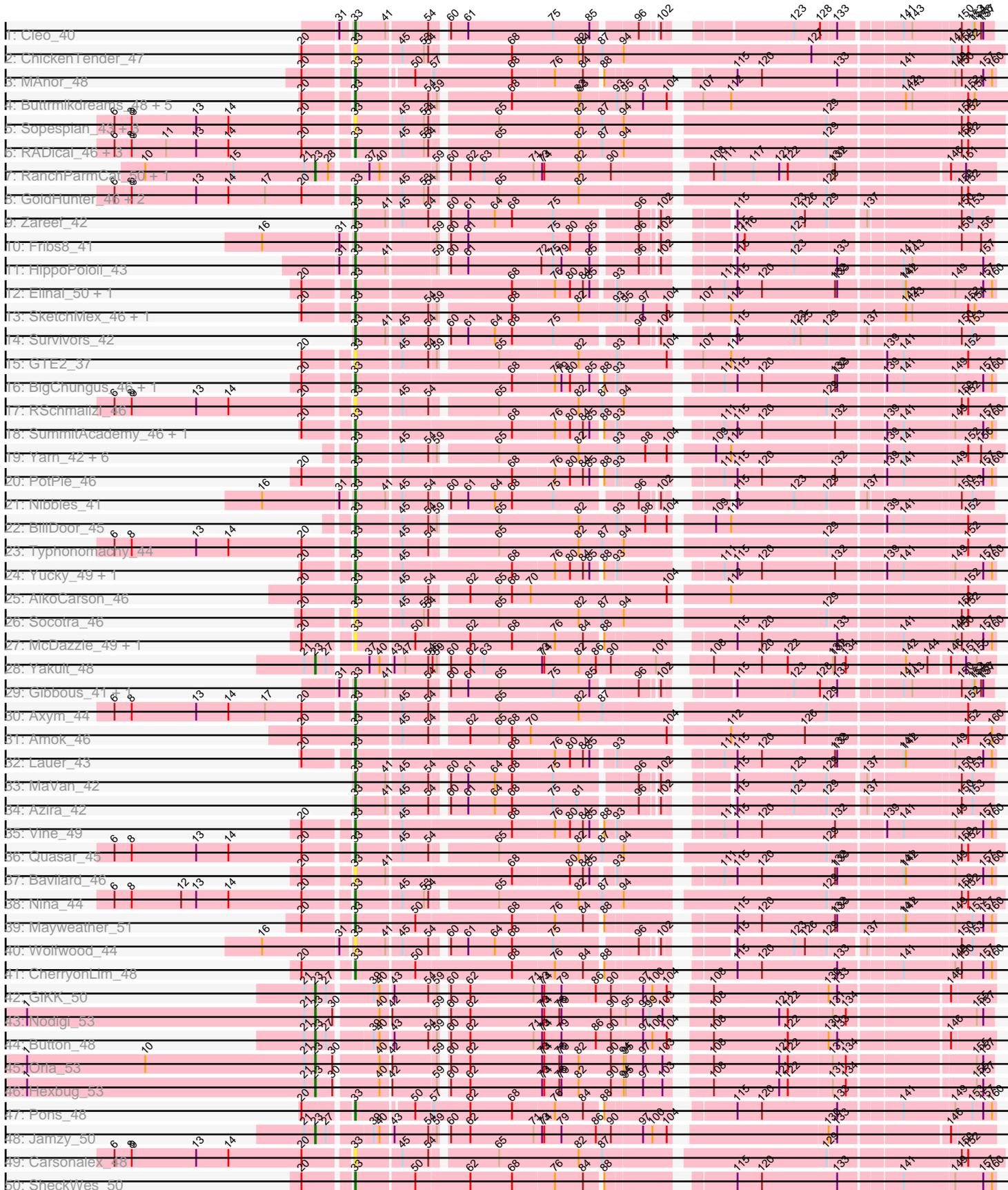


Pham 283687





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 283687 Report

This analysis was run 02/23/26 on database version 636.

Pham number 283687 has 92 members, 23 are drafts.

Phages represented in each track:

- Track 1 : Cleo\_40
- Track 2 : ChickenTender\_47
- Track 3 : MAnor\_48
- Track 4 : Buttrmilkdreams\_48, Yummy\_48, Troje\_48, Blondies\_49, Horseradish\_48, MScarn\_50
- Track 5 : Sopespian\_43, Elliott\_45, PsychoKiller\_44, Starburst\_45
- Track 6 : RADical\_46, RedBaron\_47, Burnsey\_45, Bubble\_43
- Track 7 : RanchParmCat\_50, Margaret\_51
- Track 8 : GoldHunter\_46, Agatha\_45, Cozz\_43
- Track 9 : Zareef\_42
- Track 10 : Fribs8\_41
- Track 11 : HippoPololi\_43
- Track 12 : Elinal\_50, KayGee\_48
- Track 13 : SketchMex\_46, Biskit\_48
- Track 14 : Survivors\_42
- Track 15 : GTE2\_37
- Track 16 : BigChungus\_46, Feastonyeet\_46
- Track 17 : RSchmailzl\_46
- Track 18 : SummitAcademy\_46, Balloona\_46
- Track 19 : Yarn\_42, SteamedHams\_45, CanesSauce\_44, CaramelLatte\_44, AndPeggy\_42, Tolls\_46, ChocoMunchkin\_44
- Track 20 : PotPie\_46
- Track 21 : Nibbles\_41
- Track 22 : BillDoor\_45
- Track 23 : Typhonomachy\_44
- Track 24 : Yucky\_49, CocoaPuff\_47
- Track 25 : AikoCarson\_46
- Track 26 : Socotra\_46
- Track 27 : McDazzle\_49, ElJefes\_48
- Track 28 : Yakult\_48
- Track 29 : Gibbous\_41, Dre3\_41
- Track 30 : Axym\_44
- Track 31 : Amok\_46
- Track 32 : Lauer\_43
- Track 33 : MaVan\_42
- Track 34 : Azira\_42
- Track 35 : Vine\_49

- Track 36 : Quasar\_45
- Track 37 : Bavidard\_46
- Track 38 : Nina\_44
- Track 39 : Mayweather\_51
- Track 40 : Wolfwood\_44
- Track 41 : CherryonLim\_48
- Track 42 : GiKK\_50
- Track 43 : Nodigi\_53
- Track 44 : Button\_48
- Track 45 : Orla\_53
- Track 46 : Hexbug\_53
- Track 47 : Pons\_48
- Track 48 : Jamzy\_50
- Track 49 : Carsonalex\_48
- Track 50 : SheckWes\_50
- Track 51 : Emalyn\_44
- Track 52 : MunkgeeRoachy\_43
- Track 53 : SweatNTears\_46
- Track 54 : Archimedes\_43
- Track 55 : Ghobes\_41
- Track 56 : Frizzle\_40
- Track 57 : Sapo\_40
- Track 58 : Chickadee\_57, Kwekel\_57
- Track 59 : RoadKill\_54
- Track 60 : Dxdert\_58
- Track 61 : Twonlo\_54
- Track 62 : Tiamoceli\_57
- Track 63 : GTE6\_58
- Track 64 : TPA2\_54

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

The start number called the most often in the published annotations is 33, it was called in 59 of the 69 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• Agatha\_45, AikoCarson\_46, Amok\_46, AndPeggy\_42, Axym\_44, Azira\_42, Balloona\_46, Bavidard\_46, BigChungus\_46, BillDoor\_45, Biskit\_48, Blondies\_49, Bubble\_43, Burnsey\_45, Buttrmlkdreams\_48, CanesSauce\_44, CaramelLatte\_44, Carsonalex\_48, CherryonLim\_48, Chickadee\_57, ChickenTender\_47, ChocoMunchkin\_44, Cleo\_40, CocoaPuff\_47, Cozz\_43, Dxdert\_58, Dre3\_41, ElJefes\_48, Elinal\_50, Elliott\_45, Emalyn\_44, Feastonyeet\_46, Fribs8\_41, Frizzle\_40, GTE2\_37, GTE6\_58, Ghobes\_41, Gibbous\_41, GoldHunter\_46, HippoPololi\_43, Horseradish\_48, KayGee\_48, Kwekel\_57, Lauer\_43, MAnor\_48, MScarn\_50, MaVan\_42, Mayweather\_51, McDazzle\_49, MunkgeeRoachy\_43, Nibbles\_41, Nina\_44, Pons\_48, PotPie\_46, PsychoKiller\_44, Quasar\_45, RADical\_46, RSchmailzl\_46, RedBaron\_47, RoadKill\_54, Sapo\_40, SheckWes\_50, SketchMex\_46, Socotra\_46, Sopespian\_43, Starburst\_45, SteamedHams\_45, SummitAcademy\_46, Survivors\_42, SweatNTears\_46, Tiamoceli\_57, Tolls\_46, Troje\_48, Twonlo\_54, Typhonmarchy\_44, Vine\_49, Wolfwood\_44, Yarn\_42,

Yucky\_49, Yummy\_48, Zareef\_42,

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

- 

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

- Archimedes\_43, Button\_48, GiKK\_50, Hexbug\_53, Jamzy\_50, Margaret\_51, Nodigi\_53, Orla\_53, RanchParmCat\_50, TPA2\_54, Yakult\_48,

### Summary by start number:

Start 23:

- Found in 9 of 92 ( 9.8% ) of genes in pham
- Manual Annotations of this start: 9 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Button\_48 (CT), GiKK\_50 (CT), Hexbug\_53 (CT), Jamzy\_50 (CT), Margaret\_51 (CT), Nodigi\_53 (CT), Orla\_53 (CT), RanchParmCat\_50 (CT), Yakult\_48 (CT),

Start 32:

- Found in 1 of 92 ( 1.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TPA2\_54 (singleton),

Start 33:

- Found in 81 of 92 ( 88.0% ) of genes in pham
- Manual Annotations of this start: 59 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Agatha\_45 (CT), AikoCarson\_46 (CT), Amok\_46 (CT), AndPeggy\_42 (CT), Axym\_44 (CT), Azira\_42 (CT), Balloona\_46 (CT), Bavailard\_46 (CT), BigChungus\_46 (CT), BillDoor\_45 (CT), Biskit\_48 (CT), Blondies\_49 (CT), Bubble\_43 (CT), Burnsey\_45 (CT), Buttrmlkdreams\_48 (CT), CanesSauce\_44 (CT), CaramelLatte\_44 (CT), Carsonalex\_48 (CT), CherryonLim\_48 (CT), Chickadee\_57 (DE3), ChickenTender\_47 (CT), ChocoMunchkin\_44 (CT), Cleo\_40 (CT), CocoaPuff\_47 (CT), Cozz\_43 (CT), Dexdert\_58 (DE3), Dre3\_41 (CT), ElJefes\_48 (CT), Elinal\_50 (CT), Elliott\_45 (CT), Emalyn\_44 (CT), Feastonyeet\_46 (CT), Fribs8\_41 (CT), Frizzle\_40 (DA), GTE2\_37 (CT), GTE6\_58 (DE3), Ghobes\_41 (DA), Gibbous\_41 (CT), GoldHunter\_46 (CT), HippoPololi\_43 (CT), Horseradish\_48 (CT), KayGee\_48 (CT), Kwekel\_57 (DE3), Lauer\_43 (CT), MAnor\_48 (CT), MScarn\_50 (CT), MaVan\_42 (CT), Mayweather\_51 (CT), McDazzle\_49 (CT), MunkgeeRoachy\_43 (CT), Nibbles\_41 (CT), Nina\_44 (CT), Pons\_48 (CT), PotPie\_46 (CT), PsychoKiller\_44 (CT), Quasar\_45 (CT), RADical\_46 (CT), RSchmailzl\_46 (CT), RedBaron\_47 (CT), RoadKill\_54 (DE3), Sapo\_40 (DA), SheckWes\_50 (CT), SketchMex\_46 (CT), Socotra\_46 (CT), Sopespian\_43 (CT), Starburst\_45 (CT), SteamedHams\_45 (CT), SummitAcademy\_46 (CT), Survivors\_42 (CT), SweatNTears\_46 (CT), Tiamoceli\_57 (DE3), Tolls\_46 (CT), Troje\_48 (CT), Twonlo\_54 (DE3), Typhonmarchy\_44 (CT), Vine\_49 (CT), Wolfwood\_44 (CT), Yarn\_42 (CT), Yucky\_49 (CT), Yummy\_48 (CT), Zareef\_42 (CT),

Start 34:

- Found in 1 of 92 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 69

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Archimedes\_43 (DA),

### **Summary by clusters:**

There are 4 clusters represented in this pham: singleton, DE3, DA, CT,

Info for manual annotations of cluster CT:

- Start number 23 was manually annotated 9 times for cluster CT.
- Start number 33 was manually annotated 50 times for cluster CT.

Info for manual annotations of cluster DA:

- Start number 33 was manually annotated 3 times for cluster DA.
- Start number 34 was manually annotated 1 time for cluster DA.

Info for manual annotations of cluster DE3:

- Start number 33 was manually annotated 6 times for cluster DE3.

### **Gene Information:**

Gene: Agatha\_45 Start: 33907, Stop: 33068, Start Num: 33

Candidate Starts for Agatha\_45:

(6, 34228), (8, 34204), (9, 34201), (13, 34114), (14, 34069), (17, 34018), (20, 33967), (Start: 33 @33907 has 59 MA's), (45, 33847), (53, 33817), (54, 33811), (65, 33730), (82, 33622), (129, 33298), (150, 33127), (152, 33118),

Gene: AikoCarson\_46 Start: 34085, Stop: 33246, Start Num: 33

Candidate Starts for AikoCarson\_46:

(20, 34160), (Start: 33 @34085 has 59 MA's), (45, 34025), (54, 33989), (62, 33947), (65, 33908), (68, 33890), (70, 33866), (104, 33680), (112, 33608), (152, 33296),

Gene: Amok\_46 Start: 34109, Stop: 33270, Start Num: 33

Candidate Starts for Amok\_46:

(20, 34184), (Start: 33 @34109 has 59 MA's), (45, 34049), (54, 34013), (62, 33971), (65, 33932), (68, 33914), (70, 33890), (104, 33704), (112, 33632), (126, 33530), (152, 33320), (160, 33287),

Gene: AndPeggy\_42 Start: 33440, Stop: 32601, Start Num: 33

Candidate Starts for AndPeggy\_42:

(Start: 33 @33440 has 59 MA's), (45, 33380), (54, 33344), (59, 33335), (65, 33263), (82, 33155), (93, 33101), (98, 33065), (104, 33035), (109, 32984), (112, 32963), (139, 32759), (141, 32738), (152, 32651), (156, 32633),

Gene: Archimedes\_43 Start: 37658, Stop: 38419, Start Num: 34

Candidate Starts for Archimedes\_43:

(Start: 34 @37658 has 1 MA's), (45, 37715), (52, 37739), (66, 37835), (67, 37841), (68, 37847), (77, 37895), (78, 37898), (80, 37913), (83, 37928), (89, 37964), (114, 38093), (138, 38264), (140, 38291),

Gene: Axym\_44 Start: 33804, Stop: 32965, Start Num: 33

Candidate Starts for Axym\_44:

(6, 34125), (8, 34101), (13, 34011), (14, 33966), (17, 33915), (20, 33864), (Start: 33 @33804 has 59 MA's), (45, 33744), (54, 33708), (65, 33627), (82, 33519), (87, 33486), (129, 33195), (152, 33015),

Gene: Azira\_42 Start: 33186, Stop: 32428, Start Num: 33

Candidate Starts for Azira\_42:

(Start: 33 @33186 has 59 MA's), (41, 33147), (45, 33129), (54, 33093), (60, 33078), (61, 33054), (64, 33018), (68, 32994), (75, 32940), (81, 32907), (96, 32835), (102, 32814), (115, 32754), (123, 32676), (129, 32631), (137, 32586), (150, 32472), (153, 32457),

Gene: Balloona\_46 Start: 35119, Stop: 34316, Start Num: 33

Candidate Starts for Balloona\_46:

(20, 35179), (Start: 33 @35119 has 59 MA's), (68, 34912), (76, 34858), (80, 34837), (84, 34819), (85, 34810), (88, 34798), (93, 34783), (111, 34672), (115, 34654), (120, 34621), (132, 34519), (139, 34459), (141, 34438), (149, 34369), (157, 34330), (160, 34321),

Gene: Bavilard\_46 Start: 34976, Stop: 34173, Start Num: 33

Candidate Starts for Bavilard\_46:

(20, 35036), (Start: 33 @34976 has 59 MA's), (41, 34934), (68, 34769), (80, 34694), (84, 34676), (85, 34667), (93, 34640), (111, 34529), (115, 34511), (120, 34478), (132, 34376), (133, 34373), (141, 34295), (142, 34292), (149, 34226), (157, 34187), (160, 34178),

Gene: BigChungus\_46 Start: 35108, Stop: 34305, Start Num: 33

Candidate Starts for BigChungus\_46:

(20, 35168), (Start: 33 @35108 has 59 MA's), (68, 34901), (76, 34847), (79, 34838), (80, 34826), (85, 34799), (88, 34787), (93, 34772), (111, 34661), (115, 34643), (120, 34610), (132, 34508), (133, 34505), (139, 34448), (141, 34427), (149, 34358), (157, 34319), (160, 34310),

Gene: BillDoor\_45 Start: 33112, Stop: 32273, Start Num: 33

Candidate Starts for BillDoor\_45:

(Start: 33 @33112 has 59 MA's), (45, 33052), (54, 33016), (59, 33007), (65, 32935), (82, 32827), (93, 32773), (98, 32737), (104, 32707), (109, 32656), (112, 32635), (139, 32431), (141, 32410), (152, 32323),

Gene: Biskit\_48 Start: 34069, Stop: 33221, Start Num: 33

Candidate Starts for Biskit\_48:

(20, 34129), (Start: 33 @34069 has 59 MA's), (54, 33973), (59, 33964), (68, 33874), (82, 33784), (93, 33733), (95, 33724), (97, 33700), (104, 33667), (107, 33634), (112, 33595), (142, 33367), (143, 33358), (152, 33283), (154, 33274),

Gene: Blondies\_49 Start: 34386, Stop: 33538, Start Num: 33

Candidate Starts for Blondies\_49:

(20, 34446), (Start: 33 @34386 has 59 MA's), (54, 34290), (59, 34281), (68, 34191), (82, 34101), (83, 34098), (93, 34050), (95, 34041), (97, 34017), (104, 33984), (107, 33951), (112, 33912), (142, 33684), (143, 33675), (152, 33600), (154, 33591),

Gene: Bubble\_43 Start: 33494, Stop: 32655, Start Num: 33

Candidate Starts for Bubble\_43:

(6, 33815), (8, 33791), (9, 33788), (11, 33743), (13, 33701), (14, 33656), (20, 33554), (Start: 33 @33494 has 59 MA's), (45, 33434), (53, 33404), (54, 33398), (65, 33317), (82, 33209), (87, 33176), (94, 33149), (129, 32885), (150, 32714), (152, 32705),

Gene: Burnsey\_45 Start: 33898, Stop: 33059, Start Num: 33

Candidate Starts for Burnsey\_45:

(6, 34219), (8, 34195), (9, 34192), (11, 34147), (13, 34105), (14, 34060), (20, 33958), (Start: 33 @33898 has 59 MA's), (45, 33838), (53, 33808), (54, 33802), (65, 33721), (82, 33613), (87, 33580),

(94, 33553), (129, 33289), (150, 33118), (152, 33109),

Gene: Button\_48 Start: 34069, Stop: 33221, Start Num: 23

Candidate Starts for Button\_48:

(21, 34084), (Start: 23 @34069 has 9 MA's), (27, 34054), (39, 34000), (40, 33994), (43, 33979), (54, 33934), (59, 33925), (60, 33919), (62, 33892), (71, 33805), (73, 33793), (74, 33790), (79, 33766), (86, 33718), (90, 33697), (97, 33655), (100, 33643), (104, 33625), (108, 33586), (122, 33484), (130, 33430), (133, 33418), (146, 33280),

Gene: Buttrmlkdreams\_48 Start: 34516, Stop: 33668, Start Num: 33

Candidate Starts for Buttrmlkdreams\_48:

(20, 34576), (Start: 33 @34516 has 59 MA's), (54, 34420), (59, 34411), (68, 34321), (82, 34231), (83, 34228), (93, 34180), (95, 34171), (97, 34147), (104, 34114), (107, 34081), (112, 34042), (142, 33814), (143, 33805), (152, 33730), (154, 33721),

Gene: CanesSauce\_44 Start: 33613, Stop: 32774, Start Num: 33

Candidate Starts for CanesSauce\_44:

(Start: 33 @33613 has 59 MA's), (45, 33553), (54, 33517), (59, 33508), (65, 33436), (82, 33328), (93, 33274), (98, 33238), (104, 33208), (109, 33157), (112, 33136), (139, 32932), (141, 32911), (152, 32824), (156, 32806),

Gene: CaramellLatte\_44 Start: 33613, Stop: 32774, Start Num: 33

Candidate Starts for CaramellLatte\_44:

(Start: 33 @33613 has 59 MA's), (45, 33553), (54, 33517), (59, 33508), (65, 33436), (82, 33328), (93, 33274), (98, 33238), (104, 33208), (109, 33157), (112, 33136), (139, 32932), (141, 32911), (152, 32824), (156, 32806),

Gene: Carsonalex\_48 Start: 33866, Stop: 33027, Start Num: 33

Candidate Starts for Carsonalex\_48:

(6, 34187), (8, 34163), (9, 34160), (13, 34073), (14, 34028), (20, 33926), (Start: 33 @33866 has 59 MA's), (45, 33806), (54, 33770), (65, 33689), (82, 33581), (87, 33548), (129, 33257), (150, 33086), (152, 33077),

Gene: CherryonLim\_48 Start: 36692, Stop: 35889, Start Num: 33

Candidate Starts for CherryonLim\_48:

(20, 36752), (Start: 33 @36692 has 59 MA's), (50, 36614), (68, 36485), (76, 36431), (84, 36392), (88, 36371), (115, 36227), (120, 36194), (133, 36089), (141, 36011), (149, 35942), (150, 35933), (157, 35903), (160, 35894),

Gene: Chickadee\_57 Start: 43696, Stop: 44475, Start Num: 33

Candidate Starts for Chickadee\_57:

(15, 43534), (18, 43600), (19, 43615), (Start: 33 @43696 has 59 MA's), (38, 43717), (55, 43795), (60, 43810), (63, 43855), (77, 43945), (83, 43978), (109, 44110), (115, 44137), (122, 44206), (129, 44260), (137, 44308), (152, 44431), (159, 44461),

Gene: ChickenTender\_47 Start: 33458, Stop: 32601, Start Num: 33

Candidate Starts for ChickenTender\_47:

(20, 33518), (Start: 33 @33458 has 59 MA's), (45, 33398), (53, 33368), (54, 33362), (68, 33263), (82, 33173), (84, 33167), (87, 33140), (94, 33113), (127, 32852), (147, 32672), (150, 32660), (152, 32651),

Gene: ChocoMunchkin\_44 Start: 33613, Stop: 32774, Start Num: 33

Candidate Starts for ChocoMunchkin\_44:

(Start: 33 @33613 has 59 MA's), (45, 33553), (54, 33517), (59, 33508), (65, 33436), (82, 33328), (93, 33274), (98, 33238), (104, 33208), (109, 33157), (112, 33136), (139, 32932), (141, 32911), (152, 32824), (156, 32806),

Gene: Cleo\_40 Start: 32906, Stop: 32142, Start Num: 33

Candidate Starts for Cleo\_40:

(31, 32921), (Start: 33 @32906 has 59 MA's), (41, 32867), (54, 32813), (60, 32795), (61, 32771), (75, 32657), (85, 32606), (96, 32552), (102, 32531), (123, 32390), (128, 32354), (133, 32333), (141, 32261), (143, 32249), (150, 32186), (153, 32171), (154, 32168), (156, 32159), (157, 32156),

Gene: CocoaPuff\_47 Start: 35113, Stop: 34310, Start Num: 33

Candidate Starts for CocoaPuff\_47:

(20, 35173), (Start: 33 @35113 has 59 MA's), (45, 35053), (68, 34906), (76, 34852), (80, 34831), (84, 34813), (85, 34804), (88, 34792), (93, 34777), (111, 34666), (115, 34648), (120, 34615), (132, 34513), (139, 34453), (141, 34432), (149, 34363), (157, 34324), (160, 34315),

Gene: Cozz\_43 Start: 33495, Stop: 32656, Start Num: 33

Candidate Starts for Cozz\_43:

(6, 33816), (8, 33792), (9, 33789), (13, 33702), (14, 33657), (17, 33606), (20, 33555), (Start: 33 @33495 has 59 MA's), (45, 33435), (53, 33405), (54, 33399), (65, 33318), (82, 33210), (129, 32886), (150, 32715), (152, 32706),

Gene: Dxdert\_58 Start: 44000, Stop: 44779, Start Num: 33

Candidate Starts for Dxdert\_58:

(15, 43838), (18, 43904), (19, 43919), (Start: 33 @44000 has 59 MA's), (38, 44021), (55, 44099), (60, 44114), (63, 44159), (77, 44249), (83, 44282), (103, 44375), (115, 44441), (122, 44510), (129, 44564), (137, 44612), (159, 44765),

Gene: Dre3\_41 Start: 32649, Stop: 31885, Start Num: 33

Candidate Starts for Dre3\_41:

(31, 32664), (Start: 33 @32649 has 59 MA's), (41, 32610), (54, 32556), (60, 32538), (61, 32514), (65, 32472), (75, 32400), (85, 32349), (96, 32295), (102, 32274), (115, 32211), (123, 32133), (128, 32097), (133, 32076), (141, 32004), (143, 31992), (150, 31929), (153, 31914), (154, 31911), (156, 31902), (157, 31899),

Gene: ElJefes\_48 Start: 35628, Stop: 34825, Start Num: 33

Candidate Starts for ElJefes\_48:

(20, 35688), (Start: 33 @35628 has 59 MA's), (50, 35550), (62, 35478), (68, 35421), (76, 35367), (84, 35328), (88, 35307), (115, 35163), (120, 35130), (133, 35025), (141, 34947), (149, 34878), (150, 34869), (157, 34839), (160, 34830),

Gene: Elinal\_50 Start: 35490, Stop: 34687, Start Num: 33

Candidate Starts for Elinal\_50:

(20, 35550), (Start: 33 @35490 has 59 MA's), (68, 35283), (76, 35229), (80, 35208), (84, 35190), (85, 35181), (93, 35154), (111, 35043), (115, 35025), (120, 34992), (132, 34890), (133, 34887), (141, 34809), (142, 34806), (149, 34740), (157, 34701), (160, 34692),

Gene: Elliott\_45 Start: 33793, Stop: 32954, Start Num: 33

Candidate Starts for Elliott\_45:

(6, 34114), (8, 34090), (9, 34087), (13, 34000), (14, 33955), (20, 33853), (Start: 33 @33793 has 59 MA's), (45, 33733), (53, 33703), (54, 33697), (65, 33616), (82, 33508), (87, 33475), (94, 33448), (129, 33184), (150, 33013), (152, 33004),

Gene: Emalyn\_44 Start: 32901, Stop: 32062, Start Num: 33

Candidate Starts for Emalyn\_44:

(20, 32976), (Start: 33 @32901 has 59 MA's), (45, 32841), (54, 32805), (62, 32763), (65, 32724), (68, 32706), (70, 32682), (104, 32496), (112, 32424), (152, 32112),

Gene: Feastonyeet\_46 Start: 35108, Stop: 34305, Start Num: 33

Candidate Starts for Feastonyeet\_46:

(20, 35168), (Start: 33 @35108 has 59 MA's), (68, 34901), (76, 34847), (79, 34838), (80, 34826), (85, 34799), (88, 34787), (93, 34772), (111, 34661), (115, 34643), (120, 34610), (132, 34508), (133, 34505), (139, 34448), (141, 34427), (149, 34358), (157, 34319), (160, 34310),

Gene: Fribs8\_41 Start: 32917, Stop: 32156, Start Num: 33

Candidate Starts for Fribs8\_41:

(16, 33031), (31, 32932), (Start: 33 @32917 has 59 MA's), (59, 32815), (60, 32809), (61, 32785), (75, 32671), (80, 32647), (85, 32620), (96, 32566), (102, 32545), (115, 32482), (116, 32473), (123, 32404), (150, 32200), (156, 32173),

Gene: Frizzle\_40 Start: 36518, Stop: 37297, Start Num: 33

Candidate Starts for Frizzle\_40:

(Start: 33 @36518 has 59 MA's), (35, 36530), (36, 36536), (46, 36584), (48, 36593), (49, 36596), (60, 36632), (69, 36737), (77, 36767), (82, 36797), (87, 36830), (88, 36833), (91, 36845), (92, 36848), (106, 36944), (118, 36989), (148, 37235), (154, 37259),

Gene: GTE2\_37 Start: 33497, Stop: 32658, Start Num: 33

Candidate Starts for GTE2\_37:

(20, 33557), (Start: 33 @33497 has 59 MA's), (45, 33437), (54, 33401), (59, 33392), (65, 33320), (82, 33212), (93, 33158), (104, 33092), (107, 33059), (112, 33020), (139, 32816), (141, 32795), (152, 32708),

Gene: GTE6\_58 Start: 44409, Stop: 45188, Start Num: 33

Candidate Starts for GTE6\_58:

(2, 43980), (3, 44022), (4, 44031), (5, 44073), (7, 44082), (15, 44247), (18, 44313), (19, 44328), (Start: 33 @44409 has 59 MA's), (55, 44508), (60, 44523), (63, 44568), (77, 44658), (83, 44691), (115, 44850), (122, 44919), (129, 44973), (159, 45174),

Gene: Ghobes\_41 Start: 36518, Stop: 37297, Start Num: 33

Candidate Starts for Ghobes\_41:

(Start: 33 @36518 has 59 MA's), (36, 36536), (46, 36584), (48, 36593), (49, 36596), (60, 36632), (67, 36710), (69, 36737), (77, 36767), (82, 36797), (87, 36830), (88, 36833), (91, 36845), (98, 36890), (106, 36944), (118, 36989), (148, 37235), (154, 37259),

Gene: GiKK\_50 Start: 34402, Stop: 33551, Start Num: 23

Candidate Starts for GiKK\_50:

(21, 34417), (Start: 23 @34402 has 9 MA's), (27, 34387), (39, 34330), (40, 34324), (43, 34309), (54, 34264), (59, 34255), (60, 34249), (62, 34222), (71, 34135), (73, 34123), (74, 34120), (79, 34096), (86, 34048), (90, 34027), (97, 33985), (100, 33973), (104, 33955), (108, 33916), (130, 33760), (133, 33748), (146, 33610),

Gene: Gibbous\_41 Start: 32649, Stop: 31885, Start Num: 33

Candidate Starts for Gibbous\_41:

(31, 32664), (Start: 33 @32649 has 59 MA's), (41, 32610), (54, 32556), (60, 32538), (61, 32514), (65, 32472), (75, 32400), (85, 32349), (96, 32295), (102, 32274), (115, 32211), (123, 32133), (128, 32097), (133, 32076), (141, 32004), (143, 31992), (150, 31929), (153, 31914), (154, 31911), (156, 31902),

(157, 31899),

Gene: GoldHunter\_46 Start: 33907, Stop: 33068, Start Num: 33

Candidate Starts for GoldHunter\_46:

(6, 34228), (8, 34204), (9, 34201), (13, 34114), (14, 34069), (17, 34018), (20, 33967), (Start: 33 @33907 has 59 MA's), (45, 33847), (53, 33817), (54, 33811), (65, 33730), (82, 33622), (129, 33298), (150, 33127), (152, 33118),

Gene: Hexbug\_53 Start: 36488, Stop: 35637, Start Num: 23

Candidate Starts for Hexbug\_53:

(1, 36890), (21, 36503), (Start: 23 @36488 has 9 MA's), (30, 36464), (40, 36410), (42, 36398), (59, 36341), (60, 36335), (62, 36308), (73, 36209), (74, 36206), (78, 36185), (79, 36182), (82, 36158), (90, 36113), (94, 36098), (95, 36095), (97, 36071), (103, 36044), (108, 35999), (121, 35909), (122, 35897), (131, 35837), (134, 35819), (155, 35660), (157, 35651),

Gene: HippoPololi\_43 Start: 33061, Stop: 32297, Start Num: 33

Candidate Starts for HippoPololi\_43:

(31, 33076), (Start: 33 @33061 has 59 MA's), (41, 33019), (59, 32956), (60, 32950), (61, 32926), (72, 32827), (75, 32812), (79, 32800), (85, 32761), (96, 32707), (102, 32686), (115, 32623), (123, 32545), (133, 32488), (141, 32416), (143, 32404), (157, 32311),

Gene: Horseradish\_48 Start: 34002, Stop: 33154, Start Num: 33

Candidate Starts for Horseradish\_48:

(20, 34062), (Start: 33 @34002 has 59 MA's), (54, 33906), (59, 33897), (68, 33807), (82, 33717), (83, 33714), (93, 33666), (95, 33657), (97, 33633), (104, 33600), (107, 33567), (112, 33528), (142, 33300), (143, 33291), (152, 33216), (154, 33207),

Gene: Jamzy\_50 Start: 34382, Stop: 33534, Start Num: 23

Candidate Starts for Jamzy\_50:

(21, 34397), (Start: 23 @34382 has 9 MA's), (27, 34367), (39, 34313), (40, 34307), (43, 34292), (54, 34247), (59, 34238), (60, 34232), (62, 34205), (71, 34118), (73, 34106), (74, 34103), (79, 34079), (86, 34031), (90, 34010), (97, 33968), (100, 33956), (104, 33938), (130, 33743), (133, 33731), (146, 33593),

Gene: KayGee\_48 Start: 35490, Stop: 34687, Start Num: 33

Candidate Starts for KayGee\_48:

(20, 35550), (Start: 33 @35490 has 59 MA's), (68, 35283), (76, 35229), (80, 35208), (84, 35190), (85, 35181), (93, 35154), (111, 35043), (115, 35025), (120, 34992), (132, 34890), (133, 34887), (141, 34809), (142, 34806), (149, 34740), (157, 34701), (160, 34692),

Gene: Kwekel\_57 Start: 43609, Stop: 44388, Start Num: 33

Candidate Starts for Kwekel\_57:

(15, 43447), (18, 43513), (19, 43528), (Start: 33 @43609 has 59 MA's), (38, 43630), (55, 43708), (60, 43723), (63, 43768), (77, 43858), (83, 43891), (109, 44023), (115, 44050), (122, 44119), (129, 44173), (137, 44221), (152, 44344), (159, 44374),

Gene: Lauer\_43 Start: 36512, Stop: 35706, Start Num: 33

Candidate Starts for Lauer\_43:

(20, 36572), (Start: 33 @36512 has 59 MA's), (68, 36305), (76, 36251), (80, 36230), (84, 36212), (85, 36203), (93, 36176), (111, 36065), (115, 36047), (120, 36014), (132, 35912), (133, 35909), (141, 35831), (142, 35828), (149, 35762), (157, 35723), (160, 35711),

Gene: MAnor\_48 Start: 35832, Stop: 35035, Start Num: 33

Candidate Starts for MAnor\_48:

(20, 35892), (Start: 33 @35832 has 59 MA's), (50, 35760), (57, 35739), (68, 35631), (76, 35577), (84, 35538), (88, 35517), (115, 35373), (120, 35340), (133, 35235), (141, 35157), (149, 35088), (150, 35079), (157, 35049), (160, 35040),

Gene: MScarn\_50 Start: 34184, Stop: 33336, Start Num: 33

Candidate Starts for MScarn\_50:

(20, 34244), (Start: 33 @34184 has 59 MA's), (54, 34088), (59, 34079), (68, 33989), (82, 33899), (83, 33896), (93, 33848), (95, 33839), (97, 33815), (104, 33782), (107, 33749), (112, 33710), (142, 33482), (143, 33473), (152, 33398), (154, 33389),

Gene: MaVan\_42 Start: 33215, Stop: 32457, Start Num: 33

Candidate Starts for MaVan\_42:

(Start: 33 @33215 has 59 MA's), (41, 33176), (45, 33158), (54, 33122), (60, 33107), (61, 33083), (64, 33047), (68, 33023), (75, 32969), (96, 32864), (102, 32843), (115, 32783), (123, 32705), (129, 32660), (137, 32615), (150, 32501), (153, 32486),

Gene: Margaret\_51 Start: 35131, Stop: 34277, Start Num: 23

Candidate Starts for Margaret\_51:

(10, 35368), (15, 35245), (21, 35146), (Start: 23 @35131 has 9 MA's), (28, 35113), (37, 35065), (40, 35053), (59, 34984), (60, 34978), (62, 34951), (63, 34933), (71, 34864), (73, 34852), (74, 34849), (82, 34801), (90, 34756), (108, 34645), (111, 34630), (117, 34591), (121, 34555), (122, 34543), (131, 34483), (132, 34480), (146, 34339), (151, 34318),

Gene: Mayweather\_51 Start: 36577, Stop: 35774, Start Num: 33

Candidate Starts for Mayweather\_51:

(20, 36637), (Start: 33 @36577 has 59 MA's), (50, 36499), (68, 36370), (76, 36316), (84, 36277), (88, 36256), (115, 36112), (120, 36079), (132, 35977), (133, 35974), (141, 35896), (142, 35893), (149, 35827), (153, 35803), (157, 35788), (160, 35779),

Gene: McDazzle\_49 Start: 35622, Stop: 34819, Start Num: 33

Candidate Starts for McDazzle\_49:

(20, 35682), (Start: 33 @35622 has 59 MA's), (50, 35544), (62, 35472), (68, 35415), (76, 35361), (84, 35322), (88, 35301), (115, 35157), (120, 35124), (133, 35019), (141, 34941), (149, 34872), (150, 34863), (157, 34833), (160, 34824),

Gene: MunkgeeRoachy\_43 Start: 33256, Stop: 32417, Start Num: 33

Candidate Starts for MunkgeeRoachy\_43:

(20, 33316), (Start: 33 @33256 has 59 MA's), (45, 33196), (53, 33166), (54, 33160), (65, 33079), (82, 32971), (87, 32938), (94, 32911), (129, 32647), (141, 32554), (152, 32467),

Gene: Nibbles\_41 Start: 32902, Stop: 32144, Start Num: 33

Candidate Starts for Nibbles\_41:

(16, 33016), (31, 32917), (Start: 33 @32902 has 59 MA's), (41, 32863), (45, 32845), (54, 32809), (60, 32794), (61, 32770), (64, 32734), (68, 32710), (75, 32656), (96, 32551), (102, 32530), (115, 32470), (123, 32392), (129, 32347), (137, 32302), (150, 32188), (153, 32173),

Gene: Nina\_44 Start: 34031, Stop: 33192, Start Num: 33

Candidate Starts for Nina\_44:

(6, 34352), (8, 34328), (12, 34259), (13, 34238), (14, 34193), (20, 34091), (Start: 33 @34031 has 59 MA's), (45, 33971), (53, 33941), (54, 33935), (65, 33854), (82, 33746), (87, 33713), (94, 33686), (129, 33422), (150, 33251), (152, 33242),

Gene: Nodigi\_53 Start: 36539, Stop: 35688, Start Num: 23

Candidate Starts for Nodigi\_53:

(1, 36941), (21, 36554), (Start: 23 @36539 has 9 MA's), (30, 36515), (40, 36461), (42, 36449), (59, 36392), (60, 36386), (62, 36359), (73, 36260), (74, 36257), (78, 36236), (79, 36233), (90, 36164), (95, 36146), (97, 36122), (99, 36113), (103, 36095), (108, 36050), (121, 35960), (122, 35948), (131, 35888), (134, 35870), (155, 35711), (157, 35702),

Gene: Orla\_53 Start: 36447, Stop: 35596, Start Num: 23

Candidate Starts for Orla\_53:

(1, 36849), (10, 36684), (21, 36462), (Start: 23 @36447 has 9 MA's), (30, 36423), (40, 36369), (42, 36357), (59, 36300), (60, 36294), (62, 36267), (73, 36168), (74, 36165), (78, 36144), (79, 36141), (82, 36117), (90, 36072), (94, 36057), (95, 36054), (97, 36030), (103, 36003), (108, 35958), (121, 35868), (122, 35856), (131, 35796), (134, 35778), (155, 35619), (157, 35610),

Gene: Pons\_48 Start: 35462, Stop: 34665, Start Num: 33

Candidate Starts for Pons\_48:

(20, 35522), (Start: 33 @35462 has 59 MA's), (50, 35390), (57, 35369), (62, 35318), (68, 35261), (76, 35207), (84, 35168), (88, 35147), (115, 35003), (120, 34970), (133, 34865), (141, 34787), (149, 34718), (153, 34694), (157, 34679), (160, 34670),

Gene: PotPie\_46 Start: 36143, Stop: 35340, Start Num: 33

Candidate Starts for PotPie\_46:

(20, 36203), (Start: 33 @36143 has 59 MA's), (68, 35936), (76, 35882), (80, 35861), (84, 35843), (85, 35834), (88, 35822), (93, 35807), (111, 35696), (115, 35678), (120, 35645), (132, 35543), (139, 35483), (141, 35462), (149, 35393), (157, 35354), (160, 35345),

Gene: PsychoKiller\_44 Start: 33794, Stop: 32955, Start Num: 33

Candidate Starts for PsychoKiller\_44:

(6, 34115), (8, 34091), (9, 34088), (13, 34001), (14, 33956), (20, 33854), (Start: 33 @33794 has 59 MA's), (45, 33734), (53, 33704), (54, 33698), (65, 33617), (82, 33509), (87, 33476), (94, 33449), (129, 33185), (150, 33014), (152, 33005),

Gene: Quasar\_45 Start: 34456, Stop: 33617, Start Num: 33

Candidate Starts for Quasar\_45:

(6, 34777), (8, 34753), (13, 34663), (14, 34618), (20, 34516), (Start: 33 @34456 has 59 MA's), (45, 34396), (54, 34360), (65, 34279), (82, 34171), (87, 34138), (94, 34111), (129, 33847), (150, 33676), (152, 33667),

Gene: RADical\_46 Start: 33788, Stop: 32949, Start Num: 33

Candidate Starts for RADical\_46:

(6, 34109), (8, 34085), (9, 34082), (11, 34037), (13, 33995), (14, 33950), (20, 33848), (Start: 33 @33788 has 59 MA's), (45, 33728), (53, 33698), (54, 33692), (65, 33611), (82, 33503), (87, 33470), (94, 33443), (129, 33179), (150, 33008), (152, 32999),

Gene: RSchmailzl\_46 Start: 33944, Stop: 33105, Start Num: 33

Candidate Starts for RSchmailzl\_46:

(6, 34265), (8, 34241), (9, 34238), (13, 34151), (14, 34106), (20, 34004), (Start: 33 @33944 has 59 MA's), (45, 33884), (54, 33848), (65, 33767), (82, 33659), (87, 33626), (94, 33599), (129, 33335), (150, 33164), (152, 33155),

Gene: RanchParmCat\_50 Start: 35272, Stop: 34418, Start Num: 23

Candidate Starts for RanchParmCat\_50:

(10, 35509), (15, 35386), (21, 35287), (Start: 23 @35272 has 9 MA's), (28, 35254), (37, 35206), (40, 35194), (59, 35125), (60, 35119), (62, 35092), (63, 35074), (71, 35005), (73, 34993), (74, 34990), (82, 34942), (90, 34897), (108, 34786), (111, 34771), (117, 34732), (121, 34696), (122, 34684), (131, 34624), (132, 34621), (146, 34480), (151, 34459),

Gene: RedBaron\_47 Start: 34123, Stop: 33284, Start Num: 33

Candidate Starts for RedBaron\_47:

(6, 34444), (8, 34420), (9, 34417), (11, 34372), (13, 34330), (14, 34285), (20, 34183), (Start: 33 @34123 has 59 MA's), (45, 34063), (53, 34033), (54, 34027), (65, 33946), (82, 33838), (87, 33805), (94, 33778), (129, 33514), (150, 33343), (152, 33334),

Gene: RoadKill\_54 Start: 43158, Stop: 43937, Start Num: 33

Candidate Starts for RoadKill\_54:

(15, 42996), (18, 43062), (19, 43077), (Start: 33 @43158 has 59 MA's), (38, 43179), (55, 43257), (60, 43272), (63, 43317), (77, 43407), (83, 43440), (103, 43533), (115, 43599), (122, 43668), (129, 43722), (159, 43923),

Gene: Sapo\_40 Start: 36566, Stop: 37357, Start Num: 33

Candidate Starts for Sapo\_40:

(25, 36521), (26, 36524), (Start: 33 @36566 has 59 MA's), (36, 36584), (48, 36641), (51, 36650), (69, 36785), (82, 36845), (91, 36893), (92, 36896), (105, 36989), (119, 37046), (126, 37109), (158, 37331),

Gene: SheckWes\_50 Start: 35167, Stop: 34364, Start Num: 33

Candidate Starts for SheckWes\_50:

(20, 35227), (Start: 33 @35167 has 59 MA's), (50, 35089), (62, 35017), (68, 34960), (76, 34906), (84, 34867), (88, 34846), (115, 34702), (120, 34669), (133, 34564), (141, 34486), (149, 34417), (157, 34378), (160, 34369),

Gene: SketchMex\_46 Start: 34069, Stop: 33221, Start Num: 33

Candidate Starts for SketchMex\_46:

(20, 34129), (Start: 33 @34069 has 59 MA's), (54, 33973), (59, 33964), (68, 33874), (82, 33784), (93, 33733), (95, 33724), (97, 33700), (104, 33667), (107, 33634), (112, 33595), (142, 33367), (143, 33358), (152, 33283), (154, 33274),

Gene: Socotra\_46 Start: 33906, Stop: 33067, Start Num: 33

Candidate Starts for Socotra\_46:

(20, 33966), (Start: 33 @33906 has 59 MA's), (45, 33846), (53, 33816), (54, 33810), (65, 33729), (82, 33621), (87, 33588), (94, 33561), (129, 33297), (150, 33126), (152, 33117),

Gene: Sopespian\_43 Start: 33795, Stop: 32956, Start Num: 33

Candidate Starts for Sopespian\_43:

(6, 34116), (8, 34092), (9, 34089), (13, 34002), (14, 33957), (20, 33855), (Start: 33 @33795 has 59 MA's), (45, 33735), (53, 33705), (54, 33699), (65, 33618), (82, 33510), (87, 33477), (94, 33450), (129, 33186), (150, 33015), (152, 33006),

Gene: Starburst\_45 Start: 33788, Stop: 32949, Start Num: 33

Candidate Starts for Starburst\_45:

(6, 34109), (8, 34085), (9, 34082), (13, 33995), (14, 33950), (20, 33848), (Start: 33 @33788 has 59 MA's), (45, 33728), (53, 33698), (54, 33692), (65, 33611), (82, 33503), (87, 33470), (94, 33443), (129, 33179), (150, 33008), (152, 32999),

Gene: SteamedHams\_45 Start: 33292, Stop: 32453, Start Num: 33

Candidate Starts for SteamedHams\_45:

(Start: 33 @33292 has 59 MA's), (45, 33232), (54, 33196), (59, 33187), (65, 33115), (82, 33007), (93, 32953), (98, 32917), (104, 32887), (109, 32836), (112, 32815), (139, 32611), (141, 32590), (152, 32503), (156, 32485),

Gene: SummitAcademy\_46 Start: 35232, Stop: 34429, Start Num: 33

Candidate Starts for SummitAcademy\_46:

(20, 35292), (Start: 33 @35232 has 59 MA's), (68, 35025), (76, 34971), (80, 34950), (84, 34932), (85, 34923), (88, 34911), (93, 34896), (111, 34785), (115, 34767), (120, 34734), (132, 34632), (139, 34572), (141, 34551), (149, 34482), (157, 34443), (160, 34434),

Gene: Survivors\_42 Start: 33111, Stop: 32353, Start Num: 33

Candidate Starts for Survivors\_42:

(Start: 33 @33111 has 59 MA's), (41, 33072), (45, 33054), (54, 33018), (60, 33003), (61, 32979), (64, 32943), (68, 32919), (75, 32865), (96, 32760), (102, 32739), (115, 32679), (123, 32601), (125, 32592), (129, 32556), (137, 32511), (150, 32397), (153, 32382),

Gene: SweatNTears\_46 Start: 33738, Stop: 32899, Start Num: 33

Candidate Starts for SweatNTears\_46:

(22, 33786), (29, 33756), (Start: 33 @33738 has 59 MA's), (45, 33678), (53, 33648), (54, 33642), (65, 33561), (82, 33453), (87, 33420), (94, 33393), (129, 33129), (152, 32949),

Gene: TPA2\_54 Start: 40199, Stop: 41080, Start Num: 32

Candidate Starts for TPA2\_54:

(24, 40160), (32, 40199), (44, 40265), (54, 40310), (58, 40316), (60, 40325), (61, 40349), (78, 40463), (93, 40541), (104, 40610), (110, 40676), (113, 40700), (118, 40733), (119, 40736), (124, 40787), (128, 40820), (130, 40832), (135, 40874), (136, 40880), (143, 40949), (145, 40985), (150, 41012),

Gene: Tiamoceli\_57 Start: 44584, Stop: 45363, Start Num: 33

Candidate Starts for Tiamoceli\_57:

(18, 44488), (19, 44503), (Start: 33 @44584 has 59 MA's), (38, 44605), (55, 44683), (60, 44698), (63, 44743), (77, 44833), (83, 44866), (103, 44959), (115, 45025), (122, 45094), (129, 45148), (152, 45319), (159, 45349),

Gene: Tolls\_46 Start: 33685, Stop: 32846, Start Num: 33

Candidate Starts for Tolls\_46:

(Start: 33 @33685 has 59 MA's), (45, 33625), (54, 33589), (59, 33580), (65, 33508), (82, 33400), (93, 33346), (98, 33310), (104, 33280), (109, 33229), (112, 33208), (139, 33004), (141, 32983), (152, 32896), (156, 32878),

Gene: Troje\_48 Start: 34407, Stop: 33559, Start Num: 33

Candidate Starts for Troje\_48:

(20, 34467), (Start: 33 @34407 has 59 MA's), (54, 34311), (59, 34302), (68, 34212), (82, 34122), (83, 34119), (93, 34071), (95, 34062), (97, 34038), (104, 34005), (107, 33972), (112, 33933), (142, 33705), (143, 33696), (152, 33621), (154, 33612),

Gene: Twonlo\_54 Start: 43079, Stop: 43858, Start Num: 33

Candidate Starts for Twonlo\_54:

(15, 42917), (18, 42983), (19, 42998), (Start: 33 @43079 has 59 MA's), (38, 43100), (55, 43178), (60, 43193), (63, 43238), (77, 43328), (83, 43361), (103, 43454), (115, 43520), (122, 43589), (129, 43643), (152, 43814), (159, 43844),

Gene: Typhonomachy\_44 Start: 33617, Stop: 32778, Start Num: 33

Candidate Starts for Typhonomachy\_44:

(6, 33938), (8, 33914), (13, 33824), (14, 33779), (20, 33677), (Start: 33 @33617 has 59 MA's), (45, 33557), (54, 33521), (65, 33440), (82, 33332), (87, 33299), (94, 33272), (129, 33008), (152, 32828),

Gene: Vine\_49 Start: 35909, Stop: 35106, Start Num: 33

Candidate Starts for Vine\_49:

(20, 35969), (Start: 33 @35909 has 59 MA's), (45, 35849), (68, 35702), (76, 35648), (80, 35627), (84, 35609), (85, 35600), (88, 35588), (93, 35573), (111, 35462), (115, 35444), (120, 35411), (132, 35309), (139, 35249), (141, 35228), (149, 35159), (157, 35120), (160, 35111),

Gene: Wolfwood\_44 Start: 33183, Stop: 32425, Start Num: 33

Candidate Starts for Wolfwood\_44:

(16, 33297), (31, 33198), (Start: 33 @33183 has 59 MA's), (41, 33144), (45, 33126), (54, 33090), (60, 33075), (61, 33051), (64, 33015), (68, 32991), (75, 32937), (96, 32832), (102, 32811), (115, 32751), (123, 32673), (126, 32658), (129, 32628), (137, 32583), (150, 32469), (153, 32454),

Gene: Yakult\_48 Start: 35205, Stop: 34351, Start Num: 23

Candidate Starts for Yakult\_48:

(21, 35220), (Start: 23 @35205 has 9 MA's), (27, 35190), (37, 35139), (40, 35127), (43, 35112), (47, 35097), (54, 35067), (56, 35064), (59, 35058), (60, 35052), (62, 35025), (63, 35007), (73, 34926), (74, 34923), (82, 34875), (86, 34851), (90, 34830), (101, 34770), (108, 34719), (120, 34653), (122, 34617), (131, 34557), (132, 34554), (134, 34539), (142, 34467), (144, 34437), (146, 34413), (151, 34392), (155, 34377),

Gene: Yarn\_42 Start: 33445, Stop: 32606, Start Num: 33

Candidate Starts for Yarn\_42:

(Start: 33 @33445 has 59 MA's), (45, 33385), (54, 33349), (59, 33340), (65, 33268), (82, 33160), (93, 33106), (98, 33070), (104, 33040), (109, 32989), (112, 32968), (139, 32764), (141, 32743), (152, 32656), (156, 32638),

Gene: Yucky\_49 Start: 35701, Stop: 34898, Start Num: 33

Candidate Starts for Yucky\_49:

(20, 35761), (Start: 33 @35701 has 59 MA's), (45, 35641), (68, 35494), (76, 35440), (80, 35419), (84, 35401), (85, 35392), (88, 35380), (93, 35365), (111, 35254), (115, 35236), (120, 35203), (132, 35101), (139, 35041), (141, 35020), (149, 34951), (157, 34912), (160, 34903),

Gene: Yummy\_48 Start: 34116, Stop: 33268, Start Num: 33

Candidate Starts for Yummy\_48:

(20, 34176), (Start: 33 @34116 has 59 MA's), (54, 34020), (59, 34011), (68, 33921), (82, 33831), (83, 33828), (93, 33780), (95, 33771), (97, 33747), (104, 33714), (107, 33681), (112, 33642), (142, 33414), (143, 33405), (152, 33330), (154, 33321),

Gene: Zareef\_42 Start: 33205, Stop: 32447, Start Num: 33

Candidate Starts for Zareef\_42:

(Start: 33 @33205 has 59 MA's), (41, 33166), (45, 33148), (54, 33112), (60, 33097), (61, 33073), (64, 33037), (68, 33013), (75, 32959), (96, 32854), (102, 32833), (115, 32773), (123, 32695), (126, 32680), (129, 32650), (137, 32605), (150, 32491), (153, 32476),