





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 296503 Report

This analysis was run 04/25/26 on database version 644.

Pham number 296503 has 78 members, 19 are drafts.

Phages represented in each track:

- Track 1 : EastWest\_29
- Track 2 : Beans\_26
- Track 3 : Piccoletto\_26
- Track 4 : Brent\_26
- Track 5 : NathanVaag\_26
- Track 6 : Franzy\_26
- Track 7 : Jawnski\_26
- Track 8 : King2\_26
- Track 9 : BossLady\_28
- Track 10 : Zartrosa\_28
- Track 11 : Shade\_28
- Track 12 : Martha\_28
- Track 13 : BigDome\_28
- Track 14 : Grekaycon\_28, TaeYoung\_28
- Track 15 : Jordan\_28, JKerns\_28
- Track 16 : Timinator\_28, LeeroyJ\_28
- Track 17 : Sonny\_28
- Track 18 : GravityBall\_28, BarretLemon\_28, StevieBAY\_28
- Track 19 : Pippa\_28
- Track 20 : Wyborn\_29
- Track 21 : PandaPo\_60
- Track 22 : Jstan\_27
- Track 23 : Tian\_24, Amyev\_24
- Track 24 : Reedo\_59
- Track 25 : Pixelle\_24
- Track 26 : Eraser\_25, London\_25, Subaru\_26, Elezi\_25, Skelbel\_26, Niobe\_25, Asa16\_25
- Track 27 : Wildwest\_54
- Track 28 : DrSierra\_55
- Track 29 : MissSwiss\_60
- Track 30 : VResidence\_24
- Track 31 : DrManhattan\_60
- Track 32 : Tallboi\_24
- Track 33 : JuneStar\_24
- Track 34 : Adolin\_60
- Track 35 : ObiToo\_25, Crewmate\_26
- Track 36 : Nitro\_24

- Track 37 : IttyBittyPiggy\_23
- Track 38 : Sue2\_25
- Track 39 : KeAlii\_24
- Track 40 : BooTeria\_142
- Track 41 : WaddleDee\_131, DunneganBoMo\_134
- Track 42 : KSunshine22\_140
- Track 43 : Chilliams\_143
- Track 44 : Ellewin\_134
- Track 45 : Panchaali\_136
- Track 46 : Racecar\_149, Bloom\_152, FrostedClock\_151, Talia1610\_150, Mimi\_148
- Track 47 : Atuin\_137
- Track 48 : Rockabye\_149
- Track 49 : GoldenEssence\_134
- Track 50 : ReginaGlobina\_147
- Track 51 : LeoJr\_147
- Track 52 : FloraSnap32\_146
- Track 53 : Stewart25555\_134
- Track 54 : Emmetator\_137
- Track 55 : Artu\_137
- Track 56 : SJReid\_148
- Track 57 : Phrampa\_141
- Track 58 : Patbob\_144
- Track 59 : Circuit\_27
- Track 60 : Laure\_151

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

The start number called the most often in the published annotations is 5, it was called in 23 of the 59 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- BarretLemon\_28, Beans\_26, BigDome\_28, BossLady\_28, Brent\_26, EastWest\_29, Franzy\_26, GravityBall\_28, Grekaycon\_28, JKerns\_28, Jawnski\_26, Jordan\_28, King2\_26, LeeroyJ\_28, Martha\_28, NathanVaag\_26, Piccoletto\_26, Pippa\_28, Shade\_28, Sonny\_28, StevieBAY\_28, TaeYoung\_28, Timinator\_28, Zartrosa\_28,

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

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

- Adolin\_60, Amyev\_24, Artu\_137, Asa16\_25, Atuin\_137, Bloom\_152, BooTeria\_142, Chilliams\_143, Circuit\_27, Crewmate\_26, DrManhattan\_60, DrSierra\_55, DunneganBoMo\_134, Elezi\_25, Ellewin\_134, Emmetator\_137, Eraser\_25, FloraSnap32\_146, FrostedClock\_151, GoldenEssence\_134, IttyBittyPiggy\_23, Jstan\_27, JuneStar\_24, KSunshine22\_140, KeAlii\_24, Laure\_151, LeoJr\_147, London\_25, Mimi\_148, MissSwiss\_60, Niobe\_25, Nitro\_24, ObiToo\_25, Panchaali\_136, PandaPo\_60, Patbob\_144, Phrampa\_141, Pixelle\_24, Racecar\_149, Reedo\_59, ReginaGlobina\_147, Rockabye\_149, SJReid\_148, Skelbel\_26, Stewart25555\_134, Subaru\_26, Sue2\_25, Talia1610\_150, Tallboi\_24, Tian\_24, VResidence\_24, WaddleDee\_131, Wildwest\_54, Wyborn\_29,

## Summary by start number:

### Start 5:

- Found in 24 of 78 ( 30.8% ) of genes in pham
- Manual Annotations of this start: 23 of 59
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BarretLemon\_28 (AO2), Beans\_26 (AO1), BigDome\_28 (AO2), BossLady\_28 (AO2), Brent\_26 (AO1), EastWest\_29 (AO), Franzy\_26 (AO1), GravityBall\_28 (AO2), Grekaycon\_28 (AO2), JKerns\_28 (AO2), Jawnski\_26 (AO1), Jordan\_28 (AO2), King2\_26 (AO1), LeeroyJ\_28 (AO2), Martha\_28 (AO2), NathanVaag\_26 (AO1), Piccoletto\_26 (AO1), Pippa\_28 (AO2), Shade\_28 (AO2), Sonny\_28 (AO2), StevieBAY\_28 (AO2), TaeYoung\_28 (AO2), Timinator\_28 (AO2), Zartrosa\_28 (AO2),

### Start 6:

- Found in 25 of 78 ( 32.1% ) of genes in pham
- Manual Annotations of this start: 10 of 59
- Called 76.0% of time when present
- Phage (with cluster) where this start called: Atuin\_137 (FC), Bloom\_152 (FC), Chilliams\_143 (FC), DunneganBoMo\_134 (FC), Ellewin\_134 (FC), Emmetator\_137 (FC), FloraSnap32\_146 (FC), FrostedClock\_151 (FC), Laure\_151 (UNK), Mimi\_148 (FC), Panchaali\_136 (FC), Patbob\_144 (FC), Racecar\_149 (FC), ReginaGlobina\_147 (FC), Rockabye\_149 (FC), SJReid\_148 (FC), Stewart25555\_134 (FC), Talia1610\_150 (FC), WaddleDee\_131 (FC),

### Start 7:

- Found in 2 of 78 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 2 of 59
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Circuit\_27 (FH), Wyborn\_29 (AO2),

### Start 8:

- Found in 10 of 78 ( 12.8% ) of genes in pham
- Manual Annotations of this start: 2 of 59
- Called 20.0% of time when present
- Phage (with cluster) where this start called: GoldenEssence\_134 (FC), Phrampa\_141 (FC),

### Start 9:

- Found in 10 of 78 ( 12.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 10.0% of time when present
- Phage (with cluster) where this start called: KSunshine22\_140 (FC),

### Start 14:

- Found in 14 of 78 ( 17.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 21.4% of time when present
- Phage (with cluster) where this start called: Artu\_137 (FC), BooTeria\_142 (FC), LeoJr\_147 (FC),

### Start 26:

- Found in 27 of 78 ( 34.6% ) of genes in pham
- Manual Annotations of this start: 22 of 59
- Called 96.3% of time when present
- Phage (with cluster) where this start called: Adolin\_60 (AZ1), Amyev\_24 (AZ1), Asa16\_25 (AZ1), Crewmate\_26 (AZ1), DrManhattan\_60 (AZ1), DrSierra\_55 (AZ1), Elezi\_25 (AZ1), Eraser\_25 (AZ1), IttyBittyPiggy\_23 (AZ1), JuneStar\_24 (AZ1), KeAlii\_24 (AZ1), London\_25 (AZ1), MissSwiss\_60 (AZ1), Niobe\_25 (AZ1), Nitro\_24 (AZ1), ObiToo\_25 (AZ1), PandaPo\_60 (AZ1), Pixelle\_24 (AZ1), Reedo\_59 (AZ1), Skelbel\_26 (AZ1), Subaru\_26 (AZ1), Sue2\_25 (AZ1), Tallboi\_24 (AZ1), Tian\_24 (AZ1), VResidence\_24 (AZ1), Wildwest\_54 (AZ1),

Start 41:

- Found in 38 of 78 ( 48.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.6% of time when present
- Phage (with cluster) where this start called: Jstan\_27 (AZ1),

### **Summary by clusters:**

There are 7 clusters represented in this pham: AO, FC, AO2, AO1, FH, AZ1, UNK,

Info for manual annotations of cluster AO:

- Start number 5 was manually annotated 1 time for cluster AO.

Info for manual annotations of cluster AO1:

- Start number 5 was manually annotated 7 times for cluster AO1.

Info for manual annotations of cluster AO2:

- Start number 5 was manually annotated 15 times for cluster AO2.
- Start number 7 was manually annotated 1 time for cluster AO2.

Info for manual annotations of cluster AZ1:

- Start number 26 was manually annotated 22 times for cluster AZ1.

Info for manual annotations of cluster FC:

- Start number 6 was manually annotated 10 times for cluster FC.
- Start number 8 was manually annotated 2 times for cluster FC.

Info for manual annotations of cluster FH:

- Start number 7 was manually annotated 1 time for cluster FH.

### **Gene Information:**

Gene: Adolin\_60 Start: 37995, Stop: 39464, Start Num: 26

Candidate Starts for Adolin\_60:

(Start: 26 @37995 has 22 MA's), (28, 38013), (37, 38064), (41, 38091), (54, 38211), (76, 38370), (107, 38685), (125, 38880), (138, 38952), (139, 38955), (143, 39006), (154, 39159), (155, 39183), (175, 39423),

Gene: Amyev\_24 Start: 20257, Stop: 21768, Start Num: 26

Candidate Starts for Amyev\_24:

(20, 20239), (Start: 26 @20257 has 22 MA's), (27, 20266), (28, 20275), (37, 20326), (41, 20353), (53, 20461), (60, 20524), (64, 20548), (70, 20572), (76, 20641), (83, 20701), (125, 21175), (138, 21247), (139, 21250), (143, 21301), (154, 21454), (155, 21478), (162, 21550), (175, 21718),

Gene: Artu\_137 Start: 95694, Stop: 97517, Start Num: 14

Candidate Starts for Artu\_137:

(Start: 6 @95607 has 10 MA's), (9, 95613), (14, 95694), (38, 95850), (44, 95904), (71, 96105), (88, 96318), (103, 96456), (121, 96849), (136, 96984), (143, 97056),

Gene: Asa16\_25 Start: 20493, Stop: 21989, Start Num: 26

Candidate Starts for Asa16\_25:

(20, 20475), (Start: 26 @20493 has 22 MA's), (27, 20502), (28, 20511), (37, 20562), (41, 20589), (60, 20760), (64, 20784), (76, 20877), (83, 20937), (87, 20988), (125, 21408), (138, 21480), (139, 21483), (143, 21534), (154, 21687), (155, 21711), (162, 21783), (175, 21951),

Gene: Atuin\_137 Start: 98423, Stop: 100324, Start Num: 6

Candidate Starts for Atuin\_137:

(Start: 6 @98423 has 10 MA's), (9, 98429), (14, 98510), (38, 98666), (71, 98921), (89, 99134), (99, 99236), (109, 99350), (117, 99440), (121, 99662), (128, 99758), (129, 99767), (134, 99785), (143, 99863), (151, 99947), (168, 100208),

Gene: BarretLemon\_28 Start: 23730, Stop: 25319, Start Num: 5

Candidate Starts for BarretLemon\_28:

(Start: 5 @23730 has 23 MA's), (11, 23760), (19, 23859), (29, 23928), (41, 24009), (43, 24036), (57, 24147), (59, 24168), (66, 24204), (88, 24426), (95, 24504), (99, 24531), (101, 24549), (107, 24615), (108, 24642), (131, 24798), (139, 24840), (153, 25044), (155, 25080), (157, 25113), (161, 25149), (166, 25221),

Gene: Beans\_26 Start: 23393, Stop: 24982, Start Num: 5

Candidate Starts for Beans\_26:

(Start: 5 @23393 has 23 MA's), (11, 23423), (43, 23699), (46, 23723), (47, 23729), (51, 23756), (59, 23831), (74, 23930), (94, 24131), (99, 24194), (105, 24260), (107, 24278), (131, 24443), (139, 24485), (147, 24596), (153, 24689), (155, 24725), (157, 24758), (166, 24869),

Gene: BigDome\_28 Start: 23719, Stop: 25311, Start Num: 5

Candidate Starts for BigDome\_28:

(Start: 5 @23719 has 23 MA's), (11, 23749), (19, 23848), (29, 23917), (41, 23998), (43, 24025), (57, 24136), (59, 24157), (66, 24193), (88, 24415), (95, 24493), (99, 24520), (101, 24538), (107, 24604), (108, 24631), (118, 24712), (120, 24721), (131, 24790), (139, 24832), (153, 25036), (155, 25072), (157, 25105), (161, 25141), (166, 25213),

Gene: Bloom\_152 Start: 100610, Stop: 102271, Start Num: 6

Candidate Starts for Bloom\_152:

(Start: 6 @100610 has 10 MA's), (Start: 8 @100613 has 2 MA's), (36, 100838), (68, 101096), (72, 101117), (129, 101720), (133, 101735), (148, 101873), (155, 101999), (156, 102020), (160, 102062), (167, 102146), (177, 102263),

Gene: BooTeria\_142 Start: 95835, Stop: 97658, Start Num: 14

Candidate Starts for BooTeria\_142:

(Start: 6 @95748 has 10 MA's), (9, 95754), (14, 95835), (38, 95991), (71, 96246), (103, 96597), (121, 96990), (136, 97125), (143, 97197),

Gene: BossLady\_28 Start: 23701, Stop: 25299, Start Num: 5

Candidate Starts for BossLady\_28:

(3, 23650), (4, 23656), (Start: 5 @23701 has 23 MA's), (11, 23731), (24, 23857), (30, 23908), (41, 23980), (43, 24007), (46, 24031), (47, 24037), (57, 24118), (59, 24139), (71, 24193), (74, 24238), (76, 24259), (80, 24280), (99, 24502), (101, 24520), (107, 24586), (118, 24685), (120, 24691), (126, 24736), (131, 24760), (138, 24799), (153, 25006), (155, 25042), (157, 25075), (158, 25084), (161, 25111), (166, 25186), (171, 25216),

Gene: Brent\_26 Start: 23376, Stop: 24986, Start Num: 5

Candidate Starts for Brent\_26:

(Start: 5 @23376 has 23 MA's), (10, 23391), (11, 23406), (29, 23574), (46, 23706), (47, 23712), (51, 23739), (59, 23814), (74, 23913), (94, 24114), (99, 24177), (101, 24195), (105, 24243), (107, 24261), (120, 24372), (131, 24441), (138, 24480), (147, 24594), (149, 24612), (153, 24687), (155, 24723), (157, 24756), (158, 24765), (166, 24867),

Gene: Chilliams\_143 Start: 89749, Stop: 91368, Start Num: 6

Candidate Starts for Chilliams\_143:

(Start: 6 @89749 has 10 MA's), (14, 89836), (93, 90487), (102, 90574), (106, 90613), (122, 90775), (129, 90826), (132, 90838), (150, 91000),

Gene: Circuit\_27 Start: 22611, Stop: 24224, Start Num: 7

Candidate Starts for Circuit\_27:

(2, 22551), (Start: 7 @22611 has 2 MA's), (16, 22719), (46, 22938), (47, 22944), (69, 23097), (78, 23181), (81, 23235), (112, 23598), (140, 23748), (157, 24003),

Gene: Crewmate\_26 Start: 19076, Stop: 20530, Start Num: 26

Candidate Starts for Crewmate\_26:

(Start: 26 @19076 has 22 MA's), (27, 19085), (28, 19094), (37, 19145), (41, 19172), (60, 19343), (64, 19367), (71, 19400), (84, 19544), (103, 19697), (125, 19949), (138, 20021), (149, 20141), (154, 20228), (155, 20252), (162, 20324), (175, 20492),

Gene: DrManhattan\_60 Start: 37563, Stop: 39020, Start Num: 26

Candidate Starts for DrManhattan\_60:

(Start: 26 @37563 has 22 MA's), (28, 37581), (37, 37632), (41, 37659), (54, 37779), (64, 37845), (107, 38253), (125, 38436), (138, 38508), (139, 38511), (143, 38562), (154, 38715), (155, 38739), (175, 38979),

Gene: DrSierra\_55 Start: 37478, Stop: 38938, Start Num: 26

Candidate Starts for DrSierra\_55:

(Start: 26 @37478 has 22 MA's), (27, 37487), (37, 37547), (41, 37574), (46, 37625), (64, 37769), (71, 37802), (76, 37862), (83, 37922), (125, 38354), (138, 38426), (139, 38429), (154, 38633), (155, 38657), (175, 38897),

Gene: DunneganBoMo\_134 Start: 95017, Stop: 96927, Start Num: 6

Candidate Starts for DunneganBoMo\_134:

(Start: 6 @95017 has 10 MA's), (9, 95023), (14, 95104), (38, 95260), (71, 95515), (103, 95866), (121, 96259), (136, 96394), (143, 96466),

Gene: EastWest\_29 Start: 23578, Stop: 25173, Start Num: 5

Candidate Starts for EastWest\_29:

(Start: 5 @23578 has 23 MA's), (30, 23785), (31, 23797), (43, 23884), (48, 23917), (57, 23995), (59, 24016), (62, 24034), (75, 24133), (86, 24241), (95, 24352), (96, 24367), (98, 24376), (104, 24436), (118, 24568), (120, 24577), (126, 24622), (130, 24640), (140, 24697), (155, 24916), (172, 25093),

Gene: Elezi\_25 Start: 20494, Stop: 21990, Start Num: 26

Candidate Starts for Elezi\_25:

(20, 20476), (Start: 26 @20494 has 22 MA's), (27, 20503), (28, 20512), (37, 20563), (41, 20590), (60, 20761), (64, 20785), (76, 20878), (83, 20938), (87, 20989), (125, 21409), (138, 21481), (139, 21484), (143, 21535), (154, 21688), (155, 21712), (162, 21784), (175, 21952),

Gene: Ellewin\_134 Start: 94866, Stop: 96776, Start Num: 6

Candidate Starts for Ellewin\_134:

(Start: 6 @94866 has 10 MA's), (9, 94872), (14, 94953), (38, 95109), (71, 95364), (88, 95577), (103, 95715), (121, 96108), (136, 96243), (143, 96315),

Gene: Emmetator\_137 Start: 94934, Stop: 96844, Start Num: 6

Candidate Starts for Emmetator\_137:

(Start: 6 @94934 has 10 MA's), (9, 94940), (14, 95021), (38, 95177), (71, 95432), (88, 95645), (103, 95783), (121, 96176), (133, 96302), (135, 96308), (143, 96383),

Gene: Eraser\_25 Start: 20494, Stop: 21996, Start Num: 26

Candidate Starts for Eraser\_25:

(20, 20476), (Start: 26 @20494 has 22 MA's), (27, 20503), (28, 20512), (37, 20563), (41, 20590), (60, 20761), (64, 20785), (76, 20878), (83, 20938), (87, 20989), (125, 21415), (138, 21487), (139, 21490), (143, 21541), (154, 21694), (155, 21718), (162, 21790), (175, 21958),

Gene: FloraSnap32\_146 Start: 99122, Stop: 100783, Start Num: 6

Candidate Starts for FloraSnap32\_146:

(Start: 6 @99122 has 10 MA's), (Start: 8 @99125 has 2 MA's), (36, 99350), (68, 99608), (72, 99629), (129, 100232), (133, 100247), (148, 100385), (156, 100532), (167, 100658), (177, 100775),

Gene: Franzy\_26 Start: 23375, Stop: 24985, Start Num: 5

Candidate Starts for Franzy\_26:

(Start: 5 @23375 has 23 MA's), (10, 23390), (11, 23405), (29, 23573), (46, 23705), (47, 23711), (51, 23738), (59, 23813), (74, 23912), (79, 23951), (94, 24113), (99, 24176), (101, 24194), (105, 24242), (107, 24260), (120, 24371), (131, 24440), (138, 24479), (147, 24593), (149, 24611), (153, 24686), (155, 24722), (157, 24755), (158, 24764), (166, 24866),

Gene: FrostedClock\_151 Start: 100607, Stop: 102268, Start Num: 6

Candidate Starts for FrostedClock\_151:

(Start: 6 @100607 has 10 MA's), (Start: 8 @100610 has 2 MA's), (36, 100835), (68, 101093), (72, 101114), (129, 101717), (133, 101732), (148, 101870), (155, 101996), (156, 102017), (160, 102059), (167, 102143), (177, 102260),

Gene: GoldenEssence\_134 Start: 94008, Stop: 95666, Start Num: 8

Candidate Starts for GoldenEssence\_134:

(Start: 6 @94005 has 10 MA's), (Start: 8 @94008 has 2 MA's), (36, 94233), (68, 94491), (72, 94512), (129, 95115), (133, 95130), (148, 95268), (156, 95415), (167, 95541), (177, 95658),

Gene: GravityBall\_28 Start: 23729, Stop: 25318, Start Num: 5

Candidate Starts for GravityBall\_28:

(Start: 5 @23729 has 23 MA's), (11, 23759), (19, 23858), (29, 23927), (41, 24008), (43, 24035), (57, 24146), (59, 24167), (66, 24203), (88, 24425), (95, 24503), (99, 24530), (101, 24548), (107, 24614), (108, 24641), (131, 24797), (139, 24839), (153, 25043), (155, 25079), (157, 25112), (161, 25148), (166, 25220),

Gene: Grekaycon\_28 Start: 23647, Stop: 25245, Start Num: 5

Candidate Starts for Grekaycon\_28:

(Start: 5 @23647 has 23 MA's), (11, 23677), (24, 23803), (30, 23854), (41, 23926), (43, 23953), (46, 23977), (47, 23983), (57, 24064), (59, 24085), (74, 24184), (76, 24205), (80, 24226), (99, 24448), (101, 24466), (107, 24532), (118, 24631), (120, 24637), (126, 24682), (131, 24706), (138, 24745), (153, 24952), (155, 24988), (157, 25021), (161, 25057), (166, 25132), (171, 25162),

Gene: IttyBittyPiggy\_23 Start: 18356, Stop: 19831, Start Num: 26

Candidate Starts for IttyBittyPiggy\_23:

(Start: 26 @18356 has 22 MA's), (27, 18365), (28, 18374), (41, 18452), (46, 18503), (49, 18524), (54, 18581), (55, 18587), (64, 18647), (71, 18680), (76, 18740), (103, 19001), (124, 19235), (143, 19364), (154, 19517), (155, 19541), (162, 19613), (175, 19781),

Gene: JKerns\_28 Start: 23674, Stop: 25272, Start Num: 5

Candidate Starts for JKerns\_28:

(Start: 5 @23674 has 23 MA's), (11, 23704), (24, 23830), (30, 23881), (41, 23953), (43, 23980), (46, 24004), (47, 24010), (57, 24091), (59, 24112), (71, 24166), (74, 24211), (99, 24475), (101, 24493), (107, 24559), (118, 24658), (120, 24664), (126, 24709), (131, 24733), (138, 24772), (153, 24979), (155, 25015), (157, 25048), (158, 25057), (161, 25084), (166, 25159), (171, 25189),

Gene: Jawnski\_26 Start: 23388, Stop: 24995, Start Num: 5

Candidate Starts for Jawnski\_26:

(Start: 5 @23388 has 23 MA's), (11, 23418), (43, 23694), (46, 23718), (47, 23724), (59, 23826), (74, 23925), (94, 24126), (99, 24189), (101, 24207), (105, 24255), (107, 24273), (120, 24387), (131, 24456), (138, 24495), (147, 24609), (149, 24627), (153, 24702), (155, 24738), (157, 24771), (166, 24882), (171, 24912),

Gene: Jordan\_28 Start: 23644, Stop: 25242, Start Num: 5

Candidate Starts for Jordan\_28:

(Start: 5 @23644 has 23 MA's), (11, 23674), (24, 23800), (30, 23851), (41, 23923), (43, 23950), (46, 23974), (47, 23980), (57, 24061), (59, 24082), (71, 24136), (74, 24181), (99, 24445), (101, 24463), (107, 24529), (118, 24628), (120, 24634), (126, 24679), (131, 24703), (138, 24742), (153, 24949), (155, 24985), (157, 25018), (158, 25027), (161, 25054), (166, 25129), (171, 25159),

Gene: Jstan\_27 Start: 20590, Stop: 21990, Start Num: 41

Candidate Starts for Jstan\_27:

(20, 20476), (Start: 26 @20494 has 22 MA's), (27, 20503), (28, 20512), (37, 20563), (41, 20590), (60, 20761), (64, 20785), (76, 20878), (83, 20938), (87, 20989), (125, 21409), (138, 21481), (139, 21484), (143, 21535), (154, 21688), (155, 21712), (162, 21784), (175, 21952),

Gene: JuneStar\_24 Start: 20659, Stop: 22146, Start Num: 26

Candidate Starts for JuneStar\_24:

(Start: 26 @20659 has 22 MA's), (27, 20668), (28, 20677), (37, 20728), (41, 20755), (64, 20950), (70, 20974), (76, 21043), (125, 21541), (136, 21589), (143, 21667), (154, 21832), (155, 21856), (162, 21928), (165, 21991),

Gene: KSunshine22\_140 Start: 96432, Stop: 98336, Start Num: 9

Candidate Starts for KSunshine22\_140:

(Start: 6 @96426 has 10 MA's), (9, 96432), (14, 96513), (38, 96669), (71, 96924), (88, 97137), (103, 97275), (121, 97668), (136, 97803), (143, 97875),

Gene: KeAlii\_24 Start: 18542, Stop: 20020, Start Num: 26

Candidate Starts for KeAlii\_24:

(20, 18524), (Start: 26 @18542 has 22 MA's), (27, 18551), (54, 18767), (55, 18773), (56, 18776), (60, 18809), (65, 18839), (124, 19433), (125, 19436), (139, 19511), (154, 19715), (155, 19739), (162, 19811), (175, 19979),

Gene: King2\_26 Start: 23393, Stop: 24982, Start Num: 5

Candidate Starts for King2\_26:

(Start: 5 @23393 has 23 MA's), (10, 23408), (11, 23423), (13, 23480), (24, 23549), (30, 23600), (43, 23699), (46, 23723), (47, 23729), (51, 23756), (57, 23810), (59, 23831), (74, 23930), (94, 24131), (99, 24194), (107, 24278), (131, 24443), (138, 24482), (147, 24596), (149, 24614), (153, 24689), (155, 24725), (157, 24758), (166, 24869), (171, 24899),

Gene: Laure\_151 Start: 92476, Stop: 94164, Start Num: 6

Candidate Starts for Laure\_151:

(Start: 6 @92476 has 10 MA's), (15, 92575), (89, 93193), (91, 93214), (92, 93226), (95, 93268), (104, 93343), (114, 93454), (117, 93481), (143, 93667), (148, 93724), (152, 93757), (159, 93895), (176, 94111),

Gene: LeeroyJ\_28 Start: 23729, Stop: 25318, Start Num: 5

Candidate Starts for LeeroyJ\_28:

(Start: 5 @23729 has 23 MA's), (11, 23759), (19, 23858), (29, 23927), (41, 24008), (43, 24035), (57, 24146), (59, 24167), (66, 24203), (88, 24425), (91, 24449), (95, 24503), (99, 24530), (101, 24548), (107, 24614), (108, 24641), (110, 24662), (131, 24797), (139, 24839), (153, 25043), (155, 25079), (157, 25112), (161, 25148), (166, 25220),

Gene: LeoJr\_147 Start: 99111, Stop: 100919, Start Num: 14

Candidate Starts for LeoJr\_147:

(Start: 6 @99024 has 10 MA's), (9, 99030), (14, 99111), (59, 99456), (72, 99528), (99, 99837), (109, 99951), (117, 100035), (119, 100167), (121, 100257), (128, 100353), (143, 100458), (160, 100704), (163, 100737), (168, 100803),

Gene: London\_25 Start: 20494, Stop: 21990, Start Num: 26

Candidate Starts for London\_25:

(20, 20476), (Start: 26 @20494 has 22 MA's), (27, 20503), (28, 20512), (37, 20563), (41, 20590), (60, 20761), (64, 20785), (76, 20878), (83, 20938), (87, 20989), (125, 21409), (138, 21481), (139, 21484), (143, 21535), (154, 21688), (155, 21712), (162, 21784), (175, 21952),

Gene: Martha\_28 Start: 23648, Stop: 25246, Start Num: 5

Candidate Starts for Martha\_28:

(3, 23597), (Start: 5 @23648 has 23 MA's), (11, 23678), (24, 23804), (30, 23855), (41, 23927), (43, 23954), (46, 23978), (47, 23984), (57, 24065), (59, 24086), (74, 24185), (76, 24206), (80, 24227), (99, 24449), (101, 24467), (107, 24533), (118, 24632), (120, 24638), (126, 24683), (131, 24707), (138, 24746), (153, 24953), (155, 24989), (157, 25022), (161, 25058), (166, 25133), (171, 25163),

Gene: Mimi\_148 Start: 99675, Stop: 101336, Start Num: 6

Candidate Starts for Mimi\_148:

(Start: 6 @99675 has 10 MA's), (Start: 8 @99678 has 2 MA's), (36, 99903), (68, 100161), (72, 100182), (129, 100785), (133, 100800), (148, 100938), (155, 101064), (156, 101085), (160, 101127), (167, 101211), (177, 101328),

Gene: MissSwiss\_60 Start: 37830, Stop: 39293, Start Num: 26

Candidate Starts for MissSwiss\_60:

(18, 37791), (Start: 26 @37830 has 22 MA's), (28, 37848), (37, 37899), (41, 37926), (46, 37977), (54, 38046), (64, 38112), (85, 38292), (90, 38343), (97, 38433), (107, 38520), (111, 38574), (125, 38709),

(138, 38781), (139, 38784), (143, 38835), (154, 38988), (155, 39012), (175, 39252),

Gene: NathanVaag\_26 Start: 23369, Stop: 24958, Start Num: 5

Candidate Starts for NathanVaag\_26:

(Start: 5 @23369 has 23 MA's), (11, 23399), (46, 23699), (47, 23705), (51, 23732), (59, 23807), (74, 23906), (94, 24107), (99, 24170), (105, 24236), (107, 24254), (131, 24419), (147, 24572), (149, 24590), (153, 24665), (155, 24701), (157, 24734), (166, 24845),

Gene: Niobe\_25 Start: 20494, Stop: 21990, Start Num: 26

Candidate Starts for Niobe\_25:

(20, 20476), (Start: 26 @20494 has 22 MA's), (27, 20503), (28, 20512), (37, 20563), (41, 20590), (60, 20761), (64, 20785), (76, 20878), (83, 20938), (87, 20989), (125, 21409), (138, 21481), (139, 21484), (143, 21535), (154, 21688), (155, 21712), (162, 21784), (175, 21952),

Gene: Nitro\_24 Start: 19868, Stop: 21319, Start Num: 26

Candidate Starts for Nitro\_24:

(20, 19850), (Start: 26 @19868 has 22 MA's), (27, 19877), (28, 19886), (37, 19937), (41, 19964), (60, 20135), (64, 20159), (68, 20177), (76, 20252), (83, 20312), (87, 20363), (125, 20771), (138, 20843), (139, 20846), (143, 20897), (154, 21050), (155, 21074), (162, 21146), (175, 21281),

Gene: ObiToo\_25 Start: 18813, Stop: 20267, Start Num: 26

Candidate Starts for ObiToo\_25:

(Start: 26 @18813 has 22 MA's), (27, 18822), (28, 18831), (37, 18882), (41, 18909), (60, 19080), (64, 19104), (71, 19137), (84, 19281), (103, 19434), (125, 19686), (138, 19758), (149, 19878), (154, 19965), (155, 19989), (162, 20061), (175, 20229),

Gene: Panchaali\_136 Start: 95349, Stop: 97271, Start Num: 6

Candidate Starts for Panchaali\_136:

(Start: 6 @95349 has 10 MA's), (Start: 8 @95352 has 2 MA's), (22, 95493), (34, 95571), (45, 95664), (58, 95769), (72, 95862), (91, 96090), (113, 96345), (121, 96609), (127, 96702), (168, 97155),

Gene: PandaPo\_60 Start: 37838, Stop: 39301, Start Num: 26

Candidate Starts for PandaPo\_60:

(18, 37799), (Start: 26 @37838 has 22 MA's), (28, 37856), (37, 37907), (41, 37934), (46, 37985), (54, 38054), (64, 38120), (76, 38213), (85, 38300), (90, 38351), (97, 38441), (107, 38528), (111, 38582), (125, 38717), (138, 38789), (139, 38792), (143, 38843), (154, 38996), (155, 39020), (175, 39260),

Gene: Patbob\_144 Start: 100134, Stop: 101795, Start Num: 6

Candidate Starts for Patbob\_144:

(Start: 6 @100134 has 10 MA's), (Start: 8 @100137 has 2 MA's), (68, 100620), (72, 100641), (116, 101136), (129, 101244), (133, 101259), (148, 101397), (156, 101544), (160, 101586), (167, 101670), (177, 101787),

Gene: Phrampa\_141 Start: 101796, Stop: 103436, Start Num: 8

Candidate Starts for Phrampa\_141:

(Start: 6 @101793 has 10 MA's), (Start: 8 @101796 has 2 MA's), (33, 102012), (40, 102048), (63, 102255), (72, 102306), (100, 102618), (133, 102900), (142, 102972), (156, 103185),

Gene: Piccoletto\_26 Start: 23368, Stop: 24960, Start Num: 5

Candidate Starts for Piccoletto\_26:

(Start: 5 @23368 has 23 MA's), (11, 23398), (19, 23497), (30, 23575), (39, 23629), (42, 23671), (46, 23698), (47, 23704), (51, 23731), (59, 23806), (74, 23905), (94, 24106), (99, 24169), (101, 24187), (105, 24235), (107, 24253), (131, 24421), (138, 24460), (147, 24574), (149, 24592), (153, 24667),

(155, 24703), (157, 24736), (166, 24847),

Gene: Pippa\_28 Start: 23773, Stop: 25371, Start Num: 5

Candidate Starts for Pippa\_28:

(Start: 5 @23773 has 23 MA's), (11, 23803), (24, 23929), (41, 24052), (43, 24079), (46, 24103), (47, 24109), (57, 24190), (59, 24211), (74, 24310), (76, 24331), (80, 24352), (99, 24574), (101, 24592), (107, 24658), (108, 24685), (109, 24697), (118, 24757), (120, 24763), (126, 24808), (131, 24832), (138, 24871), (153, 25078), (157, 25147), (158, 25156), (161, 25183), (166, 25258), (171, 25288),

Gene: Pixelle\_24 Start: 20263, Stop: 21774, Start Num: 26

Candidate Starts for Pixelle\_24:

(20, 20245), (Start: 26 @20263 has 22 MA's), (27, 20272), (28, 20281), (37, 20332), (41, 20359), (53, 20467), (60, 20530), (64, 20554), (70, 20578), (76, 20647), (83, 20707), (138, 21253), (139, 21256), (143, 21307), (154, 21460), (155, 21484), (162, 21556), (175, 21724),

Gene: Racecar\_149 Start: 100663, Stop: 102324, Start Num: 6

Candidate Starts for Racecar\_149:

(Start: 6 @100663 has 10 MA's), (Start: 8 @100666 has 2 MA's), (36, 100891), (68, 101149), (72, 101170), (129, 101773), (133, 101788), (148, 101926), (155, 102052), (156, 102073), (160, 102115), (167, 102199), (177, 102316),

Gene: Reedo\_59 Start: 37394, Stop: 38914, Start Num: 26

Candidate Starts for Reedo\_59:

(12, 37280), (Start: 26 @37394 has 22 MA's), (27, 37403), (32, 37439), (37, 37463), (46, 37541), (47, 37547), (49, 37562), (53, 37598), (54, 37619), (64, 37685), (83, 37838), (107, 38087), (125, 38330), (136, 38378), (138, 38402), (139, 38405), (143, 38456), (149, 38522), (154, 38609), (155, 38633), (162, 38705), (169, 38798), (173, 38834), (175, 38873),

Gene: ReginaGlobina\_147 Start: 99503, Stop: 101404, Start Num: 6

Candidate Starts for ReginaGlobina\_147:

(Start: 6 @99503 has 10 MA's), (9, 99509), (14, 99590), (38, 99746), (71, 100001), (89, 100214), (99, 100316), (109, 100430), (121, 100742), (136, 100871), (143, 100943), (168, 101288),

Gene: Rockabye\_149 Start: 91370, Stop: 93013, Start Num: 6

Candidate Starts for Rockabye\_149:

(1, 91307), (Start: 6 @91370 has 10 MA's), (14, 91457), (23, 91514), (33, 91586), (38, 91613), (72, 91865), (93, 92108), (102, 92195), (106, 92234), (122, 92408), (129, 92459), (132, 92471), (137, 92492), (150, 92633),

Gene: SJReid\_148 Start: 89888, Stop: 91558, Start Num: 6

Candidate Starts for SJReid\_148:

(Start: 6 @89888 has 10 MA's), (14, 89975), (35, 90110), (59, 90320), (63, 90344), (68, 90371), (72, 90392), (89, 90599), (115, 90902), (129, 91004), (132, 91016), (147, 91151), (150, 91178), (165, 91421), (170, 91463),

Gene: Shade\_28 Start: 23623, Stop: 25212, Start Num: 5

Candidate Starts for Shade\_28:

(Start: 5 @23623 has 23 MA's), (10, 23638), (11, 23653), (19, 23752), (24, 23779), (30, 23830), (43, 23929), (46, 23953), (47, 23959), (57, 24040), (59, 24061), (71, 24115), (74, 24160), (87, 24298), (99, 24424), (107, 24508), (108, 24535), (131, 24673), (138, 24712), (153, 24919), (155, 24955), (157, 24988), (158, 24997), (161, 25024), (166, 25099), (171, 25129),

Gene: Skelbel\_26 Start: 20494, Stop: 21990, Start Num: 26

Candidate Starts for Skelbel\_26:

(20, 20476), (Start: 26 @20494 has 22 MA's), (27, 20503), (28, 20512), (37, 20563), (41, 20590), (60, 20761), (64, 20785), (76, 20878), (83, 20938), (87, 20989), (125, 21409), (138, 21481), (139, 21484), (143, 21535), (154, 21688), (155, 21712), (162, 21784), (175, 21952),

Gene: Sonny\_28 Start: 23644, Stop: 25242, Start Num: 5

Candidate Starts for Sonny\_28:

(Start: 5 @23644 has 23 MA's), (11, 23674), (24, 23800), (30, 23851), (41, 23923), (43, 23950), (46, 23974), (47, 23980), (57, 24061), (59, 24082), (76, 24202), (99, 24445), (101, 24463), (107, 24529), (118, 24628), (120, 24634), (126, 24679), (131, 24703), (138, 24742), (153, 24949), (155, 24985), (157, 25018), (158, 25027), (161, 25054), (166, 25129), (171, 25159),

Gene: StevieBAY\_28 Start: 23729, Stop: 25318, Start Num: 5

Candidate Starts for StevieBAY\_28:

(Start: 5 @23729 has 23 MA's), (11, 23759), (19, 23858), (29, 23927), (41, 24008), (43, 24035), (57, 24146), (59, 24167), (66, 24203), (88, 24425), (95, 24503), (99, 24530), (101, 24548), (107, 24614), (108, 24641), (131, 24797), (139, 24839), (153, 25043), (155, 25079), (157, 25112), (161, 25148), (166, 25220),

Gene: Stewart25555\_134 Start: 96026, Stop: 97936, Start Num: 6

Candidate Starts for Stewart25555\_134:

(Start: 6 @96026 has 10 MA's), (14, 96113), (61, 96470), (63, 96482), (103, 96875), (121, 97268), (123, 97289), (134, 97391), (143, 97469), (174, 97883),

Gene: Subaru\_26 Start: 20494, Stop: 21990, Start Num: 26

Candidate Starts for Subaru\_26:

(20, 20476), (Start: 26 @20494 has 22 MA's), (27, 20503), (28, 20512), (37, 20563), (41, 20590), (60, 20761), (64, 20785), (76, 20878), (83, 20938), (87, 20989), (125, 21409), (138, 21481), (139, 21484), (143, 21535), (154, 21688), (155, 21712), (162, 21784), (175, 21952),

Gene: Sue2\_25 Start: 19348, Stop: 20793, Start Num: 26

Candidate Starts for Sue2\_25:

(21, 19333), (Start: 26 @19348 has 22 MA's), (28, 19366), (37, 19417), (41, 19444), (46, 19495), (54, 19564), (64, 19630), (77, 19726), (85, 19810), (97, 19939), (103, 19975), (111, 20077), (124, 20203), (125, 20206), (138, 20278), (139, 20281), (141, 20317), (154, 20485), (155, 20509), (162, 20581), (164, 20605), (174, 20737), (175, 20752),

Gene: TaeYoung\_28 Start: 23648, Stop: 25246, Start Num: 5

Candidate Starts for TaeYoung\_28:

(Start: 5 @23648 has 23 MA's), (11, 23678), (24, 23804), (30, 23855), (41, 23927), (43, 23954), (46, 23978), (47, 23984), (57, 24065), (59, 24086), (74, 24185), (76, 24206), (80, 24227), (99, 24449), (101, 24467), (107, 24533), (118, 24632), (120, 24638), (126, 24683), (131, 24707), (138, 24746), (153, 24953), (155, 24989), (157, 25022), (161, 25058), (166, 25133), (171, 25163),

Gene: Talia1610\_150 Start: 100678, Stop: 102339, Start Num: 6

Candidate Starts for Talia1610\_150:

(Start: 6 @100678 has 10 MA's), (Start: 8 @100681 has 2 MA's), (36, 100906), (68, 101164), (72, 101185), (129, 101788), (133, 101803), (148, 101941), (155, 102067), (156, 102088), (160, 102130), (167, 102214), (177, 102331),

Gene: Tallboi\_24 Start: 19849, Stop: 21330, Start Num: 26

Candidate Starts for Tallboi\_24:

(20, 19831), (Start: 26 @19849 has 22 MA's), (27, 19858), (28, 19867), (37, 19918), (41, 19945), (60, 20116), (64, 20140), (76, 20233), (83, 20293), (87, 20341), (125, 20737), (138, 20809), (154, 21016), (155, 21040), (162, 21112), (175, 21280),

Gene: Tian\_24 Start: 20257, Stop: 21768, Start Num: 26

Candidate Starts for Tian\_24:

(20, 20239), (Start: 26 @20257 has 22 MA's), (27, 20266), (28, 20275), (37, 20326), (41, 20353), (53, 20461), (60, 20524), (64, 20548), (70, 20572), (76, 20641), (83, 20701), (125, 21175), (138, 21247), (139, 21250), (143, 21301), (154, 21454), (155, 21478), (162, 21550), (175, 21718),

Gene: Timinator\_28 Start: 23729, Stop: 25318, Start Num: 5

Candidate Starts for Timinator\_28:

(Start: 5 @23729 has 23 MA's), (11, 23759), (19, 23858), (29, 23927), (41, 24008), (43, 24035), (57, 24146), (59, 24167), (66, 24203), (88, 24425), (91, 24449), (95, 24503), (99, 24530), (101, 24548), (107, 24614), (108, 24641), (110, 24662), (131, 24797), (139, 24839), (153, 25043), (155, 25079), (157, 25112), (161, 25148), (166, 25220),

Gene: VResidence\_24 Start: 18581, Stop: 20053, Start Num: 26

Candidate Starts for VResidence\_24:

(Start: 26 @18581 has 22 MA's), (27, 18590), (28, 18599), (37, 18650), (46, 18728), (60, 18848), (64, 18872), (87, 19076), (100, 19205), (103, 19229), (107, 19277), (111, 19331), (125, 19469), (138, 19541), (139, 19544), (141, 19580), (145, 19625), (149, 19661), (154, 19748), (155, 19772), (162, 19844), (175, 20012),

Gene: WaddleDee\_131 Start: 94203, Stop: 96113, Start Num: 6

Candidate Starts for WaddleDee\_131:

(Start: 6 @94203 has 10 MA's), (9, 94209), (14, 94290), (38, 94446), (71, 94701), (103, 95052), (121, 95445), (136, 95580), (143, 95652),

Gene: Wildwest\_54 Start: 38561, Stop: 40003, Start Num: 26

Candidate Starts for Wildwest\_54:

(Start: 26 @38561 has 22 MA's), (27, 38570), (28, 38579), (37, 38630), (41, 38657), (46, 38708), (54, 38777), (60, 38819), (64, 38843), (71, 38876), (77, 38939), (107, 39224), (125, 39419), (138, 39491), (139, 39494), (154, 39698), (155, 39722), (175, 39962),

Gene: Wyborn\_29 Start: 23980, Stop: 25587, Start Num: 7

Candidate Starts for Wyborn\_29:

(Start: 7 @23980 has 2 MA's), (17, 24091), (19, 24103), (24, 24130), (25, 24133), (29, 24172), (30, 24181), (43, 24283), (46, 24307), (48, 24316), (50, 24334), (59, 24415), (67, 24454), (71, 24469), (73, 24481), (74, 24514), (75, 24532), (79, 24553), (82, 24580), (95, 24754), (98, 24778), (104, 24838), (118, 24967), (130, 25030), (131, 25036), (136, 25051), (144, 25138), (146, 25186), (149, 25207), (153, 25282), (155, 25318), (160, 25381), (161, 25387), (166, 25462), (172, 25495), (174, 25522),

Gene: Zartrosa\_28 Start: 23647, Stop: 25236, Start Num: 5

Candidate Starts for Zartrosa\_28:

(Start: 5 @23647 has 23 MA's), (11, 23677), (19, 23776), (24, 23803), (30, 23854), (43, 23953), (46, 23977), (47, 23983), (52, 24031), (57, 24064), (59, 24085), (71, 24139), (74, 24184), (87, 24322), (99, 24448), (107, 24532), (108, 24559), (131, 24697), (138, 24736), (153, 24943), (155, 24979), (157, 25012), (158, 25021), (161, 25048), (166, 25123), (171, 25153),