\_19:

(Start: 25 @15745 has 54 MA's), (33, 15790), (40, 15826), (42, 15847), (45, 15874), (53, 15928), (67, 16009), (70, 16018), (71, 16021), (80, 16090), (91, 16138), (96, 16162), (108, 16228), (111, 16243), (118, 16282), (146, 16438), (158, 16504), (159, 16507), (160, 16510), (163, 16537), (165, 16546), (170, 16570), (173, 16603), (177, 16621), (186, 16666), (189, 16696), (190, 16702),

Gene: BBQValindra\_18 Start: 15702, Stop: 16631, Start Num: 24

Candidate Starts for BBQValindra\_18:

(6, 15468), (12, 15567), (20, 15681), (Start: 24 @15702 has 13 MA's), (Start: 28 @15711 has 6 MA's), (36, 15753), (Start: 37 @15765 has 1 MA's), (72, 15987), (84, 16056), (87, 16062), (89, 16071), (91, 16077), (98, 16107), (102, 16137), (108, 16167), (109, 16173), (123, 16236), (127, 16260), (139, 16317), (141, 16338), (153, 16404), (166, 16473), (185, 16578), (189, 16611),

Gene: BENtherdunthat\_19 Start: 15508, Stop: 16431, Start Num: 27

Candidate Starts for BENtherdunthat\_19:

(Start: 27 @15508 has 14 MA's), (Start: 28 @15511 has 6 MA's), (30, 15523), (32, 15541), (41, 15586), (45, 15625), (52, 15664), (56, 15697), (57, 15703), (70, 15772), (76, 15826), (77, 15829), (78, 15832), (82, 15844), (91, 15874), (94, 15892), (105, 15946), (107, 15958), (108, 15964), (113, 15985), (123, 16033), (127, 16057), (131, 16072), (132, 16075), (137, 16096), (158, 16228), (159, 16231), (161, 16237), (166, 16270), (170, 16288), (173, 16321), (184, 16372), (188, 16387), (192, 16423),

Gene: BackstagePass\_18 Start: 15842, Stop: 16771, Start Num: 24

Candidate Starts for BackstagePass\_18:

(Start: 24 @15842 has 13 MA's), (Start: 28 @15851 has 6 MA's), (36, 15893), (Start: 37 @15905 has 1 MA's), (56, 16043), (72, 16127), (84, 16196), (87, 16202), (89, 16211), (91, 16217), (98, 16247), (102, 16277), (108, 16307), (109, 16313), (123, 16376), (127, 16400), (139, 16457), (141, 16478), (153, 16544), (166, 16613), (189, 16751),

Gene: Bavilard\_17 Start: 15254, Stop: 16210, Start Num: 25

Candidate Starts for Bavilard\_17:

(Start: 25 @15254 has 54 MA's), (33, 15299), (42, 15356), (45, 15383), (53, 15437), (57, 15464), (67, 15515), (68, 15518), (70, 15524), (71, 15527), (76, 15581), (81, 15596), (91, 15641), (96, 15665), (99, 15680), (108, 15731), (127, 15827), (159, 16013), (163, 16043), (165, 16052), (170, 16076), (173, 16109), (189, 16196), (190, 16202),

Gene: BigChungus\_16 Start: 14508, Stop: 15464, Start Num: 25

Candidate Starts for BigChungus\_16:

(Start: 25 @14508 has 54 MA's), (33, 14553), (42, 14610), (45, 14637), (53, 14691), (57, 14718), (67, 14769), (68, 14772), (70, 14778), (71, 14781), (76, 14835), (81, 14850), (91, 14895), (96, 14919), (108, 14985), (127, 15081), (159, 15267), (163, 15297), (165, 15306), (170, 15330), (173, 15363), (189, 15450), (190, 15456),

Gene: BillDoor\_19 Start: 14397, Stop: 15368, Start Num: 25

Candidate Starts for BillDoor\_19:

(Start: 25 @14397 has 54 MA's), (33, 14442), (38, 14463), (40, 14478), (42, 14499), (49, 14550), (53, 14580), (57, 14607), (67, 14658), (70, 14667), (71, 14670), (76, 14724), (80, 14736), (91, 14784), (108, 14874), (117, 14925), (121, 14955), (127, 14985), (132, 15003), (146, 15099), (149, 15117), (158, 15168), (159, 15171), (163, 15201), (165, 15210), (168, 15225), (176, 15282), (187, 15330), (189, 15354), (190, 15360),

Gene: Biskit\_18 Start: 14412, Stop: 15383, Start Num: 25

Candidate Starts for Biskit\_18:

(Start: 25 @14412 has 54 MA's), (33, 14457), (38, 14478), (45, 14541), (49, 14565), (53, 14595), (67, 14673), (70, 14682), (71, 14685), (80, 14751), (91, 14799), (100, 14841), (105, 14871), (108, 14889), (117, 14940), (127, 15000), (131, 15015), (132, 15018), (135, 15042), (146, 15114), (149, 15132), (158, 15183), (159, 15186), (163, 15216), (165, 15225), (168, 15240), (176, 15297), (187, 15345), (189, 15369), (190, 15375),

Gene: Blarby\_19 Start: 13331, Stop: 14263, Start Num: 21

Candidate Starts for Blarby\_19:

(Start: 21 @13331 has 7 MA's), (42, 13442), (56, 13541), (57, 13547), (60, 13562), (68, 13604), (82, 13682), (88, 13700), (101, 13766), (112, 13823), (121, 13862), (127, 13892), (131, 13907), (132, 13910), (137, 13931), (142, 13976), (146, 13997), (147, 14000), (153, 14036), (158, 14063), (159, 14066), (166, 14105), (170, 14123), (175, 14165), (180, 14195), (181, 14198), (183, 14204), (184, 14210),

Gene: Blondies\_17 Start: 14395, Stop: 15366, Start Num: 25

Candidate Starts for Blondies\_17:

(Start: 25 @14395 has 54 MA's), (33, 14440), (38, 14461), (45, 14524), (49, 14548), (53, 14578), (67, 14656), (70, 14665), (71, 14668), (80, 14734), (91, 14782), (100, 14824), (105, 14854), (108, 14872), (117, 14923), (127, 14983), (131, 14998), (132, 15001), (135, 15025), (146, 15097), (149, 15115), (158, 15166), (159, 15169), (163, 15199), (165, 15208), (168, 15223), (176, 15280), (187, 15328), (189, 15352), (190, 15358),

Gene: BotCity\_20 Start: 15506, Stop: 16429, Start Num: 27

Candidate Starts for BotCity\_20:

(Start: 27 @15506 has 14 MA's), (Start: 28 @15509 has 6 MA's), (30, 15521), (32, 15539), (41, 15584), (45, 15623), (52, 15662), (56, 15695), (57, 15701), (70, 15770), (76, 15824), (77, 15827), (78, 15830), (82, 15842), (91, 15872), (94, 15890), (105, 15944), (107, 15956), (108, 15962), (113, 15983), (123, 16031), (127, 16055), (131, 16070), (132, 16073), (137, 16094), (158, 16226), (159, 16229), (161, 16235), (166, 16268), (170, 16286), (173, 16319), (184, 16370), (188, 16385), (192, 16421),

Gene: Bowser\_18 Start: 15695, Stop: 16621, Start Num: 24

Candidate Starts for Bowser\_18:

(1, 15356), (4, 15431), (20, 15677), (Start: 24 @15695 has 13 MA's), (Start: 28 @15704 has 6 MA's), (36, 15746), (Start: 37 @15758 has 1 MA's), (72, 15980), (77, 16025), (84, 16049), (87, 16055), (89, 16064), (91, 16070), (98, 16100), (102, 16130), (108, 16160), (109, 16166), (122, 16226), (123, 16229), (127, 16253), (139, 16310), (141, 16331), (153, 16397), (166, 16466), (174, 16520), (189, 16604),

Gene: Bran\_16 Start: 15156, Stop: 16322, Start Num: 10

Candidate Starts for Bran\_16:

(Start: 10 @15156 has 8 MA's), (19, 15285), (64, 15567), (65, 15573), (69, 15597), (73, 15624), (81, 15666), (86, 15693), (92, 15711), (107, 15801), (111, 15849), (115, 15864), (119, 15897), (124, 15915), (125, 15924), (133, 15957), (138, 15990), (144, 16035), (145, 16044), (148, 16056), (150, 16068), (154, 16092), (164, 16149), (172, 16197), (178, 16245), (179, 16254), (183, 16269), (186, 16281), (187, 16287), (189, 16311),

Gene: Budski\_19 Start: 15501, Stop: 16424, Start Num: 27

Candidate Starts for Budski\_19:

(Start: 27 @15501 has 14 MA's), (Start: 28 @15504 has 6 MA's), (30, 15516), (32, 15534), (41, 15579), (45, 15618), (52, 15657), (56, 15690), (57, 15696), (70, 15765), (76, 15819), (77, 15822), (78, 15825), (82, 15837), (88, 15855), (89, 15861), (91, 15867), (94, 15885), (105, 15939), (107, 15951), (108, 15957), (113, 15978), (123, 16026), (126, 16044), (127, 16050), (131, 16065), (132, 16068), (158, 16221), (159, 16224), (161, 16230), (166, 16263), (170, 16281), (173, 16314), (184, 16365), (188, 16380), (192, 16416),

Gene: Bunker\_18 Start: 15822, Stop: 16751, Start Num: 24

Candidate Starts for Bunker\_18:

(5, 15585), (20, 15801), (Start: 24 @15822 has 13 MA's), (Start: 28 @15831 has 6 MA's), (36, 15873), (Start: 37 @15885 has 1 MA's), (72, 16107), (77, 16152), (84, 16176), (87, 16182), (89, 16191), (91, 16197), (98, 16227), (102, 16257), (108, 16287), (109, 16293), (123, 16356), (127, 16380), (139, 16437), (141, 16458), (153, 16524), (166, 16593), (189, 16731),

Gene: Burnsey\_17 Start: 14765, Stop: 15736, Start Num: 25

Candidate Starts for Burnsey\_17:

(Start: 25 @14765 has 54 MA's), (33, 14810), (38, 14831), (45, 14894), (49, 14918), (53, 14948), (59, 14987), (67, 15026), (70, 15035), (71, 15038), (80, 15104), (91, 15152), (100, 15194), (108, 15242), (117, 15293), (127, 15353), (131, 15368), (132, 15371), (134, 15389), (135, 15395), (141, 15440), (146, 15467), (149, 15485), (159, 15539), (163, 15569), (165, 15578), (168, 15593), (176, 15650), (187, 15698), (189, 15722), (190, 15728),

Gene: Button\_18 Start: 13831, Stop: 14790, Start Num: 25

Candidate Starts for Button\_18:

(Start: 25 @13831 has 54 MA's), (34, 13879), (36, 13882), (45, 13960), (58, 14047), (70, 14101), (81, 14173), (85, 14197), (91, 14218), (108, 14308), (111, 14323), (115, 14338), (127, 14410), (141, 14497), (158, 14590), (159, 14593), (163, 14623), (165, 14632), (170, 14656), (173, 14689), (175, 14698), (176, 14704), (188, 14755), (189, 14776), (190, 14782),

Gene: Buttrmlkdreams\_17 Start: 14394, Stop: 15365, Start Num: 25

Candidate Starts for Buttrmlkdreams\_17:

(Start: 25 @14394 has 54 MA's), (33, 14439), (38, 14460), (45, 14523), (49, 14547), (53, 14577), (67, 14655), (70, 14664), (71, 14667), (80, 14733), (91, 14781), (100, 14823), (105, 14853), (108, 14871), (117, 14922), (127, 14982), (131, 14997), (132, 15000), (135, 15024), (146, 15096), (149, 15114), (158, 15165), (159, 15168), (163, 15198), (165, 15207), (168, 15222), (176, 15279), (187, 15327), (189, 15351), (190, 15357),

Gene: CanesSauce\_17 Start: 14430, Stop: 15401, Start Num: 25

Candidate Starts for CanesSauce\_17:

(Start: 25 @14430 has 54 MA's), (33, 14475), (38, 14496), (40, 14511), (42, 14532), (49, 14583), (53, 14613), (57, 14640), (67, 14691), (70, 14700), (71, 14703), (76, 14757), (80, 14769), (91, 14817), (97, 14844), (108, 14907), (117, 14958), (121, 14988), (127, 15018), (132, 15036), (146, 15132), (149, 15150), (158, 15201), (159, 15204), (163, 15234), (165, 15243), (168, 15258), (176, 15315), (187, 15363), (189, 15387), (190, 15393),

Gene: Carsonalex\_18 Start: 14822, Stop: 15793, Start Num: 25

Candidate Starts for Carsonalex\_18:

(Start: 25 @14822 has 54 MA's), (33, 14867), (38, 14888), (45, 14951), (49, 14975), (53, 15005), (59, 15044), (67, 15083), (70, 15092), (71, 15095), (80, 15161), (91, 15209), (100, 15251), (108, 15299), (117, 15350), (127, 15410), (131, 15425), (132, 15428), (134, 15446), (135, 15452), (141, 15497),

(146, 15524), (149, 15542), (158, 15593), (159, 15596), (163, 15626), (165, 15635), (168, 15650), (176, 15707), (187, 15755), (189, 15779), (190, 15785),

Gene: Che9d\_18 Start: 12821, Stop: 13750, Start Num: 21

Candidate Starts for Che9d\_18:

(Start: 21 @12821 has 7 MA's), (35, 12881), (42, 12932), (56, 13031), (57, 13037), (60, 13052), (82, 13172), (101, 13256), (103, 13268), (112, 13313), (121, 13352), (123, 13358), (127, 13382), (128, 13385), (129, 13388), (142, 13466), (146, 13487), (147, 13490), (153, 13526), (158, 13553), (159, 13556), (166, 13595), (170, 13613), (171, 13619), (175, 13655), (176, 13661), (180, 13685), (183, 13691), (184, 13697),

Gene: CheeseTouch\_19 Start: 15504, Stop: 16424, Start Num: 28

Candidate Starts for CheeseTouch\_19:

(Start: 27 @15501 has 14 MA's), (Start: 28 @15504 has 6 MA's), (30, 15516), (32, 15534), (41, 15579), (45, 15618), (52, 15657), (56, 15690), (57, 15696), (70, 15765), (77, 15822), (78, 15825), (82, 15837), (89, 15861), (91, 15867), (94, 15885), (105, 15939), (107, 15951), (108, 15957), (113, 15978), (123, 16026), (126, 16044), (127, 16050), (131, 16065), (132, 16068), (158, 16221), (159, 16224), (161, 16230), (166, 16263), (173, 16314), (184, 16365), (188, 16380), (192, 16416),

Gene: CherryonLim\_18 Start: 15217, Stop: 16173, Start Num: 25

Candidate Starts for CherryonLim\_18:

(Start: 25 @15217 has 54 MA's), (33, 15262), (45, 15346), (53, 15400), (57, 15427), (67, 15478), (68, 15481), (70, 15487), (71, 15490), (81, 15559), (91, 15604), (96, 15628), (108, 15694), (127, 15790), (155, 15952), (158, 15973), (159, 15976), (163, 16006), (165, 16015), (173, 16072), (189, 16159), (190, 16165),

Gene: ChickenTender\_19 Start: 14814, Stop: 15800, Start Num: 25

Candidate Starts for ChickenTender\_19:

(Start: 25 @14814 has 54 MA's), (30, 14835), (33, 14859), (38, 14880), (40, 14895), (49, 14967), (53, 14997), (67, 15075), (70, 15084), (71, 15087), (76, 15141), (80, 15153), (91, 15201), (94, 15219), (100, 15243), (108, 15291), (117, 15357), (127, 15417), (131, 15432), (132, 15435), (135, 15459), (146, 15531), (149, 15549), (158, 15600), (159, 15603), (163, 15633), (165, 15642), (168, 15657), (176, 15714), (187, 15762), (189, 15786), (190, 15792),

Gene: ChocoMunchkin\_17 Start: 14430, Stop: 15401, Start Num: 25

Candidate Starts for ChocoMunchkin\_17:

(Start: 25 @14430 has 54 MA's), (33, 14475), (38, 14496), (40, 14511), (42, 14532), (49, 14583), (53, 14613), (57, 14640), (67, 14691), (70, 14700), (71, 14703), (76, 14757), (80, 14769), (91, 14817), (97, 14844), (108, 14907), (117, 14958), (121, 14988), (127, 15018), (132, 15036), (146, 15132), (149, 15150), (158, 15201), (159, 15204), (163, 15234), (165, 15243), (168, 15258), (176, 15315), (187, 15363), (189, 15387), (190, 15393),

Gene: Cleo\_17 Start: 15020, Stop: 15991, Start Num: 25

Candidate Starts for Cleo\_17:

(15, 14945), (Start: 25 @15020 has 54 MA's), (33, 15065), (45, 15149), (53, 15203), (63, 15260), (67, 15284), (70, 15293), (71, 15296), (76, 15353), (91, 15413), (94, 15431), (108, 15503), (111, 15524), (146, 15719), (159, 15788), (160, 15791), (163, 15818), (165, 15827), (170, 15851), (173, 15884), (177, 15902), (186, 15947), (189, 15977),

Gene: Coriander\_18 Start: 16561, Stop: 17508, Start Num: 24

Candidate Starts for Coriander\_18:

(Start: 24 @16561 has 13 MA's), (55, 16756), (70, 16837), (72, 16849), (84, 16921), (87, 16927), (91, 16942), (108, 17032), (109, 17038), (123, 17101), (127, 17125), (128, 17128), (129, 17131), (136,

17167), (146, 17236), (153, 17278), (158, 17305), (166, 17347), (167, 17350), (169, 17362), (182, 17437), (191, 17491),

Gene: Cozz\_17 Start: 14765, Stop: 15736, Start Num: 25

Candidate Starts for Cozz\_17:

(Start: 25 @14765 has 54 MA's), (33, 14810), (38, 14831), (45, 14894), (49, 14918), (53, 14948), (59, 14987), (67, 15026), (70, 15035), (71, 15038), (80, 15104), (91, 15152), (100, 15194), (108, 15242), (117, 15293), (127, 15353), (131, 15368), (132, 15371), (134, 15389), (135, 15395), (141, 15440), (146, 15467), (149, 15485), (159, 15539), (163, 15569), (165, 15578), (168, 15593), (176, 15650), (187, 15698), (189, 15722), (190, 15728),

Gene: Crater\_17 Start: 15047, Stop: 15973, Start Num: 26

Candidate Starts for Crater\_17:

(Start: 26 @15047 has 2 MA's), (Start: 28 @15053 has 6 MA's), (32, 15083), (42, 15143), (45, 15167), (48, 15182), (50, 15197), (52, 15206), (53, 15218), (56, 15239), (59, 15257), (61, 15269), (70, 15314), (76, 15368), (77, 15371), (78, 15374), (82, 15386), (91, 15416), (94, 15434), (105, 15488), (107, 15500), (108, 15506), (113, 15527), (123, 15575), (126, 15593), (127, 15599), (131, 15614), (132, 15617), (158, 15770), (159, 15773), (161, 15779), (166, 15812), (170, 15830), (173, 15863), (184, 15914), (188, 15929), (192, 15965),

Gene: DS6A\_20 Start: 16001, Stop: 16972, Start Num: 18

Candidate Starts for DS6A\_20:

(Start: 18 @16001 has 1 MA's), (Start: 28 @16064 has 6 MA's), (45, 16178), (46, 16181), (54, 16241), (57, 16259), (62, 16286), (87, 16415), (88, 16418), (90, 16427), (98, 16460), (112, 16538), (114, 16541), (127, 16613), (154, 16760), (155, 16763), (156, 16769), (158, 16784), (162, 16799), (174, 16880), (182, 16919), (185, 16931),

Gene: Demsculpinboyz\_18 Start: 12806, Stop: 13735, Start Num: 21

Candidate Starts for Demsculpinboyz\_18:

(Start: 21 @12806 has 7 MA's), (35, 12866), (42, 12917), (56, 13016), (57, 13022), (60, 13037), (82, 13157), (88, 13175), (101, 13241), (103, 13253), (112, 13298), (121, 13337), (123, 13343), (127, 13367), (128, 13370), (129, 13373), (142, 13451), (146, 13472), (147, 13475), (153, 13511), (158, 13538), (159, 13541), (166, 13580), (170, 13598), (171, 13604), (175, 13640), (176, 13646), (180, 13670), (183, 13676), (184, 13682),

Gene: Dina\_16 Start: 15119, Stop: 16285, Start Num: 10

Candidate Starts for Dina\_16:

(Start: 10 @15119 has 8 MA's), (19, 15248), (64, 15530), (69, 15560), (73, 15587), (81, 15629), (92, 15674), (111, 15812), (119, 15860), (124, 15878), (125, 15887), (145, 16007), (154, 16055), (164, 16112), (178, 16208), (179, 16217), (183, 16232), (186, 16244), (187, 16250), (189, 16274),

Gene: DirtyBoi\_19 Start: 16014, Stop: 16961, Start Num: 24

Candidate Starts for DirtyBoi\_19:

(Start: 24 @16014 has 13 MA's), (55, 16209), (70, 16290), (72, 16302), (84, 16374), (87, 16380), (91, 16395), (102, 16455), (108, 16485), (109, 16491), (123, 16554), (127, 16578), (128, 16581), (136, 16620), (146, 16689), (153, 16731), (158, 16758), (166, 16800), (167, 16803), (169, 16815), (176, 16866), (182, 16890),

Gene: Dmitri\_18 Start: 16558, Stop: 17505, Start Num: 24

Candidate Starts for Dmitri\_18:

(Start: 24 @16558 has 13 MA's), (55, 16753), (70, 16834), (72, 16846), (84, 16918), (87, 16924), (91, 16939), (102, 16999), (108, 17029), (109, 17035), (123, 17098), (127, 17122), (128, 17125), (136, 17164), (146, 17233), (153, 17275), (166, 17344), (167, 17347), (169, 17359), (176, 17410), (182,

17434), (190, 17485), (191, 17488),

Gene: Doggs\_17 Start: 16261, Stop: 17208, Start Num: 24

Candidate Starts for Doggs\_17:

(Start: 24 @16261 has 13 MA's), (55, 16456), (70, 16537), (72, 16549), (84, 16621), (87, 16627), (91, 16642), (102, 16702), (108, 16732), (109, 16738), (123, 16801), (127, 16825), (128, 16828), (136, 16867), (146, 16936), (153, 16978), (158, 17005), (163, 17038), (166, 17047), (167, 17050), (169, 17062), (176, 17113), (182, 17137), (190, 17188), (191, 17191),

Gene: Dre3\_17 Start: 14967, Stop: 15938, Start Num: 25

Candidate Starts for Dre3\_17:

(15, 14892), (Start: 25 @14967 has 54 MA's), (33, 15012), (45, 15096), (53, 15150), (63, 15207), (67, 15231), (70, 15240), (71, 15243), (76, 15300), (91, 15360), (94, 15378), (108, 15450), (111, 15471), (127, 15552), (146, 15666), (159, 15735), (160, 15738), (163, 15765), (165, 15774), (170, 15798), (173, 15831), (177, 15849), (186, 15894), (189, 15924),

Gene: Elinal\_18 Start: 14465, Stop: 15421, Start Num: 25

Candidate Starts for Elinal\_18:

(Start: 25 @14465 has 54 MA's), (33, 14510), (42, 14567), (45, 14594), (53, 14648), (57, 14675), (67, 14726), (68, 14729), (70, 14735), (71, 14738), (76, 14792), (81, 14807), (90, 14849), (91, 14852), (96, 14876), (99, 14891), (108, 14942), (127, 15038), (159, 15224), (163, 15254), (165, 15263), (170, 15287), (173, 15320), (189, 15407), (190, 15413),

Gene: Elliott\_17 Start: 14764, Stop: 15735, Start Num: 25

Candidate Starts for Elliott\_17:

(Start: 25 @14764 has 54 MA's), (33, 14809), (38, 14830), (45, 14893), (49, 14917), (53, 14947), (59, 14986), (67, 15025), (70, 15034), (71, 15037), (80, 15103), (91, 15151), (100, 15193), (108, 15241), (117, 15292), (127, 15352), (131, 15367), (132, 15370), (134, 15388), (135, 15394), (141, 15439), (146, 15466), (149, 15484), (159, 15538), (163, 15568), (165, 15577), (168, 15592), (176, 15649), (187, 15697), (189, 15721), (190, 15727),

Gene: Emalyn\_16 Start: 14065, Stop: 15036, Start Num: 25

Candidate Starts for Emalyn\_16:

(Start: 25 @14065 has 54 MA's), (33, 14110), (38, 14131), (42, 14167), (53, 14248), (67, 14326), (70, 14335), (71, 14338), (76, 14392), (80, 14404), (91, 14452), (100, 14494), (108, 14542), (117, 14593), (121, 14623), (127, 14653), (131, 14668), (132, 14671), (146, 14767), (149, 14785), (159, 14839), (160, 14842), (163, 14869), (165, 14878), (168, 14893), (176, 14950), (187, 14998), (189, 15022), (190, 15028),

Gene: Eyes\_18 Start: 15709, Stop: 16635, Start Num: 24

Candidate Starts for Eyes\_18:

(2, 15391), (7, 15490), (12, 15577), (20, 15691), (Start: 24 @15709 has 13 MA's), (Start: 28 @15718 has 6 MA's), (36, 15760), (Start: 37 @15772 has 1 MA's), (72, 15994), (77, 16039), (84, 16063), (87, 16069), (89, 16078), (91, 16084), (98, 16114), (102, 16144), (108, 16174), (109, 16180), (113, 16195), (122, 16240), (123, 16243), (127, 16267), (139, 16324), (141, 16345), (153, 16411), (166, 16480), (174, 16534), (189, 16618),

Gene: Feastonyeet\_16 Start: 14508, Stop: 15464, Start Num: 25

Candidate Starts for Feastonyeet\_16:

(Start: 25 @14508 has 54 MA's), (33, 14553), (42, 14610), (45, 14637), (53, 14691), (57, 14718), (67, 14769), (68, 14772), (70, 14778), (71, 14781), (76, 14835), (81, 14850), (91, 14895), (96, 14919), (108, 14985), (127, 15081), (159, 15267), (163, 15297), (165, 15306), (170, 15330), (173, 15363), (189, 15450), (190, 15456),

Gene: Fribs8\_18 Start: 15556, Stop: 16521, Start Num: 25

Candidate Starts for Fribs8\_18:

(Start: 25 @15556 has 54 MA's), (33, 15601), (42, 15658), (45, 15685), (53, 15739), (67, 15820), (70, 15829), (71, 15832), (80, 15901), (91, 15949), (94, 15967), (108, 16039), (111, 16054), (121, 16105), (122, 16108), (146, 16249), (159, 16318), (160, 16321), (163, 16348), (165, 16357), (170, 16381), (173, 16414), (175, 16423), (177, 16432), (186, 16477), (189, 16507), (190, 16513),

Gene: Frickyeah\_19 Start: 15508, Stop: 16431, Start Num: 27

Candidate Starts for Frickyeah\_19:

(Start: 27 @15508 has 14 MA's), (Start: 28 @15511 has 6 MA's), (30, 15523), (32, 15541), (41, 15586), (45, 15625), (52, 15664), (56, 15697), (57, 15703), (70, 15772), (76, 15826), (77, 15829), (78, 15832), (82, 15844), (91, 15874), (94, 15892), (105, 15946), (107, 15958), (108, 15964), (113, 15985), (123, 16033), (127, 16057), (131, 16072), (132, 16075), (137, 16096), (158, 16228), (159, 16231), (161, 16237), (166, 16270), (170, 16288), (173, 16321), (184, 16372), (188, 16387), (192, 16423),

Gene: Fryberger\_52 Start: 26990, Stop: 27934, Start Num: 23

Candidate Starts for Fryberger\_52:

(Start: 22 @26987 has 1 MA's), (Start: 23 @26990 has 5 MA's), (43, 27110), (57, 27206), (74, 27308), (90, 27374), (94, 27395), (96, 27401), (103, 27452), (108, 27476), (127, 27569), (137, 27608), (155, 27719), (156, 27725), (157, 27734), (158, 27740), (163, 27773), (165, 27782), (167, 27791), (170, 27806), (182, 27881), (185, 27893), (188, 27905), (189, 27926),

Gene: GEazy\_18 Start: 15730, Stop: 16650, Start Num: 28

Candidate Starts for GEazy\_18:

(20, 15700), (Start: 24 @15721 has 13 MA's), (Start: 28 @15730 has 6 MA's), (36, 15772), (72, 16006), (77, 16051), (84, 16075), (87, 16081), (89, 16090), (91, 16096), (98, 16126), (102, 16156), (108, 16186), (109, 16192), (123, 16255), (127, 16279), (139, 16336), (153, 16423), (166, 16492), (185, 16597), (189, 16630),

Gene: GTE2\_15 Start: 14148, Stop: 15074, Start Num: 33

Candidate Starts for GTE2\_15:

(Start: 25 @14103 has 54 MA's), (33, 14148), (38, 14169), (42, 14205), (49, 14256), (53, 14286), (67, 14364), (70, 14373), (71, 14376), (76, 14430), (80, 14442), (91, 14490), (100, 14532), (108, 14580), (117, 14631), (121, 14661), (127, 14691), (131, 14706), (132, 14709), (146, 14805), (149, 14823), (158, 14874), (159, 14877), (163, 14907), (165, 14916), (168, 14931), (176, 14988), (187, 15036), (189, 15060), (190, 15066),

Gene: Getalong\_20 Start: 16305, Stop: 17228, Start Num: 27

Candidate Starts for Getalong\_20:

(Start: 27 @16305 has 14 MA's), (Start: 28 @16308 has 6 MA's), (30, 16320), (32, 16338), (41, 16383), (45, 16422), (52, 16461), (56, 16494), (57, 16500), (70, 16569), (76, 16623), (77, 16626), (78, 16629), (82, 16641), (89, 16665), (91, 16671), (94, 16689), (105, 16743), (107, 16755), (108, 16761), (113, 16782), (122, 16827), (123, 16830), (126, 16848), (127, 16854), (131, 16869), (132, 16872), (158, 17025), (159, 17028), (161, 17034), (166, 17067), (170, 17085), (173, 17118), (184, 17169), (188, 17184), (192, 17220),

Gene: GiKK\_20 Start: 14134, Stop: 15093, Start Num: 25

Candidate Starts for GiKK\_20:

(Start: 25 @14134 has 54 MA's), (34, 14182), (36, 14185), (45, 14263), (68, 14398), (70, 14404), (81, 14476), (85, 14500), (91, 14521), (108, 14611), (111, 14626), (115, 14641), (127, 14713), (141, 14800), (159, 14896), (163, 14926), (165, 14935), (170, 14959), (173, 14992), (175, 15001), (176, 15007), (188, 15058), (189, 15079), (190, 15085),



Gene: Gibbous\_17 Start: 14967, Stop: 15938, Start Num: 25

Candidate Starts for Gibbous\_17:

(15, 14892), (Start: 25 @14967 has 54 MA's), (33, 15012), (45, 15096), (53, 15150), (63, 15207), (67, 15231), (70, 15240), (71, 15243), (76, 15300), (91, 15360), (94, 15378), (108, 15450), (111, 15471), (127, 15552), (146, 15666), (159, 15735), (160, 15738), (163, 15765), (165, 15774), (170, 15798), (173, 15831), (177, 15849), (186, 15894), (189, 15924),

Gene: GoldHunter\_18 Start: 14765, Stop: 15736, Start Num: 25

Candidate Starts for GoldHunter\_18:

(Start: 25 @14765 has 54 MA's), (33, 14810), (38, 14831), (45, 14894), (49, 14918), (53, 14948), (59, 14987), (67, 15026), (70, 15035), (71, 15038), (80, 15104), (91, 15152), (100, 15194), (108, 15242), (117, 15293), (127, 15353), (131, 15368), (132, 15371), (134, 15389), (135, 15395), (141, 15440), (146, 15467), (149, 15485), (159, 15539), (163, 15569), (165, 15578), (168, 15593), (176, 15650), (187, 15698), (189, 15722), (190, 15728),

Gene: Guey18\_57 Start: 28183, Stop: 29127, Start Num: 23

Candidate Starts for Guey18\_57:

(Start: 23 @28183 has 5 MA's), (43, 28303), (57, 28399), (74, 28501), (90, 28567), (94, 28588), (96, 28594), (103, 28645), (108, 28669), (127, 28762), (137, 28801), (155, 28912), (156, 28918), (157, 28927), (158, 28933), (163, 28966), (165, 28975), (167, 28984), (170, 28999), (182, 29074), (185, 29086), (188, 29098), (189, 29119),

Gene: HannahD\_18 Start: 15721, Stop: 16650, Start Num: 24

Candidate Starts for HannahD\_18:

(20, 15700), (Start: 24 @15721 has 13 MA's), (Start: 28 @15730 has 6 MA's), (36, 15772), (72, 16006), (77, 16051), (84, 16075), (87, 16081), (89, 16090), (91, 16096), (98, 16126), (102, 16156), (108, 16186), (109, 16192), (123, 16255), (127, 16279), (139, 16336), (153, 16423), (166, 16492), (185, 16597), (189, 16630),

Gene: Hedwig\_19 Start: 16010, Stop: 16957, Start Num: 24

Candidate Starts for Hedwig\_19:

(Start: 24 @16010 has 13 MA's), (70, 16286), (72, 16298), (84, 16370), (87, 16376), (91, 16391), (102, 16451), (108, 16481), (109, 16487), (123, 16550), (127, 16574), (128, 16577), (136, 16616), (146, 16685), (153, 16727), (158, 16754), (166, 16796), (167, 16799), (169, 16811), (176, 16862), (182, 16886), (191, 16940),

Gene: Hexbug\_19 Start: 14820, Stop: 15779, Start Num: 25

Candidate Starts for Hexbug\_19:

(15, 14745), (Start: 25 @14820 has 54 MA's), (30, 14841), (36, 14871), (45, 14949), (70, 15090), (85, 15186), (91, 15207), (100, 15249), (108, 15297), (111, 15312), (120, 15366), (127, 15399), (159, 15582), (160, 15585), (163, 15612), (165, 15621), (166, 15627), (170, 15645), (173, 15678), (175, 15687), (176, 15693), (189, 15765), (190, 15771),

Gene: HippoPololi\_19 Start: 15627, Stop: 16592, Start Num: 25

Candidate Starts for HippoPololi\_19:

(Start: 25 @15627 has 54 MA's), (33, 15672), (42, 15729), (45, 15756), (53, 15810), (67, 15891), (70, 15900), (71, 15903), (76, 15960), (91, 16020), (94, 16038), (108, 16110), (111, 16125), (121, 16176), (122, 16179), (141, 16293), (146, 16320), (159, 16389), (160, 16392), (163, 16419), (165, 16428), (170, 16452), (173, 16485), (177, 16503), (186, 16548), (189, 16578),

Gene: Holliday\_19 Start: 15504, Stop: 16424, Start Num: 28

Candidate Starts for Holliday\_19:

(Start: 27 @15501 has 14 MA's), (Start: 28 @15504 has 6 MA's), (30, 15516), (32, 15534), (41, 15579), (45, 15618), (52, 15657), (56, 15690), (57, 15696), (70, 15765), (76, 15819), (77, 15822), (78, 15825), (82, 15837), (88, 15855), (89, 15861), (91, 15867), (94, 15885), (105, 15939), (107, 15951), (108, 15957), (113, 15978), (123, 16026), (126, 16044), (127, 16050), (131, 16065), (132, 16068), (158, 16221), (159, 16224), (161, 16230), (166, 16263), (170, 16281), (173, 16314), (184, 16365), (188, 16380), (192, 16416),

Gene: Horseradish\_18 Start: 14308, Stop: 15279, Start Num: 25

Candidate Starts for Horseradish\_18:

(Start: 25 @14308 has 54 MA's), (33, 14353), (38, 14374), (40, 14389), (45, 14437), (49, 14461), (53, 14491), (67, 14569), (70, 14578), (71, 14581), (80, 14647), (91, 14695), (100, 14737), (108, 14785), (117, 14836), (127, 14896), (131, 14911), (132, 14914), (135, 14938), (146, 15010), (149, 15028), (158, 15079), (159, 15082), (163, 15112), (165, 15121), (168, 15136), (173, 15178), (176, 15193), (187, 15241), (189, 15265), (190, 15271),

Gene: Horus\_19 Start: 15514, Stop: 16437, Start Num: 27

Candidate Starts for Horus\_19:

(Start: 27 @15514 has 14 MA's), (Start: 28 @15517 has 6 MA's), (30, 15529), (32, 15547), (41, 15592), (45, 15631), (52, 15670), (56, 15703), (57, 15709), (70, 15778), (76, 15832), (77, 15835), (78, 15838), (82, 15850), (89, 15874), (91, 15880), (94, 15898), (105, 15952), (107, 15964), (108, 15970), (113, 15991), (122, 16036), (123, 16039), (126, 16057), (127, 16063), (131, 16078), (132, 16081), (158, 16234), (159, 16237), (161, 16243), (166, 16276), (170, 16294), (173, 16327), (184, 16378), (188, 16393), (192, 16429),

Gene: Jabbawokkie\_20 Start: 13336, Stop: 14265, Start Num: 21

Candidate Starts for Jabbawokkie\_20:

(Start: 21 @13336 has 7 MA's), (35, 13396), (42, 13447), (56, 13546), (57, 13552), (60, 13567), (82, 13687), (88, 13705), (101, 13771), (103, 13783), (112, 13828), (121, 13867), (123, 13873), (127, 13897), (128, 13900), (129, 13903), (131, 13912), (132, 13915), (142, 13981), (146, 14002), (147, 14005), (153, 14041), (158, 14068), (159, 14071), (166, 14110), (170, 14128), (171, 14134), (175, 14170), (176, 14176), (180, 14200), (183, 14206), (184, 14212),

Gene: Jamzy\_20 Start: 14144, Stop: 15103, Start Num: 25

Candidate Starts for Jamzy\_20:

(Start: 25 @14144 has 54 MA's), (34, 14192), (36, 14195), (45, 14273), (68, 14408), (70, 14414), (80, 14483), (81, 14486), (85, 14510), (91, 14531), (99, 14570), (108, 14621), (127, 14723), (141, 14810), (159, 14906), (163, 14936), (165, 14945), (170, 14969), (173, 15002), (175, 15011), (176, 15017), (188, 15068), (189, 15089), (190, 15095),

Gene: Juicebox\_18 Start: 16606, Stop: 17736, Start Num: 8

Candidate Starts for Juicebox\_18:

(Start: 8 @16606 has 1 MA's), (9, 16621), (13, 16678), (14, 16708), (15, 16717), (16, 16729), (47, 16921), (51, 16948), (56, 16981), (66, 17032), (75, 17107), (76, 17110), (79, 17119), (84, 17143), (95, 17188), (104, 17242), (110, 17281), (119, 17350), (130, 17398), (151, 17521), (152, 17527), (164, 17590),

Gene: Kamaru\_19 Start: 15501, Stop: 16424, Start Num: 27

Candidate Starts for Kamaru\_19:

(Start: 27 @15501 has 14 MA's), (Start: 28 @15504 has 6 MA's), (30, 15516), (32, 15534), (41, 15579), (45, 15618), (52, 15657), (56, 15690), (57, 15696), (70, 15765), (76, 15819), (77, 15822), (78, 15825), (82, 15837), (88, 15855), (89, 15861), (91, 15867), (94, 15885), (105, 15939), (107, 15951), (108, 15957), (113, 15978), (123, 16026), (126, 16044), (127, 16050), (131, 16065), (132, 16068), (158, 16221), (159, 16224), (161, 16230), (166, 16263), (170, 16281), (173, 16314), (184, 16365), (188,

16380), (192, 16416),

Gene: KayGee\_17 Start: 14465, Stop: 15421, Start Num: 25

Candidate Starts for KayGee\_17:

(Start: 25 @14465 has 54 MA's), (33, 14510), (42, 14567), (45, 14594), (53, 14648), (57, 14675), (67, 14726), (68, 14729), (70, 14735), (71, 14738), (76, 14792), (81, 14807), (90, 14849), (91, 14852), (96, 14876), (99, 14891), (108, 14942), (127, 15038), (159, 15224), (163, 15254), (165, 15263), (170, 15287), (173, 15320), (189, 15407), (190, 15413),

Gene: Keelan\_50 Start: 26977, Stop: 27921, Start Num: 23

Candidate Starts for Keelan\_50:

(Start: 23 @26977 has 5 MA's), (43, 27097), (56, 27187), (68, 27247), (76, 27307), (83, 27334), (90, 27361), (94, 27382), (96, 27388), (101, 27427), (103, 27439), (127, 27556), (128, 27559), (137, 27595), (155, 27706), (157, 27721), (163, 27760), (165, 27769), (167, 27778), (170, 27793), (182, 27868), (189, 27913),

Gene: Kenna\_18 Start: 15508, Stop: 16431, Start Num: 27

Candidate Starts for Kenna\_18:

(Start: 27 @15508 has 14 MA's), (Start: 28 @15511 has 6 MA's), (30, 15523), (32, 15541), (41, 15586), (45, 15625), (52, 15664), (56, 15697), (57, 15703), (70, 15772), (76, 15826), (77, 15829), (78, 15832), (82, 15844), (88, 15862), (89, 15868), (91, 15874), (94, 15892), (105, 15946), (107, 15958), (108, 15964), (113, 15985), (123, 16033), (126, 16051), (127, 16057), (131, 16072), (132, 16075), (158, 16228), (159, 16231), (161, 16237), (166, 16270), (170, 16288), (173, 16321), (184, 16372), (188, 16387), (192, 16423),

Gene: Kiko\_19 Start: 15761, Stop: 16708, Start Num: 24

Candidate Starts for Kiko\_19:

(Start: 24 @15761 has 13 MA's), (29, 15779), (55, 15956), (70, 16037), (72, 16049), (77, 16094), (84, 16121), (87, 16127), (91, 16142), (102, 16202), (108, 16232), (109, 16238), (123, 16301), (146, 16436), (153, 16478), (158, 16505), (166, 16547), (167, 16550), (169, 16562), (174, 16601), (176, 16613), (182, 16637), (190, 16688),

Gene: Lauer\_16 Start: 14514, Stop: 15470, Start Num: 25

Candidate Starts for Lauer\_16:

(Start: 25 @14514 has 54 MA's), (33, 14559), (42, 14616), (45, 14643), (53, 14697), (57, 14724), (67, 14775), (68, 14778), (70, 14784), (71, 14787), (76, 14841), (81, 14856), (91, 14901), (96, 14925), (99, 14940), (108, 14991), (127, 15087), (159, 15273), (163, 15303), (165, 15312), (173, 15369), (184, 15420), (189, 15456), (190, 15462),

Gene: Lederberg\_16 Start: 15138, Stop: 16304, Start Num: 10

Candidate Starts for Lederberg\_16:

(Start: 10 @15138 has 8 MA's), (19, 15267), (64, 15549), (69, 15579), (73, 15606), (81, 15648), (92, 15693), (107, 15783), (111, 15831), (115, 15846), (119, 15879), (124, 15897), (125, 15906), (133, 15939), (148, 16038), (150, 16050), (154, 16074), (164, 16131), (172, 16179), (178, 16227), (179, 16236), (183, 16251), (186, 16263), (187, 16269), (189, 16293),

Gene: Leroy\_19 Start: 15515, Stop: 16438, Start Num: 27

Candidate Starts for Leroy\_19:

(Start: 27 @15515 has 14 MA's), (Start: 28 @15518 has 6 MA's), (30, 15530), (32, 15548), (41, 15593), (45, 15632), (52, 15671), (56, 15704), (57, 15710), (70, 15779), (77, 15836), (78, 15839), (82, 15851), (89, 15875), (91, 15881), (94, 15899), (105, 15953), (107, 15965), (108, 15971), (113, 15992), (123, 16040), (126, 16058), (127, 16064), (131, 16079), (132, 16082), (158, 16235), (159, 16238), (161, 16244), (166, 16277), (170, 16295), (173, 16328), (184, 16379), (188, 16394), (192, 16430),

Gene: LilSpotty\_16 Start: 13314, Stop: 14294, Start Num: 17

Candidate Starts for LilSpotty\_16:

(Start: 17 @13314 has 1 MA's), (Start: 28 @13371 has 6 MA's), (31, 13392), (40, 13434), (42, 13455), (45, 13479), (56, 13554), (82, 13695), (93, 13740), (98, 13755), (99, 13764), (108, 13815), (116, 13860), (131, 13941), (138, 13974), (143, 14016), (148, 14040), (154, 14073), (159, 14103), (160, 14106), (163, 14133), (165, 14142), (168, 14157), (170, 14166),

Gene: LitninMcQueen\_19 Start: 15502, Stop: 16425, Start Num: 27

Candidate Starts for LitninMcQueen\_19:

(Start: 27 @15502 has 14 MA's), (Start: 28 @15505 has 6 MA's), (30, 15517), (32, 15535), (41, 15580), (45, 15619), (52, 15658), (56, 15691), (57, 15697), (70, 15766), (76, 15820), (77, 15823), (78, 15826), (82, 15838), (88, 15856), (89, 15862), (91, 15868), (94, 15886), (105, 15940), (107, 15952), (108, 15958), (113, 15979), (123, 16027), (126, 16045), (127, 16051), (131, 16066), (132, 16069), (158, 16222), (159, 16225), (161, 16231), (166, 16264), (170, 16282), (173, 16315), (184, 16366), (188, 16381), (192, 16417),

Gene: Lutum\_19 Start: 15511, Stop: 16431, Start Num: 28

Candidate Starts for Lutum\_19:

(Start: 27 @15508 has 14 MA's), (Start: 28 @15511 has 6 MA's), (30, 15523), (32, 15541), (41, 15586), (45, 15625), (52, 15664), (56, 15697), (57, 15703), (70, 15772), (76, 15826), (77, 15829), (78, 15832), (82, 15844), (88, 15862), (89, 15868), (91, 15874), (94, 15892), (105, 15946), (107, 15958), (108, 15964), (113, 15985), (123, 16033), (126, 16051), (127, 16057), (131, 16072), (132, 16075), (158, 16228), (159, 16231), (161, 16237), (166, 16270), (170, 16288), (173, 16321), (184, 16372), (188, 16387), (192, 16423),

Gene: MAnor\_17 Start: 14472, Stop: 15428, Start Num: 25

Candidate Starts for MAnor\_17:

(Start: 25 @14472 has 54 MA's), (33, 14517), (53, 14655), (57, 14682), (67, 14733), (68, 14736), (70, 14742), (71, 14745), (81, 14814), (91, 14859), (96, 14883), (99, 14898), (108, 14949), (127, 15045), (158, 15228), (159, 15231), (163, 15261), (165, 15270), (173, 15327), (184, 15378), (189, 15414), (190, 15420),

Gene: MScarn\_19 Start: 14397, Stop: 15368, Start Num: 25

Candidate Starts for MScarn\_19:

(Start: 25 @14397 has 54 MA's), (33, 14442), (38, 14463), (45, 14526), (49, 14550), (53, 14580), (67, 14658), (70, 14667), (71, 14670), (80, 14736), (91, 14784), (100, 14826), (108, 14874), (117, 14925), (127, 14985), (131, 15000), (132, 15003), (135, 15027), (146, 15099), (149, 15117), (158, 15168), (159, 15171), (163, 15201), (165, 15210), (168, 15225), (176, 15282), (187, 15330), (189, 15354), (190, 15360),

Gene: MaVan\_19 Start: 15745, Stop: 16710, Start Num: 25

Candidate Starts for MaVan\_19:

(Start: 25 @15745 has 54 MA's), (33, 15790), (40, 15826), (42, 15847), (45, 15874), (53, 15928), (67, 16009), (70, 16018), (71, 16021), (80, 16090), (91, 16138), (108, 16228), (111, 16243), (118, 16282), (146, 16438), (158, 16504), (159, 16507), (160, 16510), (163, 16537), (165, 16546), (170, 16570), (173, 16603), (177, 16621), (186, 16666), (189, 16696), (190, 16702),

Gene: MagicMan\_18 Start: 16039, Stop: 16965, Start Num: 24

Candidate Starts for MagicMan\_18:

(11, 15904), (12, 15907), (20, 16021), (Start: 24 @16039 has 13 MA's), (Start: 28 @16048 has 6 MA's), (36, 16090), (Start: 37 @16102 has 1 MA's), (72, 16324), (77, 16369), (84, 16393), (87, 16399), (89, 16408), (91, 16414), (98, 16444), (102, 16474), (108, 16504), (109, 16510), (122, 16570), (123,

16573), (127, 16597), (139, 16654), (141, 16675), (153, 16741), (166, 16810), (189, 16948),

Gene: Malisha\_20 Start: 17283, Stop: 18203, Start Num: 28

Candidate Starts for Malisha\_20:

(Start: 27 @17280 has 14 MA's), (Start: 28 @17283 has 6 MA's), (30, 17295), (32, 17313), (41, 17358), (42, 17373), (44, 17385), (45, 17397), (52, 17436), (56, 17469), (70, 17544), (76, 17598), (77, 17601), (78, 17604), (82, 17616), (88, 17634), (89, 17640), (91, 17646), (105, 17718), (107, 17730), (108, 17736), (113, 17757), (123, 17805), (127, 17829), (131, 17844), (132, 17847), (140, 17901), (158, 18000), (159, 18003), (161, 18009), (166, 18042), (169, 18057), (170, 18060), (174, 18096), (184, 18144),

Gene: Margaret\_20 Start: 14513, Stop: 15472, Start Num: 25

Candidate Starts for Margaret\_20:

(15, 14438), (Start: 25 @14513 has 54 MA's), (30, 14534), (34, 14561), (36, 14564), (70, 14783), (76, 14840), (90, 14897), (91, 14900), (108, 14990), (120, 15059), (127, 15092), (155, 15251), (158, 15272), (159, 15275), (163, 15305), (165, 15314), (166, 15320), (170, 15338), (173, 15371), (175, 15380), (176, 15386), (188, 15437), (189, 15458), (190, 15464),

Gene: Mayweather\_18 Start: 15087, Stop: 16043, Start Num: 25

Candidate Starts for Mayweather\_18:

(Start: 25 @15087 has 54 MA's), (33, 15132), (45, 15216), (53, 15270), (57, 15297), (67, 15348), (68, 15351), (70, 15357), (71, 15360), (81, 15429), (91, 15474), (96, 15498), (108, 15564), (127, 15660), (158, 15843), (159, 15846), (163, 15876), (165, 15885), (173, 15942), (184, 15993), (189, 16029), (190, 16035),

Gene: Moonflower\_18 Start: 16305, Stop: 17252, Start Num: 24

Candidate Starts for Moonflower\_18:

(Start: 24 @16305 has 13 MA's), (55, 16500), (70, 16581), (84, 16665), (87, 16671), (91, 16686), (102, 16746), (108, 16776), (109, 16782), (123, 16845), (127, 16869), (129, 16875), (136, 16911), (146, 16980), (153, 17022), (158, 17049), (166, 17091), (167, 17094), (169, 17106), (176, 17157), (182, 17181), (189, 17226), (191, 17235),

Gene: MunkgeeRoachy\_17 Start: 14812, Stop: 15783, Start Num: 25

Candidate Starts for MunkgeeRoachy\_17:

(Start: 25 @14812 has 54 MA's), (33, 14857), (38, 14878), (45, 14941), (49, 14965), (53, 14995), (59, 15034), (67, 15073), (70, 15082), (71, 15085), (80, 15151), (91, 15199), (100, 15241), (108, 15289), (127, 15400), (131, 15415), (132, 15418), (134, 15436), (135, 15442), (141, 15487), (146, 15514), (149, 15532), (158, 15583), (159, 15586), (163, 15616), (165, 15625), (168, 15640), (174, 15685), (176, 15697), (187, 15745), (189, 15769), (190, 15775),

Gene: Nibbles\_19 Start: 15745, Stop: 16710, Start Num: 25

Candidate Starts for Nibbles\_19:

(Start: 25 @15745 has 54 MA's), (33, 15790), (40, 15826), (42, 15847), (45, 15874), (53, 15928), (63, 15985), (67, 16009), (70, 16018), (71, 16021), (80, 16090), (91, 16138), (108, 16228), (111, 16243), (118, 16282), (146, 16438), (158, 16504), (159, 16507), (160, 16510), (163, 16537), (165, 16546), (170, 16570), (173, 16603), (177, 16621), (186, 16666), (189, 16696), (190, 16702),

Gene: Nina\_18 Start: 15806, Stop: 16777, Start Num: 25

Candidate Starts for Nina\_18:

(Start: 25 @15806 has 54 MA's), (33, 15851), (38, 15872), (45, 15935), (49, 15959), (53, 15989), (59, 16028), (67, 16067), (70, 16076), (71, 16079), (80, 16145), (91, 16193), (100, 16235), (108, 16283), (117, 16334), (127, 16394), (131, 16409), (132, 16412), (134, 16430), (135, 16436), (141, 16481), (146, 16508), (149, 16526), (158, 16577), (159, 16580), (163, 16610), (165, 16619), (168, 16634),

(176, 16691), (187, 16739), (189, 16763), (190, 16769),

Gene: Nodigi\_19 Start: 14799, Stop: 15758, Start Num: 25

Candidate Starts for Nodigi\_19:

(Start: 25 @14799 has 54 MA's), (30, 14820), (36, 14850), (70, 15069), (85, 15165), (91, 15186), (100, 15228), (108, 15276), (111, 15291), (120, 15345), (127, 15378), (159, 15561), (160, 15564), (163, 15591), (165, 15600), (166, 15606), (170, 15624), (173, 15657), (175, 15666), (176, 15672), (186, 15714), (188, 15723), (189, 15744), (190, 15750),

Gene: Opie\_18 Start: 16062, Stop: 16988, Start Num: 24

Candidate Starts for Opie\_18:

(12, 15930), (20, 16044), (Start: 24 @16062 has 13 MA's), (Start: 28 @16071 has 6 MA's), (36, 16113), (Start: 37 @16125 has 1 MA's), (72, 16347), (77, 16392), (84, 16416), (87, 16422), (89, 16431), (91, 16437), (98, 16467), (102, 16497), (108, 16527), (109, 16533), (122, 16593), (123, 16596), (127, 16620), (139, 16677), (141, 16698), (166, 16833), (189, 16971),

Gene: Orla\_19 Start: 14803, Stop: 15762, Start Num: 25

Candidate Starts for Orla\_19:

(15, 14728), (Start: 25 @14803 has 54 MA's), (30, 14824), (36, 14854), (70, 15073), (85, 15169), (91, 15190), (100, 15232), (108, 15280), (111, 15295), (120, 15349), (127, 15382), (159, 15565), (160, 15568), (163, 15595), (165, 15604), (166, 15610), (170, 15628), (173, 15661), (175, 15670), (176, 15676), (189, 15748), (190, 15754),

Gene: Periwinkle\_21 Start: 15973, Stop: 16896, Start Num: 27

Candidate Starts for Periwinkle\_21:

(Start: 27 @15973 has 14 MA's), (Start: 28 @15976 has 6 MA's), (30, 15988), (32, 16006), (41, 16051), (45, 16090), (52, 16129), (56, 16162), (57, 16168), (70, 16237), (76, 16291), (77, 16294), (78, 16297), (82, 16309), (89, 16333), (91, 16339), (94, 16357), (105, 16411), (107, 16423), (108, 16429), (113, 16450), (122, 16495), (123, 16498), (126, 16516), (127, 16522), (131, 16537), (132, 16540), (158, 16693), (159, 16696), (161, 16702), (166, 16735), (170, 16753), (173, 16786), (184, 16837), (188, 16852), (192, 16888),

Gene: Phabuloso\_19 Start: 15505, Stop: 16425, Start Num: 28

Candidate Starts for Phabuloso\_19:

(Start: 27 @15502 has 14 MA's), (Start: 28 @15505 has 6 MA's), (30, 15517), (32, 15535), (41, 15580), (45, 15619), (52, 15658), (56, 15691), (57, 15697), (70, 15766), (76, 15820), (77, 15823), (78, 15826), (82, 15838), (88, 15856), (89, 15862), (91, 15868), (94, 15886), (105, 15940), (107, 15952), (108, 15958), (113, 15979), (123, 16027), (126, 16045), (127, 16051), (131, 16066), (132, 16069), (158, 16222), (159, 16225), (161, 16231), (166, 16264), (170, 16282), (173, 16315), (184, 16366), (188, 16381), (192, 16417),

Gene: Phistory\_20 Start: 16280, Stop: 17203, Start Num: 27

Candidate Starts for Phistory\_20:

(Start: 27 @16280 has 14 MA's), (Start: 28 @16283 has 6 MA's), (30, 16295), (32, 16313), (41, 16358), (45, 16397), (52, 16436), (56, 16469), (57, 16475), (70, 16544), (76, 16598), (77, 16601), (78, 16604), (82, 16616), (91, 16646), (94, 16664), (105, 16718), (107, 16730), (108, 16736), (113, 16757), (123, 16805), (126, 16823), (127, 16829), (131, 16844), (132, 16847), (158, 17000), (159, 17003), (161, 17009), (166, 17042), (170, 17060), (173, 17093), (184, 17144), (188, 17159), (192, 17195),

Gene: Pons\_17 Start: 14462, Stop: 15418, Start Num: 25

Candidate Starts for Pons\_17:

(Start: 25 @14462 has 54 MA's), (33, 14507), (45, 14591), (53, 14645), (57, 14672), (67, 14723), (68, 14726), (70, 14732), (71, 14735), (81, 14804), (91, 14849), (96, 14873), (108, 14939), (127, 15035),

(158, 15218), (159, 15221), (163, 15251), (165, 15260), (173, 15317), (184, 15368), (189, 15404), (190, 15410),

Gene: PotPie\_17 Start: 15327, Stop: 16283, Start Num: 25

Candidate Starts for PotPie\_17:

(Start: 25 @15327 has 54 MA's), (33, 15372), (42, 15429), (45, 15456), (53, 15510), (57, 15537), (67, 15588), (68, 15591), (70, 15597), (71, 15600), (76, 15654), (81, 15669), (91, 15714), (96, 15738), (99, 15753), (108, 15804), (127, 15900), (159, 16086), (163, 16116), (165, 16125), (173, 16182), (184, 16233), (189, 16269), (190, 16275),

Gene: PsychoKiller\_17 Start: 14764, Stop: 15735, Start Num: 25

Candidate Starts for PsychoKiller\_17:

(Start: 25 @14764 has 54 MA's), (33, 14809), (38, 14830), (45, 14893), (49, 14917), (53, 14947), (59, 14986), (67, 15025), (70, 15034), (71, 15037), (80, 15103), (91, 15151), (100, 15193), (108, 15241), (117, 15292), (127, 15352), (131, 15367), (132, 15370), (134, 15388), (135, 15394), (141, 15439), (146, 15466), (149, 15484), (159, 15538), (163, 15568), (165, 15577), (168, 15592), (176, 15649), (187, 15697), (189, 15721), (190, 15727),

Gene: Quasar\_17 Start: 15373, Stop: 16344, Start Num: 25

Candidate Starts for Quasar\_17:

(Start: 25 @15373 has 54 MA's), (33, 15418), (38, 15439), (45, 15502), (49, 15526), (53, 15556), (59, 15595), (67, 15634), (70, 15643), (71, 15646), (80, 15712), (91, 15760), (100, 15802), (108, 15850), (117, 15901), (127, 15961), (131, 15976), (132, 15979), (134, 15997), (135, 16003), (141, 16048), (146, 16075), (149, 16093), (158, 16144), (159, 16147), (163, 16177), (165, 16186), (168, 16201), (176, 16258), (187, 16306), (189, 16330), (190, 16336),

Gene: RanchParmCat\_20 Start: 14513, Stop: 15472, Start Num: 25

Candidate Starts for RanchParmCat\_20:

(15, 14438), (Start: 25 @14513 has 54 MA's), (30, 14534), (34, 14561), (36, 14564), (68, 14777), (70, 14783), (76, 14840), (90, 14897), (91, 14900), (108, 14990), (120, 15059), (127, 15092), (155, 15251), (158, 15272), (159, 15275), (163, 15305), (165, 15314), (166, 15320), (170, 15338), (173, 15371), (175, 15380), (176, 15386), (188, 15437), (189, 15458), (190, 15464),

Gene: RayTheFireFly\_18 Start: 16585, Stop: 17532, Start Num: 24

Candidate Starts for RayTheFireFly\_18:

(Start: 24 @16585 has 13 MA's), (55, 16780), (70, 16861), (72, 16873), (84, 16945), (87, 16951), (91, 16966), (108, 17056), (109, 17062), (123, 17125), (127, 17149), (129, 17155), (136, 17191), (146, 17260), (153, 17302), (158, 17329), (166, 17371), (167, 17374), (169, 17386), (176, 17437), (182, 17461), (191, 17515),

Gene: RedBaron\_18 Start: 14808, Stop: 15779, Start Num: 25

Candidate Starts for RedBaron\_18:

(Start: 25 @14808 has 54 MA's), (33, 14853), (38, 14874), (45, 14937), (49, 14961), (53, 14991), (59, 15030), (67, 15069), (70, 15078), (71, 15081), (80, 15147), (91, 15195), (100, 15237), (108, 15285), (117, 15336), (127, 15396), (131, 15411), (132, 15414), (134, 15432), (135, 15438), (141, 15483), (146, 15510), (149, 15528), (158, 15579), (159, 15582), (163, 15612), (165, 15621), (168, 15636), (176, 15693), (187, 15741), (189, 15765), (190, 15771),

Gene: Ronaldo\_55 Start: 27945, Stop: 28892, Start Num: 22

Candidate Starts for Ronaldo\_55:

(Start: 22 @27945 has 1 MA's), (Start: 23 @27948 has 5 MA's), (43, 28068), (57, 28164), (74, 28266), (90, 28332), (94, 28353), (96, 28359), (103, 28410), (108, 28434), (127, 28527), (137, 28566), (155, 28677), (156, 28683), (157, 28692), (158, 28698), (163, 28731), (165, 28740), (167, 28749), (170,

28764), (182, 28839), (185, 28851), (188, 28863), (189, 28884),

Gene: SamW\_16 Start: 15117, Stop: 16283, Start Num: 10

Candidate Starts for SamW\_16:

(Start: 10 @15117 has 8 MA's), (19, 15246), (64, 15528), (69, 15558), (73, 15585), (81, 15627), (92, 15672), (111, 15810), (119, 15858), (124, 15876), (125, 15885), (145, 16005), (154, 16053), (164, 16110), (178, 16206), (179, 16215), (183, 16230), (186, 16242), (187, 16248), (189, 16272),

Gene: Schnabeltier\_18 Start: 16103, Stop: 16966, Start Num: 37

Candidate Starts for Schnabeltier\_18:

(11, 15905), (12, 15908), (20, 16022), (Start: 24 @16040 has 13 MA's), (Start: 28 @16049 has 6 MA's), (36, 16091), (Start: 37 @16103 has 1 MA's), (72, 16325), (77, 16370), (84, 16394), (87, 16400), (89, 16409), (91, 16415), (98, 16445), (102, 16475), (108, 16505), (109, 16511), (122, 16571), (123, 16574), (127, 16598), (139, 16655), (141, 16676), (153, 16742), (166, 16811), (189, 16949),

Gene: ShawBrad\_19 Start: 15516, Stop: 16439, Start Num: 27

Candidate Starts for ShawBrad\_19:

(Start: 27 @15516 has 14 MA's), (Start: 28 @15519 has 6 MA's), (30, 15531), (32, 15549), (41, 15594), (45, 15633), (52, 15672), (56, 15705), (57, 15711), (70, 15780), (77, 15837), (78, 15840), (82, 15852), (89, 15876), (91, 15882), (94, 15900), (105, 15954), (107, 15966), (108, 15972), (113, 15993), (123, 16041), (126, 16059), (127, 16065), (131, 16080), (132, 16083), (158, 16236), (159, 16239), (161, 16245), (166, 16278), (170, 16296), (173, 16329), (184, 16380), (188, 16395), (192, 16431),

Gene: SheckWes\_16 Start: 14462, Stop: 15418, Start Num: 25

Candidate Starts for SheckWes\_16:

(Start: 25 @14462 has 54 MA's), (33, 14507), (45, 14591), (53, 14645), (57, 14672), (67, 14723), (68, 14726), (70, 14732), (71, 14735), (76, 14789), (81, 14804), (91, 14849), (96, 14873), (99, 14888), (108, 14939), (127, 15035), (158, 15218), (159, 15221), (163, 15251), (165, 15260), (173, 15317), (184, 15368), (189, 15404), (190, 15410),

Gene: SilverChicken\_18 Start: 12813, Stop: 13742, Start Num: 21

Candidate Starts for SilverChicken\_18:

(Start: 21 @12813 has 7 MA's), (35, 12873), (42, 12924), (56, 13023), (57, 13029), (60, 13044), (82, 13164), (88, 13182), (101, 13248), (103, 13260), (112, 13305), (121, 13344), (123, 13350), (127, 13374), (128, 13377), (129, 13380), (131, 13389), (132, 13392), (142, 13458), (146, 13479), (147, 13482), (153, 13518), (158, 13545), (159, 13548), (166, 13587), (170, 13605), (171, 13611), (175, 13647), (176, 13653), (180, 13677), (183, 13683), (184, 13689),

Gene: SketchMex\_16 Start: 14412, Stop: 15383, Start Num: 25

Candidate Starts for SketchMex\_16:

(Start: 25 @14412 has 54 MA's), (33, 14457), (38, 14478), (45, 14541), (49, 14565), (53, 14595), (67, 14673), (70, 14682), (71, 14685), (80, 14751), (91, 14799), (100, 14841), (105, 14871), (108, 14889), (117, 14940), (127, 15000), (131, 15015), (132, 15018), (135, 15042), (146, 15114), (149, 15132), (158, 15183), (159, 15186), (163, 15216), (165, 15225), (168, 15240), (176, 15297), (187, 15345), (189, 15369), (190, 15375),

Gene: Socotra\_18 Start: 14764, Stop: 15735, Start Num: 25

Candidate Starts for Socotra\_18:

(Start: 25 @14764 has 54 MA's), (33, 14809), (38, 14830), (45, 14893), (49, 14917), (53, 14947), (59, 14986), (67, 15025), (70, 15034), (71, 15037), (80, 15103), (91, 15151), (100, 15193), (108, 15241), (117, 15292), (127, 15352), (131, 15367), (132, 15370), (134, 15388), (135, 15394), (141, 15439), (146, 15466), (149, 15484), (158, 15535), (159, 15538), (163, 15568), (165, 15577), (168, 15592), (176, 15649), (187, 15697), (189, 15721), (190, 15727),



Gene: Sopespian\_17 Start: 14765, Stop: 15736, Start Num: 25

Candidate Starts for Sopespian\_17:

(Start: 25 @14765 has 54 MA's), (33, 14810), (38, 14831), (45, 14894), (49, 14918), (53, 14948), (59, 14987), (67, 15026), (70, 15035), (71, 15038), (80, 15104), (91, 15152), (100, 15194), (108, 15242), (117, 15293), (127, 15353), (131, 15368), (132, 15371), (134, 15389), (135, 15395), (141, 15440), (146, 15467), (149, 15485), (159, 15539), (163, 15569), (165, 15578), (168, 15593), (176, 15650), (187, 15698), (189, 15722), (190, 15728),

Gene: Soul22\_18 Start: 12811, Stop: 13740, Start Num: 21

Candidate Starts for Soul22\_18:

(Start: 21 @12811 has 7 MA's), (35, 12871), (42, 12922), (56, 13021), (57, 13027), (60, 13042), (82, 13162), (88, 13180), (101, 13246), (103, 13258), (112, 13303), (121, 13342), (123, 13348), (127, 13372), (128, 13375), (129, 13378), (142, 13456), (146, 13477), (147, 13480), (153, 13516), (158, 13543), (159, 13546), (166, 13585), (170, 13603), (171, 13609), (175, 13645), (180, 13675), (183, 13681), (184, 13687),

Gene: Spooky\_19 Start: 15489, Stop: 16412, Start Num: 27

Candidate Starts for Spooky\_19:

(Start: 27 @15489 has 14 MA's), (Start: 28 @15492 has 6 MA's), (30, 15504), (32, 15522), (41, 15567), (42, 15582), (44, 15594), (45, 15606), (52, 15645), (56, 15678), (70, 15753), (76, 15807), (78, 15813), (89, 15849), (91, 15855), (105, 15927), (107, 15939), (108, 15945), (120, 16005), (123, 16014), (127, 16038), (131, 16053), (132, 16056), (140, 16110), (158, 16209), (159, 16212), (161, 16218), (166, 16251), (169, 16266), (170, 16269), (174, 16305),

Gene: Squiddly\_21 Start: 16901, Stop: 17824, Start Num: 27

Candidate Starts for Squiddly\_21:

(Start: 27 @16901 has 14 MA's), (Start: 28 @16904 has 6 MA's), (30, 16916), (32, 16934), (41, 16979), (42, 16994), (44, 17006), (45, 17018), (52, 17057), (56, 17090), (70, 17165), (76, 17219), (77, 17222), (78, 17225), (82, 17237), (88, 17255), (89, 17261), (91, 17267), (105, 17339), (107, 17351), (108, 17357), (113, 17378), (123, 17426), (127, 17450), (131, 17465), (132, 17468), (158, 17621), (159, 17624), (161, 17630), (166, 17663), (169, 17678), (170, 17681), (174, 17717), (184, 17765),

Gene: StAB\_16 Start: 15144, Stop: 16310, Start Num: 10

Candidate Starts for StAB\_16:

(Start: 10 @15144 has 8 MA's), (19, 15273), (39, 15384), (64, 15555), (65, 15561), (69, 15585), (73, 15612), (81, 15654), (92, 15699), (106, 15786), (107, 15789), (111, 15837), (115, 15852), (119, 15885), (124, 15903), (125, 15912), (133, 15945), (138, 15978), (144, 16023), (145, 16032), (148, 16044), (150, 16056), (154, 16080), (164, 16137), (172, 16185), (178, 16233), (179, 16242), (183, 16257), (186, 16269), (187, 16275), (189, 16299),

Gene: Starburst\_18 Start: 14764, Stop: 15735, Start Num: 25

Candidate Starts for Starburst\_18:

(Start: 25 @14764 has 54 MA's), (33, 14809), (38, 14830), (45, 14893), (49, 14917), (53, 14947), (59, 14986), (67, 15025), (70, 15034), (71, 15037), (80, 15103), (91, 15151), (100, 15193), (108, 15241), (117, 15292), (127, 15352), (131, 15367), (132, 15370), (134, 15388), (135, 15394), (141, 15439), (146, 15466), (149, 15484), (158, 15535), (159, 15538), (163, 15568), (165, 15577), (168, 15592), (176, 15649), (187, 15697), (189, 15721), (190, 15727),

Gene: SteamedHams\_19 Start: 14430, Stop: 15401, Start Num: 25

Candidate Starts for SteamedHams\_19:

(Start: 25 @14430 has 54 MA's), (33, 14475), (38, 14496), (40, 14511), (42, 14532), (49, 14583), (53, 14613), (57, 14640), (67, 14691), (70, 14700), (71, 14703), (76, 14757), (80, 14769), (91, 14817), (108,

14907), (117, 14958), (121, 14988), (127, 15018), (132, 15036), (146, 15132), (149, 15150), (158, 15201), (159, 15204), (163, 15234), (165, 15243), (168, 15258), (176, 15315), (187, 15363), (189, 15387), (190, 15393),

Gene: Stiles\_16 Start: 14922, Stop: 16088, Start Num: 10

Candidate Starts for Stiles\_16:

(Start: 10 @14922 has 8 MA's), (19, 15051), (64, 15333), (69, 15363), (73, 15390), (81, 15432), (92, 15477), (106, 15564), (107, 15567), (111, 15615), (115, 15630), (119, 15663), (124, 15681), (125, 15690), (133, 15723), (144, 15801), (148, 15822), (150, 15834), (154, 15858), (164, 15915), (172, 15963), (178, 16011), (179, 16020), (183, 16035), (186, 16047), (187, 16053), (189, 16077),

Gene: SummitAcademy\_16 Start: 14542, Stop: 15498, Start Num: 25

Candidate Starts for SummitAcademy\_16:

(Start: 25 @14542 has 54 MA's), (33, 14587), (42, 14644), (45, 14671), (53, 14725), (57, 14752), (67, 14803), (68, 14806), (70, 14812), (71, 14815), (76, 14869), (81, 14884), (91, 14929), (96, 14953), (99, 14968), (108, 15019), (127, 15115), (159, 15301), (163, 15331), (165, 15340), (173, 15397), (184, 15448), (189, 15484), (190, 15490),

Gene: Survivors\_19 Start: 15594, Stop: 16559, Start Num: 25

Candidate Starts for Survivors\_19:

(Start: 25 @15594 has 54 MA's), (33, 15639), (40, 15675), (42, 15696), (45, 15723), (53, 15777), (67, 15858), (70, 15867), (71, 15870), (80, 15939), (91, 15987), (108, 16077), (111, 16092), (118, 16131), (146, 16287), (158, 16353), (159, 16356), (160, 16359), (163, 16386), (165, 16395), (170, 16419), (173, 16452), (177, 16470), (186, 16515), (189, 16545), (190, 16551),

Gene: SweatNTears\_19 Start: 14923, Stop: 15894, Start Num: 25

Candidate Starts for SweatNTears\_19:

(Start: 25 @14923 has 54 MA's), (33, 14968), (38, 14989), (45, 15052), (49, 15076), (53, 15106), (67, 15184), (70, 15193), (71, 15196), (80, 15262), (91, 15310), (100, 15352), (105, 15382), (108, 15400), (117, 15451), (127, 15511), (131, 15526), (132, 15529), (135, 15553), (146, 15625), (149, 15643), (158, 15694), (159, 15697), (163, 15727), (165, 15736), (168, 15751), (176, 15808), (187, 15856), (189, 15880), (190, 15886),

Gene: TaronosaurusRx\_18 Start: 16056, Stop: 16982, Start Num: 24

Candidate Starts for TaronosaurusRx\_18:

(2, 15741), (3, 15765), (4, 15792), (20, 16038), (Start: 24 @16056 has 13 MA's), (Start: 28 @16065 has 6 MA's), (36, 16107), (Start: 37 @16119 has 1 MA's), (72, 16341), (77, 16386), (84, 16410), (87, 16416), (89, 16425), (91, 16431), (98, 16461), (108, 16521), (109, 16527), (122, 16587), (123, 16590), (127, 16614), (139, 16671), (153, 16758), (166, 16827), (174, 16881), (189, 16965),

Gene: Tolls\_19 Start: 14433, Stop: 15404, Start Num: 25

Candidate Starts for Tolls\_19:

(Start: 25 @14433 has 54 MA's), (33, 14478), (38, 14499), (40, 14514), (42, 14535), (49, 14586), (53, 14616), (57, 14643), (67, 14694), (70, 14703), (71, 14706), (76, 14760), (80, 14772), (91, 14820), (108, 14910), (117, 14961), (121, 14991), (127, 15021), (132, 15039), (146, 15135), (149, 15153), (158, 15204), (159, 15207), (163, 15237), (165, 15246), (168, 15261), (176, 15318), (187, 15366), (189, 15390), (190, 15396),

Gene: Troje\_17 Start: 14394, Stop: 15365, Start Num: 25

Candidate Starts for Troje\_17:

(Start: 25 @14394 has 54 MA's), (33, 14439), (38, 14460), (40, 14475), (45, 14523), (49, 14547), (53, 14577), (67, 14655), (70, 14664), (71, 14667), (80, 14733), (91, 14781), (100, 14823), (108, 14871), (117, 14922), (127, 14982), (131, 14997), (132, 15000), (135, 15024), (146, 15096), (149, 15114),

(158, 15165), (159, 15168), (163, 15198), (165, 15207), (168, 15222), (173, 15264), (176, 15279), (187, 15327), (189, 15351), (190, 15357),

Gene: Troy\_16 Start: 15117, Stop: 16283, Start Num: 10

Candidate Starts for Troy\_16:

(Start: 10 @15117 has 8 MA's), (19, 15246), (64, 15528), (69, 15558), (73, 15585), (81, 15627), (92, 15672), (111, 15810), (119, 15858), (124, 15876), (125, 15885), (145, 16005), (154, 16053), (164, 16110), (178, 16206), (179, 16215), (183, 16230), (186, 16242), (187, 16248), (189, 16272),

Gene: Typhonomachy\_18 Start: 14764, Stop: 15735, Start Num: 25

Candidate Starts for Typhonomachy\_18:

(Start: 25 @14764 has 54 MA's), (33, 14809), (38, 14830), (45, 14893), (49, 14917), (53, 14947), (59, 14986), (67, 15025), (70, 15034), (71, 15037), (80, 15103), (91, 15151), (100, 15193), (108, 15241), (117, 15292), (127, 15352), (131, 15367), (132, 15370), (134, 15388), (135, 15394), (141, 15439), (146, 15466), (149, 15484), (158, 15535), (159, 15538), (163, 15568), (165, 15577), (168, 15592), (176, 15649), (187, 15697), (189, 15721), (190, 15727),

Gene: Vine\_18 Start: 15477, Stop: 16433, Start Num: 25

Candidate Starts for Vine\_18:

(Start: 25 @15477 has 54 MA's), (33, 15522), (42, 15579), (45, 15606), (53, 15660), (57, 15687), (67, 15738), (68, 15741), (70, 15747), (71, 15750), (76, 15804), (81, 15819), (91, 15864), (96, 15888), (99, 15903), (108, 15954), (127, 16050), (159, 16236), (163, 16266), (165, 16275), (170, 16299), (173, 16332), (189, 16419), (190, 16425),

Gene: Volt\_54 Start: 27948, Stop: 28892, Start Num: 23

Candidate Starts for Volt\_54:

(Start: 22 @27945 has 1 MA's), (Start: 23 @27948 has 5 MA's), (43, 28068), (57, 28164), (74, 28266), (90, 28332), (94, 28353), (96, 28359), (103, 28410), (108, 28434), (127, 28527), (137, 28566), (155, 28677), (156, 28683), (157, 28692), (158, 28698), (163, 28731), (165, 28740), (167, 28749), (170, 28764), (182, 28839), (185, 28851), (188, 28863), (189, 28884),

Gene: Whitney\_20 Start: 16305, Stop: 17228, Start Num: 27

Candidate Starts for Whitney\_20:

(Start: 27 @16305 has 14 MA's), (Start: 28 @16308 has 6 MA's), (30, 16320), (32, 16338), (41, 16383), (45, 16422), (52, 16461), (56, 16494), (57, 16500), (70, 16569), (76, 16623), (77, 16626), (78, 16629), (82, 16641), (89, 16665), (91, 16671), (94, 16689), (105, 16743), (107, 16755), (108, 16761), (113, 16782), (122, 16827), (123, 16830), (126, 16848), (127, 16854), (131, 16869), (132, 16872), (158, 17025), (159, 17028), (161, 17034), (166, 17067), (170, 17085), (173, 17118), (184, 17169), (188, 17184), (192, 17220),

Gene: Yakult\_18 Start: 14355, Stop: 15323, Start Num: 25

Candidate Starts for Yakult\_18:

(15, 14280), (Start: 25 @14355 has 54 MA's), (33, 14400), (34, 14403), (36, 14406), (38, 14421), (40, 14436), (44, 14472), (45, 14484), (67, 14616), (70, 14625), (90, 14739), (91, 14742), (108, 14832), (127, 14943), (141, 15030), (159, 15126), (160, 15129), (163, 15156), (165, 15165), (166, 15171), (170, 15189), (173, 15222), (175, 15231), (189, 15309), (190, 15315),

Gene: Yarn\_16 Start: 14423, Stop: 15394, Start Num: 25

Candidate Starts for Yarn\_16:

(Start: 25 @14423 has 54 MA's), (33, 14468), (38, 14489), (40, 14504), (42, 14525), (49, 14576), (53, 14606), (57, 14633), (67, 14684), (70, 14693), (71, 14696), (76, 14750), (80, 14762), (91, 14810), (108, 14900), (117, 14951), (121, 14981), (127, 15011), (132, 15029), (146, 15125), (149, 15143), (158, 15194), (159, 15197), (163, 15227), (165, 15236), (168, 15251), (176, 15308), (187, 15356), (189,

15380), (190, 15386),

Gene: Yoshi\_18 Start: 12812, Stop: 13741, Start Num: 21

Candidate Starts for Yoshi\_18:

(Start: 21 @12812 has 7 MA's), (35, 12872), (42, 12923), (56, 13022), (57, 13028), (60, 13043), (68, 13085), (82, 13163), (88, 13181), (101, 13247), (103, 13259), (112, 13304), (121, 13343), (123, 13349), (127, 13373), (128, 13376), (129, 13379), (142, 13457), (146, 13478), (147, 13481), (153, 13517), (158, 13544), (159, 13547), (166, 13586), (170, 13604), (171, 13610), (175, 13646), (176, 13652), (180, 13676), (183, 13682), (184, 13688),

Gene: Yucky\_19 Start: 15337, Stop: 16293, Start Num: 25

Candidate Starts for Yucky\_19:

(Start: 25 @15337 has 54 MA's), (33, 15382), (42, 15439), (45, 15466), (53, 15520), (57, 15547), (67, 15598), (68, 15601), (70, 15607), (71, 15610), (76, 15664), (81, 15679), (91, 15724), (96, 15748), (99, 15763), (108, 15814), (127, 15910), (159, 16096), (163, 16126), (165, 16135), (170, 16159), (173, 16192), (189, 16279), (190, 16285),

Gene: Yummy\_18 Start: 14308, Stop: 15279, Start Num: 25

Candidate Starts for Yummy\_18:

(Start: 25 @14308 has 54 MA's), (33, 14353), (38, 14374), (40, 14389), (45, 14437), (49, 14461), (53, 14491), (67, 14569), (70, 14578), (71, 14581), (80, 14647), (91, 14695), (100, 14737), (108, 14785), (117, 14836), (127, 14896), (131, 14911), (132, 14914), (135, 14938), (146, 15010), (149, 15028), (158, 15079), (159, 15082), (163, 15112), (165, 15121), (168, 15136), (173, 15178), (176, 15193), (187, 15241), (189, 15265), (190, 15271),

Gene: ZAYM\_18 Start: 16111, Stop: 16974, Start Num: 37

Candidate Starts for ZAYM\_18:

(2, 15733), (4, 15784), (20, 16030), (Start: 24 @16048 has 13 MA's), (Start: 28 @16057 has 6 MA's), (36, 16099), (Start: 37 @16111 has 1 MA's), (72, 16333), (77, 16378), (84, 16402), (87, 16408), (91, 16423), (98, 16453), (108, 16513), (109, 16519), (122, 16579), (123, 16582), (127, 16606), (139, 16663), (153, 16750), (166, 16819), (174, 16873), (189, 16957),

Gene: Zapner\_19 Start: 13337, Stop: 14266, Start Num: 21

Candidate Starts for Zapner\_19:

(Start: 21 @13337 has 7 MA's), (35, 13397), (42, 13448), (56, 13547), (57, 13553), (60, 13568), (82, 13688), (88, 13706), (101, 13772), (103, 13784), (112, 13829), (121, 13868), (123, 13874), (127, 13898), (128, 13901), (129, 13904), (131, 13913), (132, 13916), (142, 13982), (146, 14003), (147, 14006), (153, 14042), (158, 14069), (159, 14072), (166, 14111), (170, 14129), (171, 14135), (175, 14171), (176, 14177), (180, 14201), (183, 14207), (184, 14213),

Gene: Zareef\_21 Start: 15746, Stop: 16711, Start Num: 25

Candidate Starts for Zareef\_21:

(Start: 25 @15746 has 54 MA's), (33, 15791), (40, 15827), (42, 15848), (45, 15875), (53, 15929), (67, 16010), (70, 16019), (71, 16022), (80, 16091), (91, 16139), (108, 16229), (111, 16244), (118, 16283), (146, 16439), (158, 16505), (159, 16508), (160, 16511), (163, 16538), (165, 16547), (170, 16571), (173, 16604), (177, 16622), (186, 16667), (189, 16697), (190, 16703),

Gene: Ziko\_55 Start: 27888, Stop: 28832, Start Num: 23

Candidate Starts for Ziko\_55:

(Start: 22 @27885 has 1 MA's), (Start: 23 @27888 has 5 MA's), (43, 28008), (57, 28104), (74, 28206), (90, 28272), (94, 28293), (96, 28299), (103, 28350), (108, 28374), (127, 28467), (137, 28506), (155, 28617), (156, 28623), (157, 28632), (158, 28638), (163, 28671), (165, 28680), (167, 28689), (170, 28704), (182, 28779), (185, 28791), (188, 28803), (189, 28824),

