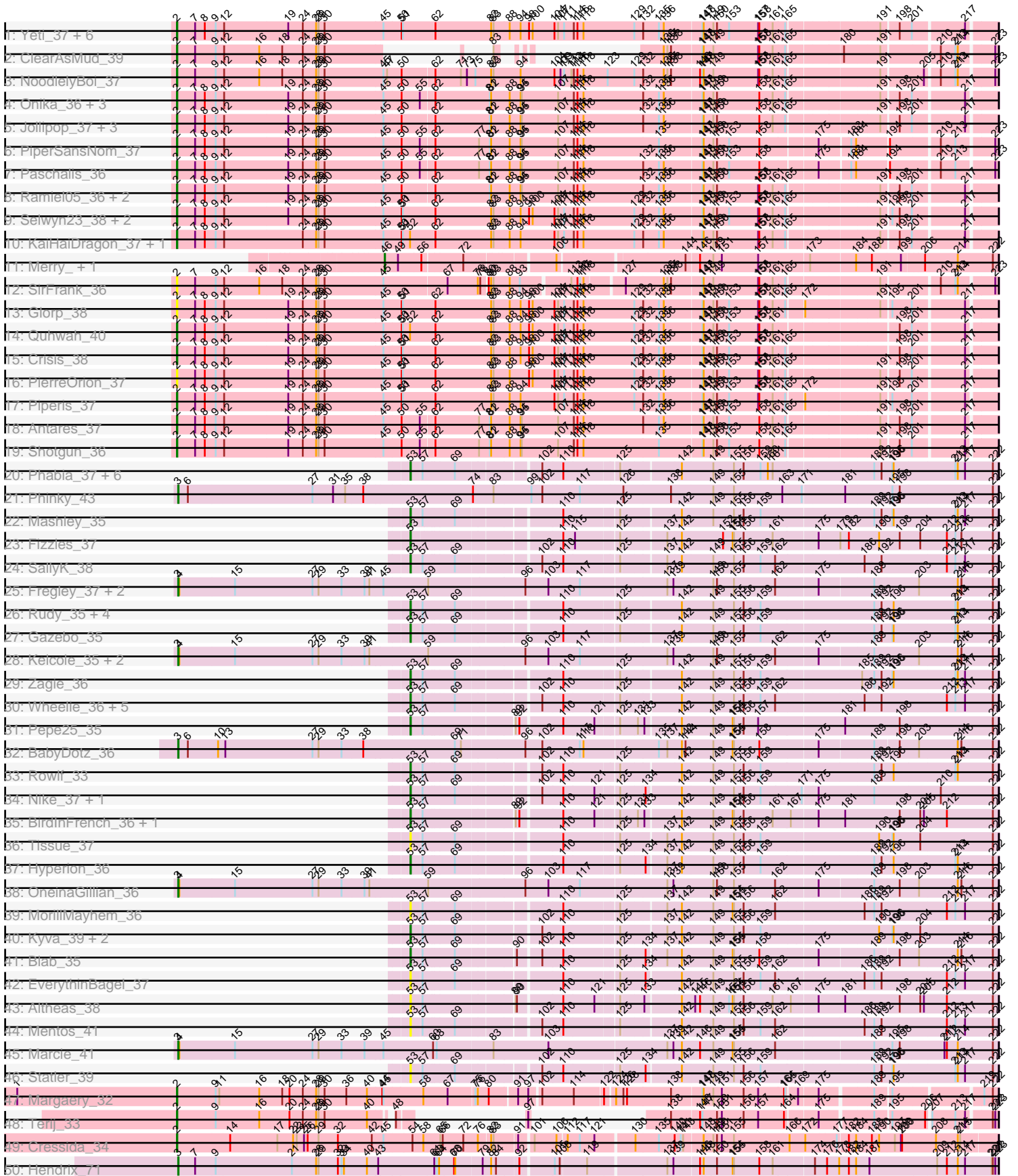
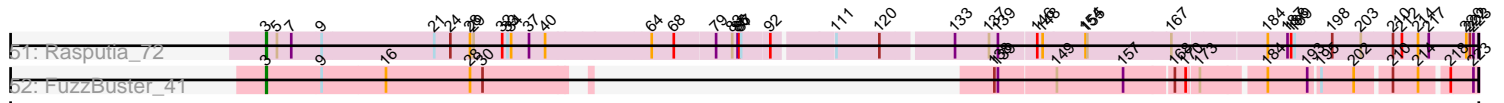


Pham 224479



# Pham 224479



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 224479 Report

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

Pham number 224479 has 93 members, 17 are drafts.

Phages represented in each track:

- Track 1 : Yeti\_37, Ganandorf\_36, Jefe\_37, Busephilis\_36, Honeyfin\_38, Phrancesco\_37, Phorgeous\_36
- Track 2 : ClearAsMud\_39
- Track 3 : NoodlelyBoi\_37
- Track 4 : Onika\_36, Cranjjs\_38, CrazyRich\_36, PhedwardCullen\_35
- Track 5 : Jollipop\_37, Hermeonysus\_36, BrazzalePHS\_36, Pulchra\_38
- Track 6 : PiperSansNom\_37
- Track 7 : Paschalis\_36
- Track 8 : Ramiel05\_36, Savannah\_36, Kowalski\_36
- Track 9 : Selwyn23\_38, Scumberland\_38, LittleFortune\_38
- Track 10 : KaiHaiDragon\_37, EarickHC\_37
- Track 11 : Merry\_, Sunny\_
- Track 12 : SirFrank\_36
- Track 13 : Glorp\_38
- Track 14 : Quhwah\_40
- Track 15 : Crisis\_38
- Track 16 : PierreOrion\_37
- Track 17 : Piperis\_37
- Track 18 : Antares\_37
- Track 19 : Shotgun\_36
- Track 20 : Phabia\_37, Lonelysoil\_36, Judebell\_39, Casend\_38, Teehee\_38, FrankDeliGuy\_35, Wayne3\_38
- Track 21 : Phinky\_43
- Track 22 : Mashley\_35
- Track 23 : Fizzles\_37
- Track 24 : SallyK\_38
- Track 25 : Fregley\_37, Tempo\_36, CandC\_35
- Track 26 : Rudy\_35, Quammi\_35, StrawberryJamm\_39, Viceroy\_35, AluminumJesus\_35
- Track 27 : Gazebo\_35
- Track 28 : Kelcole\_35, RobinRose\_38, Romm\_38
- Track 29 : Zagie\_36
- Track 30 : Wheelie\_36, Jehoshaphat\_39, Llemily\_37, DonaldDuck\_37, Zhafia\_40, Sillytadpoles\_38
- Track 31 : Pepe25\_35
- Track 32 : BabyDotz\_36
- Track 33 : Rowlf\_33

- Track 34 : Nike\_37, Squash\_39
- Track 35 : BirdInFrench\_36, Wilca\_36
- Track 36 : Tissue\_37
- Track 37 : Hyperion\_36
- Track 38 : OneinaGillian\_36
- Track 39 : MorillMayhem\_36
- Track 40 : Kyva\_39, Namago\_37, Grassboy\_38
- Track 41 : Blab\_35
- Track 42 : EverythinBagel\_37
- Track 43 : Altheas\_38
- Track 44 : Mentos\_41
- Track 45 : Marcie\_41
- Track 46 : Statler\_39
- Track 47 : Margaery\_32
- Track 48 : Terij\_33
- Track 49 : Cressida\_34
- Track 50 : Hendrix\_71
- Track 51 : Rasputia\_72
- Track 52 : FuzzBuster\_41

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

The start number called the most often in the published annotations is 2, it was called in 34 of the 76 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Antares\_37, BrazzalePHS\_36, Busephilis\_36, ClearAsMud\_39, Cranjiss\_38, CrazyRich\_36, Cressida\_34, Crisis\_38, EarickHC\_37, Ganandorf\_36, Glorp\_38, Hermeonysus\_36, Honeyfin\_38, Jefe\_37, Jollipop\_37, KaiHaiDragon\_37, Kowalski\_36, LittleFortune\_38, Margaery\_32, NoodlelyBoi\_37, Onika\_36, Paschalis\_36, PhedwardCullen\_35, Phorgeous\_36, Phrancesco\_37, PierreOrion\_37, PiperSansNom\_37, Piperis\_37, Pulchra\_38, Quhwah\_40, Ramiel05\_36, Savannah\_36, Scumberland\_38, Selwyn23\_38, Shotgun\_36, SirFrank\_36, Terij\_33, Yeti\_37,

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

- 

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

- Altheas\_38, AluminumJesus\_35, BabyDotz\_36, BirdInFrench\_36, Blab\_35, CandC\_35, Casend\_38, DonaldDuck\_37, EverythinBagel\_37, Fizzles\_37, FrankDeliGuy\_35, Fregley\_37, FuzzBuster\_41, Gazebo\_35, Grassboy\_38, Hendrix\_71, Hyperion\_36, Jehoshaphat\_39, Judebell\_39, Kelcole\_35, Kyva\_39, Llemily\_37, Lonelysoil\_36, Marcie\_41, Mashley\_35, Mentos\_41, Merry\_, MorillMayhem\_36, Namago\_37, Nike\_37, OneinaGillian\_36, Pepe25\_35, Phabia\_37, Phinky\_43, Quammi\_35, Rasputia\_72, RobinRose\_38, Romm\_38, Rowlf\_33, Rudy\_35, SallyK\_38, Sillytadpoles\_38, Squash\_39, Statler\_39, StrawberryJamm\_39, Sunny\_, Teehee\_38, Tempo\_36, Tissue\_37, Viceroy\_35, Wayne3\_38, Wheelie\_36, Wilca\_36, Zagie\_36, Zhafia\_40,

## Summary by start number:

### Start 2:

- Found in 38 of 93 ( 40.9% ) of genes in pham
- Manual Annotations of this start: 34 of 76
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Antares\_37 (EC), BrazzalePHS\_36 (EC), Busephilis\_36 (EC), ClearAsMud\_39 (EC), Cranjis\_38 (EC), CrazyRich\_36 (EC), Cressida\_34 (EI), Crisis\_38 (EC), EarickHC\_37 (EC), Ganandorf\_36 (EC), Glorp\_38 (EC), Hermeonysus\_36 (EC), Honeyfin\_38 (EC), Jefe\_37 (EC), Jollipop\_37 (EC), KaiHaiDragon\_37 (EC), Kowalski\_36 (EC), LittleFortune\_38 (EC), Margaery\_32 (EI), NoodlelyBoi\_37 (EC), Onika\_36 (EC), Paschalis\_36 (EC), PhedwardCullen\_35 (EC), Phorgeous\_36 (EC), Phrancesco\_37 (EC), PierreOrion\_37 (EC), PiperSansNom\_37 (EC), Piperis\_37 (EC), Pulchra\_38 (EC), Quhwah\_40 (EC), Ramiel05\_36 (EC), Savannah\_36 (EC), Scumberland\_38 (EC), Selwyn23\_38 (EC), Shotgun\_36 (EC), SirFrank\_36 (EC), Terij\_33 (EI), Yeti\_37 (EC),

### Start 3:

- Found in 13 of 93 ( 14.0% ) of genes in pham
- Manual Annotations of this start: 12 of 76
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BabyDotz\_36 (EG), CandC\_35 (EG), Fregley\_37 (EG), FuzzBuster\_41 (singleton), Hendrix\_71 (GC), Kelcole\_35 (EG), Marcie\_41 (EG), OneinaGillian\_36 (EG), Phinky\_43 (EG), Rasputia\_72 (GC), RobinRose\_38 (EG), Romm\_38 (EG), Tempo\_36 (EG),

### Start 46:

- Found in 2 of 93 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 2 of 76
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Merry\_ (EC), Sunny\_ (EC),

### Start 53:

- Found in 40 of 93 ( 43.0% ) of genes in pham
- Manual Annotations of this start: 28 of 76
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Altheas\_38 (EG), AluminumJesus\_35 (EG), BirdInFrench\_36 (EG), Blab\_35 (EG), Casend\_38 (EG), DonaldDuck\_37 (EG), EverythinBagel\_37 (EG), Fizzles\_37 (EG), FrankDeliGuy\_35 (EG), Gazebo\_35 (EG), Grassboy\_38 (EG), Hyperion\_36 (EG), Jehoshaphat\_39 (EG), Judebell\_39 (EG), Kyva\_39 (EG), Llemily\_37 (EG), Lonelysoil\_36 (EG), Mashley\_35 (EG), Mentos\_41 (EG), MorillMayhem\_36 (EG), Namago\_37 (EG), Nike\_37 (EG), Pepe25\_35 (EG), Phabia\_37 (EG), Quammi\_35 (EG), Rowlf\_33 (EG), Rudy\_35 (EG), SallyK\_38 (EG), Sillytadpoles\_38 (EG), Squash\_39 (EG), Statler\_39 (EG), StrawberryJamm\_39 (EG), Teehee\_38 (EG), Tissue\_37 (EG), Viceroy\_35 (EG), Wayne3\_38 (EG), Wheelie\_36 (EG), Wilca\_36 (EG), Zagie\_36 (EG), Zhafia\_40 (EG),

## Summary by clusters:

There are 5 clusters represented in this pham: GC, EG, EI, singleton, EC,

Info for manual annotations of cluster EC:

- Start number 2 was manually annotated 31 times for cluster EC.

- Start number 46 was manually annotated 2 times for cluster EC.

Info for manual annotations of cluster EG:

- Start number 3 was manually annotated 9 times for cluster EG.
- Start number 53 was manually annotated 28 times for cluster EG.

Info for manual annotations of cluster EI:

- Start number 2 was manually annotated 3 times for cluster EI.

Info for manual annotations of cluster GC:

- Start number 3 was manually annotated 2 times for cluster GC.

### **Gene Information:**

Gene: Altheas\_38 Start: 26739, Stop: 28082, Start Num: 53

Candidate Starts for Altheas\_38:

(Start: 53 @26739 has 28 MA's), (57, 26763), (89, 26964), (90, 26967), (110, 27066), (121, 27138), (125, 27189), (133, 27240), (142, 27321), (145, 27351), (146, 27363), (149, 27396), (153, 27435), (154, 27444), (155, 27447), (156, 27471), (161, 27543), (167, 27585), (175, 27645), (181, 27711), (198, 27843), (204, 27891), (205, 27900), (212, 27954), (222, 28068),

Gene: AluminumJesus\_35 Start: 26345, Stop: 27685, Start Num: 53

Candidate Starts for AluminumJesus\_35:

(Start: 53 @26345 has 28 MA's), (57, 26369), (69, 26441), (110, 26672), (125, 26795), (142, 26927), (149, 27002), (155, 27053), (156, 27077), (159, 27119), (189, 27383), (192, 27401), (196, 27431), (213, 27578), (214, 27584), (222, 27671),

Gene: Antares\_37 Start: 23711, Stop: 25657, Start Num: 2

Candidate Starts for Antares\_37:

(Start: 2 @23711 has 34 MA's), (7, 23756), (8, 23780), (9, 23807), (12, 23828), (19, 23984), (24, 24020), (28, 24053), (29, 24059), (30, 24074), (45, 24218), (50, 24260), (55, 24305), (62, 24338), (77, 24446), (81, 24473), (82, 24476), (88, 24521), (94, 24548), (95, 24551), (107, 24641), (114, 24680), (116, 24689), (118, 24704), (132, 24851), (135, 24890), (136, 24902), (147, 24992), (148, 24995), (149, 25019), (150, 25028), (153, 25058), (158, 25133), (161, 25166), (165, 25196), (191, 25403), (198, 25442), (201, 25472), (217, 25589),

Gene: BabyDotz\_36 Start: 26482, Stop: 28446, Start Num: 3

Candidate Starts for BabyDotz\_36:

(Start: 3 @26482 has 12 MA's), (6, 26506), (10, 26578), (13, 26593), (27, 26809), (29, 26824), (33, 26881), (38, 26932), (69, 27151), (71, 27166), (96, 27319), (102, 27361), (117, 27451), (118, 27460), (135, 27640), (137, 27661), (142, 27694), (144, 27703), (149, 27769), (154, 27817), (155, 27820), (158, 27883), (175, 28018), (189, 28147), (198, 28204), (203, 28252), (214, 28345), (216, 28354), (222, 28432),

Gene: BirdInFrench\_36 Start: 24913, Stop: 26256, Start Num: 53

Candidate Starts for BirdInFrench\_36:

(Start: 53 @24913 has 28 MA's), (57, 24937), (89, 25138), (92, 25147), (110, 25240), (121, 25312), (125, 25363), (131, 25399), (133, 25414), (142, 25495), (149, 25570), (154, 25618), (155, 25621), (156, 25645), (161, 25717), (167, 25759), (175, 25819), (181, 25885), (198, 26017), (204, 26065), (205, 26074), (212, 26128), (222, 26242),

Gene: Blab\_35 Start: 26270, Stop: 27604, Start Num: 53

Candidate Starts for Blab\_35:

(Start: 53 @26270 has 28 MA's), (57, 26294), (69, 26366), (90, 26498), (102, 26549), (110, 26597), (125, 26720), (134, 26774), (137, 26819), (142, 26852), (149, 26927), (154, 26975), (155, 26978), (158, 27041), (175, 27176), (189, 27305), (198, 27362), (203, 27410), (214, 27503), (216, 27512), (222, 27590),

Gene: BrazzalePHS\_36 Start: 23506, Stop: 25452, Start Num: 2

Candidate Starts for BrazzalePHS\_36:

(Start: 2 @23506 has 34 MA's), (7, 23551), (8, 23575), (9, 23602), (12, 23623), (19, 23779), (24, 23815), (28, 23848), (29, 23854), (30, 23869), (45, 24013), (50, 24055), (62, 24133), (81, 24268), (82, 24271), (88, 24316), (94, 24343), (95, 24346), (107, 24436), (114, 24475), (116, 24484), (118, 24499), (132, 24646), (135, 24685), (136, 24697), (147, 24787), (148, 24790), (149, 24814), (150, 24823), (158, 24928), (161, 24961), (165, 24991), (191, 25198), (198, 25237), (201, 25267), (217, 25384),

Gene: Busephilis\_36 Start: 23441, Stop: 25393, Start Num: 2

Candidate Starts for Busephilis\_36:

(Start: 2 @23441 has 34 MA's), (7, 23486), (8, 23510), (9, 23537), (12, 23558), (19, 23714), (24, 23750), (28, 23783), (29, 23789), (30, 23804), (45, 23948), (50, 23990), (51, 23993), (62, 24074), (82, 24212), (83, 24218), (88, 24257), (94, 24284), (98, 24305), (100, 24314), (104, 24368), (107, 24377), (111, 24392), (114, 24416), (116, 24425), (118, 24440), (129, 24566), (132, 24587), (135, 24626), (136, 24638), (147, 24728), (148, 24731), (149, 24755), (150, 24764), (153, 24794), (157, 24866), (158, 24869), (161, 24902), (165, 24932), (191, 25139), (198, 25178), (201, 25208), (217, 25325),

Gene: CandC\_35 Start: 24614, Stop: 26587, Start Num: 3

Candidate Starts for CandC\_35:

(Start: 3 @24614 has 12 MA's), (4, 24617), (15, 24752), (27, 24944), (29, 24959), (33, 25016), (39, 25070), (41, 25082), (45, 25115), (59, 25220), (96, 25454), (103, 25511), (117, 25586), (137, 25796), (139, 25811), (149, 25910), (150, 25919), (155, 25961), (162, 26063), (175, 26159), (189, 26288), (203, 26393), (214, 26486), (216, 26495), (222, 26573),

Gene: Casend\_38 Start: 26891, Stop: 28231, Start Num: 53

Candidate Starts for Casend\_38:

(Start: 53 @26891 has 28 MA's), (57, 26915), (69, 26987), (102, 27170), (110, 27218), (125, 27341), (142, 27473), (149, 27548), (155, 27599), (156, 27623), (159, 27665), (160, 27683), (161, 27695), (189, 27929), (192, 27947), (195, 27974), (196, 27977), (213, 28124), (214, 28130), (217, 28148), (222, 28217),

Gene: ClearAsMud\_39 Start: 24222, Stop: 25577, Start Num: 2

Candidate Starts for ClearAsMud\_39:

(Start: 2 @24222 has 34 MA's), (7, 24267), (9, 24318), (12, 24339), (16, 24426), (18, 24480), (24, 24531), (28, 24564), (29, 24570), (30, 24585), (83, 24732), (136, 24822), (137, 24831), (138, 24840), (147, 24912), (148, 24915), (149, 24939), (157, 25050), (158, 25053), (161, 25086), (165, 25116), (180, 25239), (191, 25323), (210, 25449), (213, 25485), (214, 25491), (223, 25569),

Gene: Cranjis\_38 Start: 23666, Stop: 25612, Start Num: 2

Candidate Starts for Cranjis\_38:

(Start: 2 @23666 has 34 MA's), (7, 23711), (8, 23735), (9, 23762), (12, 23783), (19, 23939), (24, 23975), (28, 24008), (29, 24014), (30, 24029), (45, 24173), (50, 24215), (55, 24260), (62, 24293), (81, 24428), (82, 24431), (88, 24476), (94, 24503), (95, 24506), (107, 24596), (114, 24635), (116, 24644), (118, 24659), (132, 24806), (135, 24845), (136, 24857), (147, 24947), (148, 24950), (149, 24974), (150, 24983), (158, 25088), (161, 25121), (165, 25151), (191, 25358), (198, 25397), (201, 25427), (217, 25544),

Gene: CrazyRich\_36 Start: 23475, Stop: 25421, Start Num: 2

Candidate Starts for CrazyRich\_36:

(Start: 2 @23475 has 34 MA's), (7, 23520), (8, 23544), (9, 23571), (12, 23592), (19, 23748), (24, 23784), (28, 23817), (29, 23823), (30, 23838), (45, 23982), (50, 24024), (55, 24069), (62, 24102), (81, 24237), (82, 24240), (88, 24285), (94, 24312), (95, 24315), (107, 24405), (114, 24444), (116, 24453), (118, 24468), (132, 24615), (135, 24654), (136, 24666), (147, 24756), (148, 24759), (149, 24783), (150, 24792), (158, 24897), (161, 24930), (165, 24960), (191, 25167), (198, 25206), (201, 25236), (217, 25353),

Gene: Cressida\_34 Start: 22922, Stop: 24850, Start Num: 2

Candidate Starts for Cressida\_34:

(Start: 2 @22922 has 34 MA's), (14, 23048), (17, 23165), (22, 23204), (23, 23213), (25, 23231), (26, 23240), (29, 23267), (32, 23315), (42, 23399), (45, 23426), (54, 23495), (58, 23522), (65, 23558), (66, 23564), (72, 23615), (76, 23651), (82, 23678), (83, 23684), (91, 23738), (101, 23765), (106, 23816), (112, 23837), (117, 23867), (121, 23900), (130, 23990), (135, 24047), (140, 24086), (141, 24101), (143, 24107), (148, 24152), (149, 24176), (150, 24185), (151, 24197), (155, 24227), (166, 24362), (172, 24401), (177, 24473), (182, 24494), (184, 24512), (188, 24551), (190, 24569), (197, 24602), (199, 24617), (200, 24620), (208, 24704), (214, 24758), (215, 24764),

Gene: Crisis\_38 Start: 23460, Stop: 25412, Start Num: 2

Candidate Starts for Crisis\_38:

(Start: 2 @23460 has 34 MA's), (7, 23505), (8, 23529), (9, 23556), (12, 23577), (19, 23733), (24, 23769), (28, 23802), (29, 23808), (30, 23823), (45, 23967), (50, 24009), (51, 24012), (62, 24093), (82, 24231), (83, 24237), (88, 24276), (94, 24303), (98, 24324), (100, 24333), (104, 24387), (107, 24396), (111, 24411), (114, 24435), (116, 24444), (118, 24459), (129, 24585), (132, 24606), (135, 24645), (136, 24657), (147, 24747), (148, 24750), (149, 24774), (150, 24783), (153, 24813), (157, 24885), (158, 24888), (161, 24921), (165, 24951), (198, 25197), (201, 25227), (217, 25344),

Gene: DonaldDuck\_37 Start: 26237, Stop: 27580, Start Num: 53

Candidate Starts for DonaldDuck\_37:

(Start: 53 @26237 has 28 MA's), (57, 26261), (69, 26333), (102, 26516), (110, 26564), (125, 26687), (142, 26819), (149, 26894), (155, 26945), (156, 26969), (159, 27011), (162, 27047), (186, 27251), (192, 27293), (212, 27452), (213, 27473), (217, 27497), (222, 27566),

Gene: EarickHC\_37 Start: 23386, Stop: 25338, Start Num: 2

Candidate Starts for EarickHC\_37:

(Start: 2 @23386 has 34 MA's), (7, 23431), (8, 23455), (9, 23482), (12, 23503), (24, 23695), (28, 23728), (29, 23734), (30, 23749), (45, 23893), (50, 23935), (51, 23938), (52, 23956), (62, 24019), (82, 24157), (83, 24163), (88, 24202), (94, 24229), (104, 24313), (107, 24322), (111, 24337), (114, 24361), (116, 24370), (118, 24385), (129, 24511), (132, 24532), (135, 24571), (136, 24583), (147, 24673), (148, 24676), (149, 24700), (150, 24709), (157, 24811), (158, 24814), (161, 24847), (165, 24877), (191, 25084), (198, 25123), (201, 25153), (217, 25270),

Gene: EverythinBagel\_37 Start: 26625, Stop: 27968, Start Num: 53

Candidate Starts for EverythinBagel\_37:

(Start: 53 @26625 has 28 MA's), (57, 26649), (69, 26721), (110, 26952), (125, 27075), (134, 27129), (142, 27207), (149, 27282), (155, 27333), (156, 27357), (159, 27399), (162, 27435), (186, 27639), (189, 27663), (192, 27681), (212, 27840), (213, 27861), (217, 27885), (222, 27954),

Gene: Fizzles\_37 Start: 25850, Stop: 27190, Start Num: 53

Candidate Starts for Fizzles\_37:



(Start: 53 @25850 has 28 MA's), (110, 26177), (115, 26201), (125, 26300), (137, 26399), (142, 26432), (152, 26531), (154, 26555), (155, 26558), (156, 26582), (161, 26654), (175, 26756), (179, 26807), (182, 26828), (190, 26900), (198, 26951), (204, 26999), (212, 27062), (213, 27083), (216, 27098), (222, 27176),

Gene: FrankDeliGuy\_35 Start: 26197, Stop: 27537, Start Num: 53

Candidate Starts for FrankDeliGuy\_35:

(Start: 53 @26197 has 28 MA's), (57, 26221), (69, 26293), (102, 26476), (110, 26524), (125, 26647), (142, 26779), (149, 26854), (155, 26905), (156, 26929), (159, 26971), (160, 26989), (161, 27001), (189, 27235), (192, 27253), (195, 27280), (196, 27283), (213, 27430), (214, 27436), (217, 27454), (222, 27523),

Gene: Fregley\_37 Start: 25184, Stop: 27157, Start Num: 3

Candidate Starts for Fregley\_37:

(Start: 3 @25184 has 12 MA's), (4, 25187), (15, 25322), (27, 25514), (29, 25529), (33, 25586), (39, 25640), (41, 25652), (45, 25685), (59, 25790), (96, 26024), (103, 26081), (117, 26156), (137, 26366), (139, 26381), (149, 26480), (150, 26489), (155, 26531), (162, 26633), (175, 26729), (189, 26858), (203, 26963), (214, 27056), (216, 27065), (222, 27143),

Gene: FuzzBuster\_41 Start: 23513, Stop: 24814, Start Num: 3

Candidate Starts for FuzzBuster\_41:

(Start: 3 @23513 has 12 MA's), (9, 23603), (16, 23708), (28, 23849), (30, 23870), (138, 24074), (139, 24080), (149, 24173), (157, 24284), (168, 24362), (170, 24380), (173, 24398), (184, 24497), (193, 24563), (195, 24578), (202, 24632), (210, 24686), (214, 24728), (218, 24770), (223, 24806),

Gene: Ganandorf\_36 Start: 23522, Stop: 25474, Start Num: 2

Candidate Starts for Ganandorf\_36:

(Start: 2 @23522 has 34 MA's), (7, 23567), (8, 23591), (9, 23618), (12, 23639), (19, 23795), (24, 23831), (28, 23864), (29, 23870), (30, 23885), (45, 24029), (50, 24071), (51, 24074), (62, 24155), (82, 24293), (83, 24299), (88, 24338), (94, 24365), (98, 24386), (100, 24395), (104, 24449), (107, 24458), (111, 24473), (114, 24497), (116, 24506), (118, 24521), (129, 24647), (132, 24668), (135, 24707), (136, 24719), (147, 24809), (148, 24812), (149, 24836), (150, 24845), (153, 24875), (157, 24947), (158, 24950), (161, 24983), (165, 25013), (191, 25220), (198, 25259), (201, 25289), (217, 25406),

Gene: Gazebo\_35 Start: 26808, Stop: 28148, Start Num: 53

Candidate Starts for Gazebo\_35:

(Start: 53 @26808 has 28 MA's), (57, 26832), (69, 26904), (110, 27135), (125, 27258), (142, 27390), (149, 27465), (155, 27516), (156, 27540), (159, 27582), (189, 27846), (192, 27864), (195, 27891), (196, 27894), (213, 28041), (214, 28047), (222, 28134),

Gene: Glorp\_38 Start: 23523, Stop: 25475, Start Num: 2

Candidate Starts for Glorp\_38:

(Start: 2 @23523 has 34 MA's), (7, 23568), (8, 23592), (9, 23619), (12, 23640), (19, 23796), (24, 23832), (28, 23865), (29, 23871), (30, 23886), (45, 24030), (50, 24072), (51, 24075), (62, 24156), (82, 24294), (83, 24300), (88, 24339), (94, 24366), (98, 24387), (100, 24396), (104, 24450), (107, 24459), (111, 24474), (114, 24498), (116, 24507), (118, 24522), (129, 24648), (132, 24669), (135, 24708), (136, 24720), (147, 24810), (148, 24813), (149, 24837), (150, 24846), (153, 24876), (157, 24948), (158, 24951), (161, 24984), (165, 25014), (172, 25050), (191, 25221), (195, 25242), (201, 25290), (217, 25407),

Gene: Grassboy\_38 Start: 26866, Stop: 28209, Start Num: 53

Candidate Starts for Grassboy\_38:

(Start: 53 @26866 has 28 MA's), (57, 26890), (69, 26962), (102, 27145), (110, 27193), (125, 27316), (137, 27415), (142, 27448), (149, 27523), (155, 27574), (156, 27598), (159, 27640), (190, 27919), (195, 27952), (196, 27955), (204, 28018), (222, 28195),

Gene: Hendrix\_71 Start: 44066, Stop: 46000, Start Num: 3

Candidate Starts for Hendrix\_71:

(Start: 3 @44066 has 12 MA's), (7, 44108), (9, 44156), (21, 44342), (28, 44402), (29, 44408), (32, 44456), (33, 44465), (34, 44471), (40, 44528), (43, 44555), (61, 44684), (63, 44690), (64, 44696), (68, 44726), (70, 44729), (79, 44792), (82, 44813), (84, 44825), (92, 44876), (105, 44951), (108, 44963), (119, 45026), (137, 45209), (139, 45224), (146, 45284), (148, 45293), (150, 45323), (154, 45362), (155, 45365), (158, 45428), (161, 45461), (174, 45554), (176, 45584), (178, 45614), (182, 45638), (184, 45656), (187, 45686), (209, 45848), (212, 45872), (214, 45899), (217, 45917), (221, 45983), (222, 45986), (223, 45992),

Gene: Hermeonysus\_36 Start: 23395, Stop: 25341, Start Num: 2

Candidate Starts for Hermeonysus\_36:

(Start: 2 @23395 has 34 MA's), (7, 23440), (8, 23464), (9, 23491), (12, 23512), (19, 23668), (24, 23704), (28, 23737), (29, 23743), (30, 23758), (45, 23902), (50, 23944), (62, 24022), (81, 24157), (82, 24160), (88, 24205), (94, 24232), (95, 24235), (107, 24325), (114, 24364), (116, 24373), (118, 24388), (132, 24535), (135, 24574), (136, 24586), (147, 24676), (148, 24679), (149, 24703), (150, 24712), (158, 24817), (161, 24850), (165, 24880), (191, 25087), (198, 25126), (201, 25156), (217, 25273),

Gene: Honeyfin\_38 Start: 23710, Stop: 25662, Start Num: 2

Candidate Starts for Honeyfin\_38:

(Start: 2 @23710 has 34 MA's), (7, 23755), (8, 23779), (9, 23806), (12, 23827), (19, 23983), (24, 24019), (28, 24052), (29, 24058), (30, 24073), (45, 24217), (50, 24259), (51, 24262), (62, 24343), (82, 24481), (83, 24487), (88, 24526), (94, 24553), (98, 24574), (100, 24583), (104, 24637), (107, 24646), (111, 24661), (114, 24685), (116, 24694), (118, 24709), (129, 24835), (132, 24856), (135, 24895), (136, 24907), (147, 24997), (148, 25000), (149, 25024), (150, 25033), (153, 25063), (157, 25135), (158, 25138), (161, 25171), (165, 25201), (191, 25408), (198, 25447), (201, 25477), (217, 25594),

Gene: Hyperion\_36 Start: 26764, Stop: 28104, Start Num: 53

Candidate Starts for Hyperion\_36:

(Start: 53 @26764 has 28 MA's), (57, 26788), (69, 26860), (110, 27091), (125, 27214), (134, 27268), (137, 27313), (142, 27346), (149, 27421), (155, 27472), (156, 27496), (159, 27538), (189, 27802), (192, 27820), (196, 27850), (213, 27997), (214, 28003), (222, 28090),

Gene: Jefe\_37 Start: 23447, Stop: 25399, Start Num: 2

Candidate Starts for Jefe\_37:

(Start: 2 @23447 has 34 MA's), (7, 23492), (8, 23516), (9, 23543), (12, 23564), (19, 23720), (24, 23756), (28, 23789), (29, 23795), (30, 23810), (45, 23954), (50, 23996), (51, 23999), (62, 24080), (82, 24218), (83, 24224), (88, 24263), (94, 24290), (98, 24311), (100, 24320), (104, 24374), (107, 24383), (111, 24398), (114, 24422), (116, 24431), (118, 24446), (129, 24572), (132, 24593), (135, 24632), (136, 24644), (147, 24734), (148, 24737), (149, 24761), (150, 24770), (153, 24800), (157, 24872), (158, 24875), (161, 24908), (165, 24938), (191, 25145), (198, 25184), (201, 25214), (217, 25331),

Gene: Jehoshaphat\_39 Start: 27156, Stop: 28499, Start Num: 53

Candidate Starts for Jehoshaphat\_39:

(Start: 53 @27156 has 28 MA's), (57, 27180), (69, 27252), (102, 27435), (110, 27483), (125, 27606), (142, 27738), (149, 27813), (155, 27864), (156, 27888), (159, 27930), (162, 27966), (186, 28170), (192, 28212), (212, 28371), (213, 28392), (217, 28416), (222, 28485),

Gene: Jollipop\_37 Start: 23792, Stop: 25738, Start Num: 2

Candidate Starts for Jollipop\_37:

(Start: 2 @23792 has 34 MA's), (7, 23837), (8, 23861), (9, 23888), (12, 23909), (19, 24065), (24, 24101), (28, 24134), (29, 24140), (30, 24155), (45, 24299), (50, 24341), (62, 24419), (81, 24554), (82, 24557), (88, 24602), (94, 24629), (95, 24632), (107, 24722), (114, 24761), (116, 24770), (118, 24785), (132, 24932), (135, 24971), (136, 24983), (147, 25073), (148, 25076), (149, 25100), (150, 25109), (158, 25214), (161, 25247), (165, 25277), (191, 25484), (198, 25523), (201, 25553), (217, 25670),

Gene: Judebell\_39 Start: 26662, Stop: 28002, Start Num: 53

Candidate Starts for Judebell\_39:

(Start: 53 @26662 has 28 MA's), (57, 26686), (69, 26758), (102, 26941), (110, 26989), (125, 27112), (142, 27244), (149, 27319), (155, 27370), (156, 27394), (159, 27436), (160, 27454), (161, 27466), (189, 27700), (192, 27718), (195, 27745), (196, 27748), (213, 27895), (214, 27901), (217, 27919), (222, 27988),

Gene: KaiHaiDragon\_37 Start: 23386, Stop: 25338, Start Num: 2

Candidate Starts for KaiHaiDragon\_37:

(Start: 2 @23386 has 34 MA's), (7, 23431), (8, 23455), (9, 23482), (12, 23503), (24, 23695), (28, 23728), (29, 23734), (30, 23749), (45, 23893), (50, 23935), (51, 23938), (52, 23956), (62, 24019), (82, 24157), (83, 24163), (88, 24202), (94, 24229), (104, 24313), (107, 24322), (111, 24337), (114, 24361), (116, 24370), (118, 24385), (129, 24511), (132, 24532), (135, 24571), (136, 24583), (147, 24673), (148, 24676), (149, 24700), (150, 24709), (157, 24811), (158, 24814), (161, 24847), (165, 24877), (191, 25084), (198, 25123), (201, 25153), (217, 25270),

Gene: Kelcole\_35 Start: 25066, Stop: 27039, Start Num: 3

Candidate Starts for Kelcole\_35:

(Start: 3 @25066 has 12 MA's), (4, 25069), (15, 25204), (27, 25396), (29, 25411), (33, 25468), (39, 25522), (41, 25534), (59, 25672), (96, 25906), (103, 25963), (117, 26038), (137, 26248), (139, 26263), (149, 26362), (150, 26371), (155, 26413), (162, 26515), (175, 26611), (189, 26740), (203, 26845), (214, 26938), (216, 26947), (222, 27025),

Gene: Kowalski\_36 Start: 23502, Stop: 25448, Start Num: 2

Candidate Starts for Kowalski\_36:

(Start: 2 @23502 has 34 MA's), (7, 23547), (8, 23571), (9, 23598), (12, 23619), (19, 23775), (24, 23811), (28, 23844), (29, 23850), (30, 23865), (45, 24009), (50, 24051), (62, 24129), (81, 24264), (82, 24267), (88, 24312), (94, 24339), (95, 24342), (107, 24432), (114, 24471), (116, 24480), (118, 24495), (132, 24642), (135, 24681), (136, 24693), (147, 24783), (148, 24786), (149, 24810), (150, 24819), (157, 24921), (158, 24924), (161, 24957), (165, 24987), (191, 25194), (198, 25233), (201, 25263), (217, 25380),

Gene: Kyva\_39 Start: 26901, Stop: 28244, Start Num: 53

Candidate Starts for Kyva\_39:

(Start: 53 @26901 has 28 MA's), (57, 26925), (69, 26997), (102, 27180), (110, 27228), (125, 27351), (137, 27450), (142, 27483), (149, 27558), (155, 27609), (156, 27633), (159, 27675), (190, 27954), (195, 27987), (196, 27990), (204, 28053), (222, 28230),

Gene: LittleFortune\_38 Start: 23752, Stop: 25704, Start Num: 2

Candidate Starts for LittleFortune\_38:

(Start: 2 @23752 has 34 MA's), (7, 23797), (8, 23821), (9, 23848), (12, 23869), (19, 24025), (24, 24061), (28, 24094), (29, 24100), (30, 24115), (45, 24259), (50, 24301), (51, 24304), (62, 24385), (82, 24523), (83, 24529), (88, 24568), (94, 24595), (98, 24616), (100, 24625), (104, 24679), (107, 24688), (111, 24703), (114, 24727), (116, 24736), (118, 24751), (129, 24877), (132, 24898), (135, 24937), (136, 24949), (147, 25039), (148, 25042), (149, 25066), (150, 25075), (153, 25105), (157, 25177), (158, 25180), (161, 25213), (165, 25243), (191, 25450), (195, 25471), (198, 25489), (201, 25519),

(217, 25636),

Gene: Llemily\_37 Start: 25932, Stop: 27275, Start Num: 53

Candidate Starts for Llemily\_37:

(Start: 53 @25932 has 28 MA's), (57, 25956), (69, 26028), (102, 26211), (110, 26259), (125, 26382), (142, 26514), (149, 26589), (155, 26640), (156, 26664), (159, 26706), (162, 26742), (186, 26946), (192, 26988), (212, 27147), (213, 27168), (217, 27192), (222, 27261),

Gene: Lonelysoil\_36 Start: 26177, Stop: 27517, Start Num: 53

Candidate Starts for Lonelysoil\_36:

(Start: 53 @26177 has 28 MA's), (57, 26201), (69, 26273), (102, 26456), (110, 26504), (125, 26627), (142, 26759), (149, 26834), (155, 26885), (156, 26909), (159, 26951), (160, 26969), (161, 26981), (189, 27215), (192, 27233), (195, 27260), (196, 27263), (213, 27410), (214, 27416), (217, 27434), (222, 27503),

Gene: Marcie\_41 Start: 25722, Stop: 27695, Start Num: 3

Candidate Starts for Marcie\_41:

(Start: 3 @25722 has 12 MA's), (4, 25725), (15, 25860), (27, 26052), (29, 26067), (33, 26124), (39, 26178), (45, 26223), (60, 26340), (63, 26349), (83, 26484), (103, 26619), (137, 26904), (139, 26919), (142, 26940), (146, 26985), (149, 27018), (154, 27066), (155, 27069), (162, 27171), (189, 27396), (195, 27438), (198, 27456), (211, 27561), (212, 27567), (214, 27594), (222, 27681),

Gene: Margaery\_32 Start: 22803, Stop: 24701, Start Num: 2

Candidate Starts for Margaery\_32:

(1, 22407), (Start: 2 @22803 has 34 MA's), (9, 22899), (11, 22908), (16, 23007), (18, 23061), (20, 23079), (24, 23112), (28, 23145), (29, 23151), (30, 23166), (36, 23220), (40, 23271), (44, 23307), (45, 23310), (58, 23406), (67, 23466), (75, 23529), (76, 23535), (80, 23562), (91, 23625), (97, 23649), (102, 23673), (114, 23751), (122, 23820), (124, 23841), (126, 23859), (128, 23868), (138, 23976), (147, 24048), (148, 24051), (149, 24075), (151, 24096), (156, 24150), (157, 24186), (164, 24249), (165, 24252), (169, 24273), (175, 24315), (189, 24432), (195, 24468), (219, 24666), (222, 24687),

Gene: Mashley\_35 Start: 26580, Stop: 27920, Start Num: 53

Candidate Starts for Mashley\_35:

(Start: 53 @26580 has 28 MA's), (57, 26604), (69, 26676), (110, 26907), (125, 27030), (142, 27162), (149, 27237), (155, 27288), (156, 27312), (159, 27354), (189, 27618), (192, 27636), (195, 27663), (196, 27666), (213, 27813), (214, 27819), (217, 27837), (222, 27906),

Gene: Mentos\_41 Start: 27667, Stop: 29010, Start Num: 53

Candidate Starts for Mentos\_41:

(Start: 53 @27667 has 28 MA's), (57, 27691), (69, 27763), (102, 27946), (110, 27994), (125, 28117), (142, 28249), (149, 28324), (155, 28375), (156, 28399), (159, 28441), (162, 28477), (186, 28681), (189, 28705), (192, 28723), (212, 28882), (213, 28903), (217, 28927), (222, 28996),

Gene: Merry\_ Start: 25560, Stop: 26966, Start Num: 46

Candidate Starts for Merry\_:

(Start: 46 @25560 has 2 MA's), (49, 25593), (56, 25650), (72, 25743), (106, 25938), (144, 26226), (146, 26256), (149, 26289), (151, 26310), (157, 26400), (173, 26523), (184, 26628), (188, 26667), (199, 26736), (206, 26784), (214, 26865), (222, 26952),

Gene: MorillMayhem\_36 Start: 26447, Stop: 27790, Start Num: 53

Candidate Starts for MorillMayhem\_36:

(Start: 53 @26447 has 28 MA's), (57, 26471), (69, 26543), (110, 26774), (125, 26897), (137, 26996), (142, 27029), (149, 27104), (154, 27152), (155, 27155), (156, 27179), (162, 27257), (186, 27461),

(189, 27485), (192, 27503), (212, 27662), (213, 27683), (217, 27707), (222, 27776),

Gene: Namago\_37 Start: 26031, Stop: 27374, Start Num: 53

Candidate Starts for Namago\_37:

(Start: 53 @26031 has 28 MA's), (57, 26055), (69, 26127), (102, 26310), (110, 26358), (125, 26481), (137, 26580), (142, 26613), (149, 26688), (155, 26739), (156, 26763), (159, 26805), (190, 27084), (195, 27117), (196, 27120), (204, 27183), (222, 27360),

Gene: Nike\_37 Start: 26983, Stop: 28329, Start Num: 53

Candidate Starts for Nike\_37:

(Start: 53 @26983 has 28 MA's), (57, 27007), (69, 27079), (102, 27262), (110, 27310), (121, 27382), (125, 27433), (134, 27487), (142, 27565), (149, 27640), (155, 27691), (156, 27715), (159, 27757), (171, 27856), (175, 27889), (189, 28024), (210, 28186), (222, 28315),

Gene: NoodlelyBoi\_37 Start: 23832, Stop: 25775, Start Num: 2

Candidate Starts for NoodlelyBoi\_37:

(Start: 2 @23832 has 34 MA's), (7, 23877), (9, 23928), (12, 23949), (16, 24036), (18, 24090), (24, 24141), (28, 24174), (29, 24180), (30, 24195), (45, 24339), (47, 24348), (50, 24381), (62, 24459), (71, 24522), (73, 24537), (75, 24558), (82, 24597), (83, 24603), (94, 24669), (104, 24750), (109, 24765), (111, 24774), (113, 24792), (114, 24798), (116, 24807), (118, 24822), (123, 24882), (129, 24948), (132, 24969), (136, 25020), (137, 25029), (138, 25038), (146, 25104), (147, 25110), (148, 25113), (149, 25137), (157, 25248), (158, 25251), (161, 25284), (165, 25314), (191, 25521), (205, 25617), (210, 25647), (213, 25683), (214, 25689), (223, 25767),

Gene: OneinaGillian\_36 Start: 24713, Stop: 26689, Start Num: 3

Candidate Starts for OneinaGillian\_36:

(Start: 3 @24713 has 12 MA's), (4, 24716), (15, 24851), (27, 25043), (29, 25058), (33, 25115), (39, 25169), (41, 25181), (59, 25319), (96, 25553), (103, 25610), (117, 25685), (137, 25895), (139, 25910), (149, 26009), (150, 26018), (155, 26060), (162, 26162), (175, 26258), (189, 26387), (198, 26447), (203, 26495), (214, 26588), (216, 26597), (222, 26675),

Gene: Onika\_36 Start: 23477, Stop: 25423, Start Num: 2

Candidate Starts for Onika\_36:

(Start: 2 @23477 has 34 MA's), (7, 23522), (8, 23546), (9, 23573), (12, 23594), (19, 23750), (24, 23786), (28, 23819), (29, 23825), (30, 23840), (45, 23984), (50, 24026), (55, 24071), (62, 24104), (81, 24239), (82, 24242), (88, 24287), (94, 24314), (95, 24317), (107, 24407), (114, 24446), (116, 24455), (118, 24470), (132, 24617), (135, 24656), (136, 24668), (147, 24758), (148, 24761), (149, 24785), (150, 24794), (158, 24899), (161, 24932), (165, 24962), (191, 25169), (198, 25208), (201, 25238), (217, 25355),

Gene: Paschalis\_36 Start: 23490, Stop: 25430, Start Num: 2

Candidate Starts for Paschalis\_36:

(Start: 2 @23490 has 34 MA's), (7, 23535), (8, 23559), (9, 23586), (12, 23607), (19, 23763), (24, 23799), (28, 23832), (29, 23838), (30, 23853), (45, 23997), (50, 24039), (55, 24084), (62, 24117), (77, 24225), (81, 24252), (82, 24255), (88, 24300), (94, 24327), (95, 24330), (107, 24420), (114, 24459), (116, 24468), (118, 24483), (132, 24630), (135, 24669), (136, 24681), (147, 24771), (148, 24774), (149, 24798), (150, 24807), (153, 24837), (158, 24912), (175, 25041), (183, 25110), (184, 25122), (194, 25191), (210, 25302), (213, 25338), (223, 25422),

Gene: Pepe25\_35 Start: 24930, Stop: 26273, Start Num: 53

Candidate Starts for Pepe25\_35:

(Start: 53 @24930 has 28 MA's), (57, 24954), (89, 25155), (92, 25164), (110, 25257), (121, 25329), (125, 25380), (131, 25416), (133, 25431), (142, 25512), (149, 25587), (154, 25635), (155, 25638),

(156, 25662), (157, 25698), (181, 25902), (198, 26034), (222, 26259),

Gene: Phabia\_37 Start: 26350, Stop: 27690, Start Num: 53

Candidate Starts for Phabia\_37:

(Start: 53 @26350 has 28 MA's), (57, 26374), (69, 26446), (102, 26629), (110, 26677), (125, 26800), (142, 26932), (149, 27007), (155, 27058), (156, 27082), (159, 27124), (160, 27142), (161, 27154), (189, 27388), (192, 27406), (195, 27433), (196, 27436), (213, 27583), (214, 27589), (217, 27607), (222, 27676),

Gene: PhedwardCullen\_35 Start: 23235, Stop: 25181, Start Num: 2

Candidate Starts for PhedwardCullen\_35:

(Start: 2 @23235 has 34 MA's), (7, 23280), (8, 23304), (9, 23331), (12, 23352), (19, 23508), (24, 23544), (28, 23577), (29, 23583), (30, 23598), (45, 23742), (50, 23784), (55, 23829), (62, 23862), (81, 23997), (82, 24000), (88, 24045), (94, 24072), (95, 24075), (107, 24165), (114, 24204), (116, 24213), (118, 24228), (132, 24375), (135, 24414), (136, 24426), (147, 24516), (148, 24519), (149, 24543), (150, 24552), (158, 24657), (161, 24690), (165, 24720), (191, 24927), (198, 24966), (201, 24996), (217, 25113),

Gene: Phinky\_43 Start: 27523, Stop: 29499, Start Num: 3

Candidate Starts for Phinky\_43:

(Start: 3 @27523 has 12 MA's), (6, 27547), (27, 27850), (31, 27901), (35, 27931), (38, 27973), (74, 28234), (83, 28285), (99, 28378), (102, 28405), (117, 28495), (126, 28597), (138, 28714), (149, 28813), (155, 28864), (163, 28984), (171, 29029), (181, 29128), (195, 29242), (198, 29260), (222, 29485),

Gene: Phorgeous\_36 Start: 23344, Stop: 25296, Start Num: 2

Candidate Starts for Phorgeous\_36:

(Start: 2 @23344 has 34 MA's), (7, 23389), (8, 23413), (9, 23440), (12, 23461), (19, 23617), (24, 23653), (28, 23686), (29, 23692), (30, 23707), (45, 23851), (50, 23893), (51, 23896), (62, 23977), (82, 24115), (83, 24121), (88, 24160), (94, 24187), (98, 24208), (100, 24217), (104, 24271), (107, 24280), (111, 24295), (114, 24319), (116, 24328), (118, 24343), (129, 24469), (132, 24490), (135, 24529), (136, 24541), (147, 24631), (148, 24634), (149, 24658), (150, 24667), (153, 24697), (157, 24769), (158, 24772), (161, 24805), (165, 24835), (191, 25042), (198, 25081), (201, 25111), (217, 25228),

Gene: Phrancesco\_37 Start: 23622, Stop: 25574, Start Num: 2

Candidate Starts for Phrancesco\_37:

(Start: 2 @23622 has 34 MA's), (7, 23667), (8, 23691), (9, 23718), (12, 23739), (19, 23895), (24, 23931), (28, 23964), (29, 23970), (30, 23985), (45, 24129), (50, 24171), (51, 24174), (62, 24255), (82, 24393), (83, 24399), (88, 24438), (94, 24465), (98, 24486), (100, 24495), (104, 24549), (107, 24558), (111, 24573), (114, 24597), (116, 24606), (118, 24621), (129, 24747), (132, 24768), (135, 24807), (136, 24819), (147, 24909), (148, 24912), (149, 24936), (150, 24945), (153, 24975), (157, 25047), (158, 25050), (161, 25083), (165, 25113), (191, 25320), (198, 25359), (201, 25389), (217, 25506),

Gene: PierreOrion\_37 Start: 23645, Stop: 25597, Start Num: 2

Candidate Starts for PierreOrion\_37:

(Start: 2 @23645 has 34 MA's), (7, 23690), (8, 23714), (9, 23741), (12, 23762), (19, 23918), (24, 23954), (28, 23987), (29, 23993), (30, 24008), (45, 24152), (50, 24194), (51, 24197), (62, 24278), (82, 24416), (83, 24422), (88, 24461), (98, 24509), (100, 24518), (104, 24572), (107, 24581), (111, 24596), (114, 24620), (116, 24629), (118, 24644), (129, 24770), (132, 24791), (135, 24830), (136, 24842), (147, 24932), (148, 24935), (149, 24959), (150, 24968), (153, 24998), (157, 25070), (158, 25073), (161, 25106), (165, 25136), (191, 25343), (198, 25382), (201, 25412), (217, 25529),

Gene: PiperSansNom\_37 Start: 23797, Stop: 25737, Start Num: 2

Candidate Starts for PiperSansNom\_37:

(Start: 2 @23797 has 34 MA's), (7, 23842), (8, 23866), (9, 23893), (12, 23914), (19, 24070), (24, 24106), (28, 24139), (29, 24145), (30, 24160), (45, 24304), (50, 24346), (55, 24391), (62, 24424), (77, 24532), (81, 24559), (82, 24562), (88, 24607), (94, 24634), (95, 24637), (107, 24727), (114, 24766), (116, 24775), (118, 24790), (135, 24976), (147, 25078), (148, 25081), (149, 25105), (150, 25114), (153, 25144), (158, 25219), (175, 25348), (183, 25417), (184, 25429), (194, 25498), (210, 25609), (213, 25645), (223, 25729),

Gene: Piperis\_37 Start: 23467, Stop: 25419, Start Num: 2

Candidate Starts for Piperis\_37:

(Start: 2 @23467 has 34 MA's), (7, 23512), (8, 23536), (9, 23563), (12, 23584), (19, 23740), (24, 23776), (28, 23809), (29, 23815), (30, 23830), (45, 23974), (50, 24016), (51, 24019), (62, 24100), (82, 24238), (83, 24244), (88, 24283), (94, 24310), (104, 24394), (107, 24403), (111, 24418), (114, 24442), (116, 24451), (118, 24466), (129, 24592), (132, 24613), (135, 24652), (136, 24664), (147, 24754), (148, 24757), (149, 24781), (150, 24790), (153, 24820), (157, 24892), (158, 24895), (161, 24928), (165, 24958), (172, 24994), (191, 25165), (195, 25186), (201, 25234), (217, 25351),

Gene: Pulchra\_38 Start: 23867, Stop: 25813, Start Num: 2

Candidate Starts for Pulchra\_38:

(Start: 2 @23867 has 34 MA's), (7, 23912), (8, 23936), (9, 23963), (12, 23984), (19, 24140), (24, 24176), (28, 24209), (29, 24215), (30, 24230), (45, 24374), (50, 24416), (62, 24494), (81, 24629), (82, 24632), (88, 24677), (94, 24704), (95, 24707), (107, 24797), (114, 24836), (116, 24845), (118, 24860), (132, 25007), (135, 25046), (136, 25058), (147, 25148), (148, 25151), (149, 25175), (150, 25184), (158, 25289), (161, 25322), (165, 25352), (191, 25559), (198, 25598), (201, 25628), (217, 25745),

Gene: Quammi\_35 Start: 26053, Stop: 27393, Start Num: 53

Candidate Starts for Quammi\_35:

(Start: 53 @26053 has 28 MA's), (57, 26077), (69, 26149), (110, 26380), (125, 26503), (142, 26635), (149, 26710), (155, 26761), (156, 26785), (159, 26827), (189, 27091), (192, 27109), (196, 27139), (213, 27286), (214, 27292), (222, 27379),

Gene: Quhwah\_40 Start: 24093, Stop: 26045, Start Num: 2

Candidate Starts for Quhwah\_40:

(Start: 2 @24093 has 34 MA's), (7, 24138), (8, 24162), (9, 24189), (12, 24210), (19, 24366), (24, 24402), (28, 24435), (29, 24441), (30, 24456), (45, 24600), (50, 24642), (51, 24645), (52, 24663), (62, 24726), (82, 24864), (83, 24870), (88, 24909), (94, 24936), (98, 24957), (100, 24966), (104, 25020), (107, 25029), (111, 25044), (114, 25068), (116, 25077), (118, 25092), (129, 25218), (132, 25239), (135, 25278), (136, 25290), (147, 25380), (148, 25383), (149, 25407), (150, 25416), (153, 25446), (157, 25518), (158, 25521), (161, 25554), (198, 25830), (201, 25860), (217, 25977),

Gene: Ramiel05\_36 Start: 23502, Stop: 25448, Start Num: 2

Candidate Starts for Ramiel05\_36:

(Start: 2 @23502 has 34 MA's), (7, 23547), (8, 23571), (9, 23598), (12, 23619), (19, 23775), (24, 23811), (28, 23844), (29, 23850), (30, 23865), (45, 24009), (50, 24051), (62, 24129), (81, 24264), (82, 24267), (88, 24312), (94, 24339), (95, 24342), (107, 24432), (114, 24471), (116, 24480), (118, 24495), (132, 24642), (135, 24681), (136, 24693), (147, 24783), (148, 24786), (149, 24810), (150, 24819), (157, 24921), (158, 24924), (161, 24957), (165, 24987), (191, 25194), (198, 25233), (201, 25263), (217, 25380),

Gene: Rasputia\_72 Start: 44029, Stop: 45960, Start Num: 3

Candidate Starts for Rasputia\_72:

(Start: 3 @44029 has 12 MA's), (5, 44047), (7, 44071), (9, 44119), (21, 44305), (24, 44332), (28, 44365), (29, 44371), (32, 44419), (33, 44428), (34, 44434), (37, 44464), (40, 44491), (64, 44659), (68,

44692), (79, 44758), (83, 44785), (85, 44794), (86, 44797), (87, 44800), (92, 44842), (111, 44935), (120, 45007), (133, 45118), (137, 45175), (139, 45190), (146, 45250), (148, 45259), (154, 45328), (155, 45331), (167, 45469), (184, 45616), (187, 45646), (188, 45652), (189, 45658), (198, 45718), (203, 45766), (210, 45817), (212, 45832), (214, 45859), (217, 45877), (220, 45940), (222, 45946), (223, 45952),

Gene: RobinRose\_38 Start: 25217, Stop: 27190, Start Num: 3

Candidate Starts for RobinRose\_38:

(Start: 3 @25217 has 12 MA's), (4, 25220), (15, 25355), (27, 25547), (29, 25562), (33, 25619), (39, 25673), (41, 25685), (59, 25823), (96, 26057), (103, 26114), (117, 26189), (137, 26399), (139, 26414), (149, 26513), (150, 26522), (155, 26564), (162, 26666), (175, 26762), (189, 26891), (203, 26996), (214, 27089), (216, 27098), (222, 27176),

Gene: Romm\_38 Start: 25217, Stop: 27190, Start Num: 3

Candidate Starts for Romm\_38:

(Start: 3 @25217 has 12 MA's), (4, 25220), (15, 25355), (27, 25547), (29, 25562), (33, 25619), (39, 25673), (41, 25685), (59, 25823), (96, 26057), (103, 26114), (117, 26189), (137, 26399), (139, 26414), (149, 26513), (150, 26522), (155, 26564), (162, 26666), (175, 26762), (189, 26891), (203, 26996), (214, 27089), (216, 27098), (222, 27176),

Gene: Rowlf\_33 Start: 26228, Stop: 27568, Start Num: 53

Candidate Starts for Rowlf\_33:

(Start: 53 @26228 has 28 MA's), (57, 26252), (69, 26324), (102, 26507), (110, 26555), (125, 26678), (142, 26810), (149, 26885), (155, 26936), (156, 26960), (159, 27002), (189, 27266), (192, 27284), (196, 27314), (213, 27461), (214, 27467), (222, 27554),

Gene: Rudy\_35 Start: 26086, Stop: 27426, Start Num: 53

Candidate Starts for Rudy\_35:

(Start: 53 @26086 has 28 MA's), (57, 26110), (69, 26182), (110, 26413), (125, 26536), (142, 26668), (149, 26743), (155, 26794), (156, 26818), (159, 26860), (189, 27124), (192, 27142), (196, 27172), (213, 27319), (214, 27325), (222, 27412),

Gene: SallyK\_38 Start: 27030, Stop: 28373, Start Num: 53

Candidate Starts for SallyK\_38:

(Start: 53 @27030 has 28 MA's), (57, 27054), (69, 27126), (102, 27309), (110, 27357), (125, 27480), (137, 27579), (142, 27612), (149, 27687), (155, 27738), (156, 27762), (159, 27804), (162, 27840), (186, 28044), (192, 28086), (212, 28245), (213, 28266), (217, 28290), (222, 28359),

Gene: Savannah\_36 Start: 23529, Stop: 25475, Start Num: 2

Candidate Starts for Savannah\_36:

(Start: 2 @23529 has 34 MA's), (7, 23574), (8, 23598), (9, 23625), (12, 23646), (19, 23802), (24, 23838), (28, 23871), (29, 23877), (30, 23892), (45, 24036), (50, 24078), (62, 24156), (81, 24291), (82, 24294), (88, 24339), (94, 24366), (95, 24369), (107, 24459), (114, 24498), (116, 24507), (118, 24522), (132, 24669), (135, 24708), (136, 24720), (147, 24810), (148, 24813), (149, 24837), (150, 24846), (157, 24948), (158, 24951), (161, 24984), (165, 25014), (191, 25221), (198, 25260), (201, 25290), (217, 25407),

Gene: Scumberland\_38 Start: 23718, Stop: 25670, Start Num: 2

Candidate Starts for Scumberland\_38:

(Start: 2 @23718 has 34 MA's), (7, 23763), (8, 23787), (9, 23814), (12, 23835), (19, 23991), (24, 24027), (28, 24060), (29, 24066), (30, 24081), (45, 24225), (50, 24267), (51, 24270), (62, 24351), (82, 24489), (83, 24495), (88, 24534), (94, 24561), (98, 24582), (100, 24591), (104, 24645), (107, 24654), (111, 24669), (114, 24693), (116, 24702), (118, 24717), (129, 24843), (132, 24864), (135, 24903),



(136, 24915), (147, 25005), (148, 25008), (149, 25032), (150, 25041), (153, 25071), (157, 25143), (158, 25146), (161, 25179), (165, 25209), (191, 25416), (195, 25437), (198, 25455), (201, 25485), (217, 25602),

Gene: Selwyn23\_38 Start: 23695, Stop: 25647, Start Num: 2

Candidate Starts for Selwyn23\_38:

(Start: 2 @23695 has 34 MA's), (7, 23740), (8, 23764), (9, 23791), (12, 23812), (19, 23968), (24, 24004), (28, 24037), (29, 24043), (30, 24058), (45, 24202), (50, 24244), (51, 24247), (62, 24328), (82, 24466), (83, 24472), (88, 24511), (94, 24538), (98, 24559), (100, 24568), (104, 24622), (107, 24631), (111, 24646), (114, 24670), (116, 24679), (118, 24694), (129, 24820), (132, 24841), (135, 24880), (136, 24892), (147, 24982), (148, 24985), (149, 25009), (150, 25018), (153, 25048), (157, 25120), (158, 25123), (161, 25156), (165, 25186), (191, 25393), (195, 25414), (198, 25432), (201, 25462), (217, 25579),

Gene: Shotgun\_36 Start: 23328, Stop: 25274, Start Num: 2

Candidate Starts for Shotgun\_36:

(Start: 2 @23328 has 34 MA's), (7, 23373), (8, 23397), (9, 23424), (12, 23445), (19, 23601), (24, 23637), (28, 23670), (29, 23676), (30, 23691), (45, 23835), (50, 23877), (55, 23922), (62, 23955), (77, 24063), (81, 24090), (82, 24093), (88, 24138), (94, 24165), (95, 24168), (107, 24258), (114, 24297), (116, 24306), (118, 24321), (135, 24507), (147, 24609), (148, 24612), (149, 24636), (150, 24645), (153, 24675), (158, 24750), (161, 24783), (165, 24813), (191, 25020), (198, 25059), (201, 25089), (217, 25206),

Gene: Sillytadpoles\_38 Start: 25920, Stop: 27263, Start Num: 53

Candidate Starts for Sillytadpoles\_38:

(Start: 53 @25920 has 28 MA's), (57, 25944), (69, 26016), (102, 26199), (110, 26247), (125, 26370), (142, 26502), (149, 26577), (155, 26628), (156, 26652), (159, 26694), (162, 26730), (186, 26934), (192, 26976), (212, 27135), (213, 27156), (217, 27180), (222, 27249),

Gene: SirFrank\_36 Start: 23432, Stop: 25330, Start Num: 2

Candidate Starts for SirFrank\_36:

(Start: 2 @23432 has 34 MA's), (7, 23477), (9, 23528), (12, 23549), (16, 23636), (18, 23690), (24, 23741), (28, 23774), (29, 23780), (30, 23795), (45, 23939), (67, 24089), (76, 24164), (78, 24170), (80, 24182), (82, 24188), (83, 24194), (88, 24233), (93, 24257), (113, 24365), (116, 24380), (117, 24386), (118, 24395), (127, 24482), (136, 24575), (137, 24584), (138, 24593), (147, 24665), (148, 24668), (149, 24692), (157, 24803), (158, 24806), (161, 24839), (165, 24869), (191, 25076), (210, 25202), (213, 25238), (214, 25244), (223, 25322),

Gene: Squash\_39 Start: 26994, Stop: 28340, Start Num: 53

Candidate Starts for Squash\_39:

(Start: 53 @26994 has 28 MA's), (57, 27018), (69, 27090), (102, 27273), (110, 27321), (121, 27393), (125, 27444), (134, 27498), (142, 27576), (149, 27651), (155, 27702), (156, 27726), (159, 27768), (171, 27867), (175, 27900), (189, 28035), (210, 28197), (222, 28326),

Gene: Statler\_39 Start: 26839, Stop: 28179, Start Num: 53

Candidate Starts for Statler\_39:

(Start: 53 @26839 has 28 MA's), (57, 26863), (69, 26935), (102, 27118), (110, 27166), (125, 27289), (134, 27343), (142, 27421), (149, 27496), (155, 27547), (156, 27571), (159, 27613), (189, 27877), (192, 27895), (195, 27922), (196, 27925), (213, 28072), (214, 28078), (217, 28096), (222, 28165),

Gene: StrawberryJamm\_39 Start: 26290, Stop: 27630, Start Num: 53

Candidate Starts for StrawberryJamm\_39:

(Start: 53 @26290 has 28 MA's), (57, 26314), (69, 26386), (110, 26617), (125, 26740), (142, 26872), (149, 26947), (155, 26998), (156, 27022), (159, 27064), (189, 27328), (192, 27346), (196, 27376), (213, 27523), (214, 27529), (222, 27616),

Gene: Sunny\_ Start: 25562, Stop: 26968, Start Num: 46

Candidate Starts for Sunny\_:

(Start: 46 @25562 has 2 MA's), (49, 25595), (56, 25652), (72, 25745), (106, 25940), (144, 26228), (146, 26258), (149, 26291), (151, 26312), (157, 26402), (173, 26525), (184, 26630), (188, 26669), (199, 26738), (206, 26786), (214, 26867), (222, 26954),

Gene: Teehee\_38 Start: 27156, Stop: 28496, Start Num: 53

Candidate Starts for Teehee\_38:

(Start: 53 @27156 has 28 MA's), (57, 27180), (69, 27252), (102, 27435), (110, 27483), (125, 27606), (142, 27738), (149, 27813), (155, 27864), (156, 27888), (159, 27930), (160, 27948), (161, 27960), (189, 28194), (192, 28212), (195, 28239), (196, 28242), (213, 28389), (214, 28395), (217, 28413), (222, 28482),

Gene: Tempo\_36 Start: 25093, Stop: 27066, Start Num: 3

Candidate Starts for Tempo\_36:

(Start: 3 @25093 has 12 MA's), (4, 25096), (15, 25231), (27, 25423), (29, 25438), (33, 25495), (39, 25549), (41, 25561), (45, 25594), (59, 25699), (96, 25933), (103, 25990), (117, 26065), (137, 26275), (139, 26290), (149, 26389), (150, 26398), (155, 26440), (162, 26542), (175, 26638), (189, 26767), (203, 26872), (214, 26965), (216, 26974), (222, 27052),

Gene: Terij\_33 Start: 22891, Stop: 24228, Start Num: 2

Candidate Starts for Terij\_33:

(Start: 2 @22891 has 34 MA's), (9, 22987), (16, 23095), (20, 23167), (24, 23200), (28, 23233), (29, 23239), (30, 23254), (40, 23359), (48, 23398), (97, 23437), (138, 23503), (146, 23569), (147, 23575), (150, 23611), (151, 23623), (156, 23677), (157, 23713), (164, 23776), (175, 23842), (189, 23959), (195, 23995), (206, 24073), (207, 24079), (213, 24136), (217, 24160), (222, 24214), (223, 24220),

Gene: Tissue\_37 Start: 26673, Stop: 28016, Start Num: 53

Candidate Starts for Tissue\_37:

(Start: 53 @26673 has 28 MA's), (57, 26697), (69, 26769), (110, 27000), (125, 27123), (137, 27222), (142, 27255), (149, 27330), (155, 27381), (156, 27405), (159, 27447), (190, 27726), (195, 27759), (196, 27762), (204, 27825), (222, 28002),

Gene: Viceroy\_35 Start: 26053, Stop: 27393, Start Num: 53

Candidate Starts for Viceroy\_35:

(Start: 53 @26053 has 28 MA's), (57, 26077), (69, 26149), (110, 26380), (125, 26503), (142, 26635), (149, 26710), (155, 26761), (156, 26785), (159, 26827), (189, 27091), (192, 27109), (196, 27139), (213, 27286), (214, 27292), (222, 27379),

Gene: Wayne3\_38 Start: 26919, Stop: 28259, Start Num: 53

Candidate Starts for Wayne3\_38:

(Start: 53 @26919 has 28 MA's), (57, 26943), (69, 27015), (102, 27198), (110, 27246), (125, 27369), (142, 27501), (149, 27576), (155, 27627), (156, 27651), (159, 27693), (160, 27711), (161, 27723), (189, 27957), (192, 27975), (195, 28002), (196, 28005), (213, 28152), (214, 28158), (217, 28176), (222, 28245),

Gene: Wheelie\_36 Start: 26237, Stop: 27580, Start Num: 53

Candidate Starts for Wheelie\_36:

(Start: 53 @26237 has 28 MA's), (57, 26261), (69, 26333), (102, 26516), (110, 26564), (125, 26687), (142, 26819), (149, 26894), (155, 26945), (156, 26969), (159, 27011), (162, 27047), (186, 27251), (192, 27293), (212, 27452), (213, 27473), (217, 27497), (222, 27566),

Gene: Wilca\_36 Start: 24913, Stop: 26256, Start Num: 53

Candidate Starts for Wilca\_36:

(Start: 53 @24913 has 28 MA's), (57, 24937), (89, 25138), (92, 25147), (110, 25240), (121, 25312), (125, 25363), (131, 25399), (133, 25414), (142, 25495), (149, 25570), (154, 25618), (155, 25621), (156, 25645), (161, 25717), (167, 25759), (175, 25819), (181, 25885), (198, 26017), (204, 26065), (205, 26074), (212, 26128), (222, 26242),

Gene: Yeti\_37 Start: 23497, Stop: 25449, Start Num: 2

Candidate Starts for Yeti\_37:

(Start: 2 @23497 has 34 MA's), (7, 23542), (8, 23566), (9, 23593), (12, 23614), (19, 23770), (24, 23806), (28, 23839), (29, 23845), (30, 23860), (45, 24004), (50, 24046), (51, 24049), (62, 24130), (82, 24268), (83, 24274), (88, 24313), (94, 24340), (98, 24361), (100, 24370), (104, 24424), (107, 24433), (111, 24448), (114, 24472), (116, 24481), (118, 24496), (129, 24622), (132, 24643), (135, 24682), (136, 24694), (147, 24784), (148, 24787), (149, 24811), (150, 24820), (153, 24850), (157, 24922), (158, 24925), (161, 24958), (165, 24988), (191, 25195), (198, 25234), (201, 25264), (217, 25381),

Gene: Zagie\_36 Start: 26491, Stop: 27831, Start Num: 53

Candidate Starts for Zagie\_36:

(Start: 53 @26491 has 28 MA's), (57, 26515), (69, 26587), (110, 26818), (125, 26941), (142, 27073), (149, 27148), (155, 27199), (156, 27223), (159, 27265), (185, 27499), (189, 27529), (192, 27547), (195, 27574), (196, 27577), (213, 27724), (214, 27730), (217, 27748), (222, 27817),

Gene: Zhafia\_40 Start: 26715, Stop: 28058, Start Num: 53

Candidate Starts for Zhafia\_40:

(Start: 53 @26715 has 28 MA's), (57, 26739), (69, 26811), (102, 26994), (110, 27042), (125, 27165), (142, 27297), (149, 27372), (155, 27423), (156, 27447), (159, 27489), (162, 27525), (186, 27729), (192, 27771), (212, 27930), (213, 27951), (217, 27975), (222, 28044),